Draft
Site Inspection Report
CC RVAAP-83 Former Buildings 1031 and 1039
Revision 1

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

February 27, 2015

Contract No. W912QR-04-D-0039
Delivery Order: 0004

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
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This Site Inspection (SI) report documents the SI activities conducted at CC RVAAP-83 Former Buildings 1031 and 1039 at the former Ravenna Army Ammunition Plant in Portage and Trumbull counties, Ohio. The purpose of the SI was to determine the presence or absence of contamination and whether the Former Buildings 1031 and 1039 Area of Concern (AOC) warrented further investigation pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The sampling completed for this SI indicates that there is no contamination present at the Former Buildings 1031 and 1039 AOC that would warrant further investigation. This SI report recommends No Further Action.

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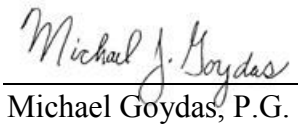
CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Environmental Chemical Corporation has completed the *Draft Site Inspection Report CC RVAAP-83 Former Buildings 1031 and 1039, Revision 1 at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures utilizing justified and valid assumptions was verified. This includes review of data quality objectives, technical assumptions, methods, procedures, and materials used. The appropriateness of the data used, level of data obtained, and reasonableness of the results, including whether the product meets the customer's needs, are consistent with law and existing United States Army Corps of Engineers policy.



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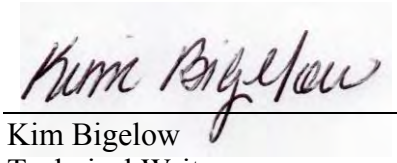

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
µg/kg	Microgram(s) per kilogram
amsl	Above mean sea level
AOC	Area of concern
beta-BHC	beta-Hexachlorocylohexane
bgs	Below ground surface
BKG	Background
CC	Army Environmental Compliance-Related Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	Centimeter
CR	Compliance Restoration
DDD	p,p'-Dichlorodiphenyldichloroethane.
DDE	p,p'-Dichlorodiphenyldichloroethylene.
DDT	1,1,1-Trichloro-2,2-di(4-chlorophenyl)ethane.
delta-BHC	Delta-hexachlorocyclohexane
DI	Deionized
DRO	Diesel range organic
DSB	Deep soil boring
DU	Decision Unit
ECC	Environmental Chemical Corporation
EQM	Environmental Quality Management, Inc.
ER	Equipment rinsate
FD	Field duplicate
ft	Feet (foot)
FWCUG	Facility-Wide Cleanup Goal
FWSAP	Facility-Wide Sampling and Analysis Plan
gpm	Gallon(s) per minute
GRO	Gasoline range organic
HMX	Cyclotetramethylene tetranitramine
HRR	Historical Records Review
ID	Identification
IDW	Investigation-derived waste
ISM	Incremental sampling methodology

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

J	Estimated
km	Kilometer
LES	Lakeshore Engineering Services, Inc.
m	Meter
MgA	Mahoning Silt Loam, 0-2 percent Slopes
MgB	Mahoning Silt Loam, 2-6 percent Slopes
mg/kg	Milligram(s) per kilogram
MS	Matrix spike
MSD	Matrix spike duplicate
MTBE	Methyl-tert-butyl ether
NA	Not applicable
ND	Non-detect
NFA	No Further Action
No.	Number
NS	Not sampled
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PID	Photoionization detector
QA	Quality assurance
QC	Quality control
RDX	Cyclotrimethylene trinitramine
RI	Remedial Investigation
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SB	Soil boring
SI	Site Inspection
SIM	Selective ion monitoring
SRC	Site-related chemical
SVOC	Semivolatile organic compound

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

TAL	Target Analyte List
TB	Trip blank
TCR	Target Cancer Risk
THQ	Target Hazard Quotient
TNT	2,4,6-Trinitrotoluene
TPH	Total petroleum hydrocarbon
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
WOE	Weight-of-evidence

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EXECUTIVE SUMMARY

Environmental Chemical Corporation (ECC) has been contracted by the United States Army Corps of Engineers (USACE)–Louisville District to complete a Site Inspection (SI) at the Compliance Restoration (CR) Site CC (Army Environmental Compliance-Related Cleanup Program) RVAAP-83 Former Buildings 1031 and 1039 at the former Ravenna Army Ammunition Plant (RVAAP), in Portage and Trumbull counties, Ohio. This SI was completed under Contract Number (No.) W912QR-04-D-0039, Delivery Order No. 0004, Modification No. 1.

This SI was completed in accordance with the *Final Site Inspection and Remedial Investigation Work Plan at Compliance Restoration Sites (Revision 0), Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2012a), and the United States Environmental Protection Agency's (USEPA) *Interim Final Guidance for Performing Site Inspections under CERCLA* (USEPA 1992).

CC RVAAP-83 is one area of concern (AOC) that is comprised of two sites: (1) Former Building 1031 and (2) Former Building 1039. Former Building 1031 was utilized as a hospital and Former Building 1039 was used as a laboratory. Based on the Historical Records Review (HRR) findings, during the laboratory operations, Building 1039 contained and operated a photography laboratory, a chemistry laboratory, and a medical x-ray facility. The photo laboratory was used for large-scale photo development activities until its closure in the early 1970s.

- Former Building 1031 received a no additional investigation determination as a result of the findings of the *Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039 Revision 1, Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2012b). No additional investigation activities were required at Building 1031 and, therefore, it is not included in this SI Report.

- Former Building 1039 was determined to require further investigation as a result of the findings of the HRR (ECC 2012b) due to the historical practices conducted within the former laboratory building.

This SI at CC RVAAP-83 was conducted to assess the potential contamination specifically related to the former sump and associated piping identified at Former Building 1039. Since the sump was located beneath the subsurface, the environmental media evaluated in this SI included only subsurface soil. No surface soil was collected as part of this SI. Sediment and surface water are not present at this AOC and, therefore, no samples were collected of this media. Groundwater samples were not collected as groundwater is being evaluated on a facility-wide basis under RVAAP-66 Facility-Wide Groundwater.

The primary objective of this SI was to determine the presence of potential contamination in soil at the AOC. In order to determine potential contamination, the following steps were included as part of this SI:

- Collect soil samples for laboratory analysis at CC RVAAP-83.

- Identify whether Site-Related Chemicals (SRCs) are present in the soil at the AOC. SRCs are identified following the process outlined in the Facility-Wide Human Health Cleanup Goals document (SAIC 2010).

- Compare the maximum reported concentrations of the SRCs to the most stringent Resident Receptor Facility-Wide Cleanup Goals (FWCUGs), between the adult and the child receptor, using the Target Cancer Risk (TCR) level of 10^{-6} and the Target Hazard Quotient (THQ) for non-carcinogenic risks of THQ = 0.1. For the purposes of this SI, potential contamination at CC RVAAP-83 is defined by an exceedance of the most stringent Resident Receptor FWCUG.

- Complete a weight-of-evidence (WOE) approach to further evaluate the SRCs reported at concentrations exceeding the most stringent Resident Receptor FWCUG using the TCR level of 10^{-6} or the THQ for non-carcinogenic risks at THQ = 0.1.

- Provide a recommendation for either further investigation under the Comprehensive Environmental Response, Compensation, and Liability Act, in the form of a Remedial Investigation, if potential contamination has been identified, or NFA if no potential contamination has been identified at this AOC.

The soil sampling conducted at CC RVAAP-83 was within a relatively small area, approximately 870 square feet (ft), which corresponds to the suspected location of the former sump and the associated piping. The subsurface soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals, explosives, and propellants. VOCs were collected as discrete samples.

The following subsurface soil samples were collected during this SI:

- Three horizontal subsurface soil incremental sampling methodology (ISM) samples were collected at depths of 1-4, 4-7, and 7-10 ft below ground surface (bgs).

- Eight vertical ISM subsurface samples were collected at depths of 4-10 ft bgs.

- One subsurface soil sample was collected as a composite sample between 7 and 13 ft bgs to characterize the soil to 13 ft bgs.

The analytical results from the SI samples were used to determine if potential contamination was present by first identifying the SRCs. Per the *RVAAP's Facility-Wide Human Health Risk Assessment Manual* (USACE 2005), a chemical detected at a concentration greater than the established background value, is not an essential nutrient, and has not been screened out through

a frequency of detection evaluation, is identified as an SRC. An SRC may, or may not be, related to the former operations at the site. The resulting maximum detected concentration of each SRC identified in this SI was compared to the most stringent FWCUG for the Resident Receptor (between the adult and child receptors) using the TCR level of 10^{-6} or the THQ for non-carcinogenic risks of THQ = 0.1 for each SRC to determine the presence of potential contamination.

The SRCs that exceeded the most stringent value (between adult and child receptors) Resident Receptor FWCUG, using a TCR level of 10^{-6} or the THQ = 0.1 for non-carcinogenic risks, were then evaluated using a WOE approach. The WOE evaluation considers the SRCs that exceed their Resident Receptor FWCUGs, as described above, to determine if the chemical should be identified as potential contamination.

The SI results of the subsurface soil sampling conducted at Former Building 1039 at CC RVAAP-83 are summarized as follows:

- A total of 19 SVOCs including polycyclic aromatic hydrocarbon compounds, 1 pesticide delta-hexachlorocyclohexane, and 4 metals (antimony, beryllium, cadmium, and lead) were identified as SRCs in the subsurface soil samples.

- No VOCs, SVOCs, metals, explosives, propellants, polychlorinated biphenyls, or pesticides were detected at concentrations exceeding their respective Resident Receptor FWCUGs in the subsurface soil samples collected.

- Therefore, no potential contaminants were identified in the subsurface soil collected at Former Building 1039 at CC RVAAP-83.

The conclusions of this SI conducted at Former Building 1039 at CC RVAAP-83 are as follows:

- No potential contaminants were identified in the subsurface soil sampled at this AOC.

- The results of this SI indicate that the subsurface soil is not contaminated; therefore, soil is not a source of groundwater contamination at this AOC.

The results of this SI indicate that No Further Action (NFA) is warranted for soil at Former Building 1039 at CC RVAAP-83. Since no additional investigation was previously granted at the Former Building 1031 hospital building, the entire AOC, consisting of both former buildings sites, at CC RVAAP-83 is recommended for NFA.

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1. INTRODUCTION

Environmental Chemical Corporation (ECC) was contracted by the United States Army Corps of Engineers (USACE)–Louisville District to complete a Site Inspection (SI) for Compliance Restoration (CR) Site CC (Army Environmental Compliance-Related Cleanup Program) RVAAP-83 Former Buildings 1031 and 1039 at the former Ravenna Army Ammunition Plant (RVAAP) in Portage and Trumbull counties, Ohio. The location of the former RVAAP is provided in Figure 1-1 and the location of the CR sites at the facility is shown in Figure 1-2. The SI was completed and this document was prepared under Contract Number (No.) W912QR-04-D-0039, Delivery Order No. 0004, Modification No. 1.

Planning and performance of all elements of this contract are in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders for RVAAP* (Ohio EPA 2004). The *Director's Final Findings and Orders* require conformance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan to complete this SI for area of concern (AOC) CC RVAAP-83. The location of CC RVAAP-83 is shown on Figure 1-3.

The SI for CC RVAAP-83 was conducted in accordance with the United States Environmental Protection Agency's (USEPA) *Interim Final Guidance for Performing Site Inspections under CERCLA* (USEPA 1992). The work described in this SI Report was conducted in accordance with the *Final Site Inspection and Remedial Investigation Work Plan Addendum at Compliance Restoration Sites CC RVAAP-71 Barn No. 5 Petroleum Release and CC RVAAP-83 Former Buildings 1031 and 1039, Revision 1, Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2013).

This SI includes the following components:

- Site descriptions and operational histories
- Waste characteristics and management practices
- Summary of field investigation and pre-mobilization activities
- Summary of the analytical data and results of the field investigation activities
- Determination of Site-Related Chemicals (SRCs)
- Comparison of SRC maximum concentrations to the most stringent Resident Receptor Facility-Wide Cleanup Goals (FWCUGs)
- A weight-of-evidence (WOE) evaluation of the SRCs to determine if potential contamination is present

- Evaluation of the exposure pathways for surface soil, subsurface soil, air, surface water, and groundwater

- Conclusions

- References

1.1 PURPOSE AND SCOPE

ECC is submitting this SI report to the Army in accordance with the Performance Work Statement, Multiple Award Remediation Contract No. W912QR-04-D-0039, Delivery Order No. 0004 under a firm-fixed price performance-based acquisition to provide environmental investigation and remediation services at 14 CR sites at the RVAAP, Ravenna, Ohio (Figures 1-1 and 1-2). The Delivery Order was issued by the USACE–Louisville District on August 15, 2011.

Environmental work at the former RVAAP under the Installation Restoration Program began in 1989, with 32 environmental AOCs. The United States Army Center for Health Promotion and Preventive Medicine collected environmental samples at each AOC and performed a Relative Risk Site Evaluation, which prioritized each AOC into one of three groups: low, medium, and high priorities. Environmental restoration work has proceeded primarily by addressing the highest priority sites first. In 1998, the number of environmental AOCs was increased from 32 to 51. Relative risk rankings were conducted to further prioritize those additional environmental AOCs. Since 1998, new environmental AOCs have been added.

This SI discusses one of these AOCs, CC RVAAP-83, which is comprised of two sites: Former Building 1031 and Former Building 1039. Former Building 1031 was utilized as a hospital and Former Building 1039 was used as a laboratory. Former Building 1031 received a No Further Action (NFA) determination as a result of the findings of the *Final Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039 Revision 1, Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2012b). No additional investigation activities were required at Building 1031 and, therefore, it is not included in this SI Report. Former Building 1039 was determined to require further investigation as a result of the findings of the Historical Records Review (HRR) (ECC 2012b) due to the historical practices conducted within the former laboratory building.

Historical information available for CC RVAAP-83 is presented in the *Final Historical Records Review Report for CC-RVAAP-71 Barn No. 5 Petroleum Release and CC-RVAAP-83 Former Buildings 1031 and 1039 Revision 1, Ravenna Army Ammunition Plant, Ravena, Ohio* (ECC 2012b). The HRR followed the USEPA guidance document that establishes the minimum requirements for conducting an Abbreviated Preliminary Assessment, as outlined in *Improving Site Assessment: Abbreviated Preliminary Assessments* (USEPA 1999).

1.2 FACILITY DESCRIPTION

The facility, consisting of 21,683 acres, is located in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 kilometers (km) (3 miles) east/northeast of the city of

Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls. The facility, previously known as the RVAAP, was formerly used as a load, assemble, and pack facility for munitions production. As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the United States Property and Fiscal Office for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp Ravenna). References in this document to the former RVAAP relate to previous activities at the facility as related to former munitions production activities or to activities being conducted under the restoration/cleanup program.

1.3 DEMOGRAPHY AND LAND USE

The facility consists of 21,683 acres in northeastern Ohio, approximately 37 km (23 miles) east-northeast of Akron and 30 miles (48.3 km) west-northwest of Youngstown. The facility occupies east-central Portage County and southwestern Trumbull County. The 2010 Census reports that the populations of Portage and Trumbull counties are 161,419 and 210,312, respectively. Population centers closest to the facility are Ravenna, with a population of 11,724, and Newton Falls, with a population of 4,795.

The facility is located in a rural area and is not close to any major industrial or developed areas. Approximately 55 percent of Portage County, in which the majority of the facility is located, consists of either woodland or farmland acreage. The closest major recreational area, the Michael J. Kirwan Reservoir (also known as West Branch Reservoir), is south of the facility.

The facility is licensed to the OHARNG for use as a military training site. Training and related activities at Camp Ravenna include field operations and bivouac training, convoy training, equipment maintenance, C-130 aircraft drop zone operations, helicopter operations, and storage of heavy equipment.

1.4 FACILITY ENVIRONMENTAL SETTING

This section describes the physical features, topography, geology, hydrogeology, and environmental characteristics of the facility. The environmental setting specific to CC RVAAP-83 Former Buildings 1031 and 1039 is included in Chapter 6.

1.4.1 Physiographic Setting

The facility is located within the Southern New York Section of the Appalachian Plateaus physiographic province (United States Geological Survey 1968). This province is characterized by elevated uplands underlain primarily by Mississippian and Pennsylvanian-age bedrock units that are horizontal or gently dipping. The province is characterized by its rolling topography with incised streams having dendritic drainage patterns. The Southern New York Section has been modified by glaciation, which rounded ridges, filled major valleys, and blanketed many areas with glacially-derived unconsolidated surficial deposits (e.g., sand, gravel, and finer-grained outwash deposits). As a result of glacial activity, old stream drainage patterns were disrupted in many locales, and extensive wetland areas developed.

1.4.2 Surface Features and Topography

The topography of the facility is gently undulating with an overall decrease in ground surface elevation from a topographic high of approximately 1,220 feet (ft) above mean sea level (amsl) in the far western portion of the facility to low areas at approximately 930 ft amsl in the far eastern portion of the facility. The average surface elevation for CC RVAAP-77 is 1,025 ft amsl. USACE mapped the facility topography in February 1998 using a 2-ft (60.1-centimeter [cm]) contour interval with an accuracy of 0.02 ft (0.61 cm). USACE based the topographic information on aerial photographs taken during Spring 1997. The USACE survey is the basis for the topographical information illustrated in figures included in this report.

1.4.3 Soil and Geology

1.4.3.1 Regional Geology

The regional geology at the facility consists of horizontal to gently dipping bedrock strata of Mississippian and Pennsylvanian-age overlain by unconsolidated glacial deposits of varying thicknesses. The unconsolidated surficial deposits and bedrock geology are described in the following subsections.

1.4.3.2 Soil and Glacial Deposits

Bedrock at the facility is overlain by deposits of the Wisconsin-age Lavery Till in the western portion of the facility and the younger Hiram Till and associated outwash deposits in the eastern two-thirds of the facility (Figure 1-4). Unconsolidated glacial deposits vary considerably in thickness across the facility, from non-existent in some of the eastern portions of the facility to an estimated 150 ft (46 meters [m]) in the south-central portion.

Thin surface glacial deposits have been completely removed as a consequence of human activities at locations such as Ramsdell Quarry. Bedrock is present at or near the ground surface in locations such as Load Line 1 and the Erie Burning Grounds (USACE 2001).

Where glacial sediments remain, their distribution and character indicate their origin as a ground moraine. These tills consist of laterally discontinuous assemblages of yellow-brown, brown, and gray silty clays to clayey silts, with sand and rock fragments. Lacustrine sediment from bodies of glacial-age standing water has also been encountered in the form of deposits of uniform light gray silt greater than 50 ft thick in some areas (USACE 2001).

Soil at the facility is generally derived from the Wisconsin-age silty clay glacial till. Distributions of soil types are discussed and mapped in the *Soil Survey of Portage County, Ohio,* which describes soil as nearly level to gently sloping and poor to moderately well drained (United States Department of Agriculture 1978). Much of the native soil was disturbed during construction activities in former production and operational areas of the facility.

Several soil types are present at the facility, as shown in Figure 1-5 and Figure 1-6. The primary soil type present at CC RVAAP-83 is shown in Figure 1-7 and summarized in Table 1-1.

Table 1-1: Soil Type at Former Building 1039, CC RVAAP-83

Soil Series Classification	Parent Material	Geographic Setting	Slope Percent	Drainage	Surface Runoff	Permeability
Mahoning silt loams (MgA and MgB)	Silty clay loam or clay loam glacial till, generally where bedrock is greater than 6 feet below ground surface.	Gently sloping highland areas	0-2 and 2-6	Poorly drained	Rapid and seasonal wetness	Low

1.4.3.3 Bedrock Geology

The Sharon Sandstone Member, informally referred to as the Sharon Conglomerate, of the Pennsylvanian Pottsville Formation, is the primary bedrock beneath the facility (Figure 1-8). The Sharon Sandstone Member, the lowest unit of the Pottsville Formation, is a highly porous, loosely cemented, permeable, cross-bedded, frequently fractured and weathered, orthoquartzite sandstone, which is locally conglomeratic. Thin shale lenses occur in the upper portion of the unit (Winslow and White 1966).

In the western portion of the facility, the upper members of the Pottsville Formation, including the Sharon Member, Connoquennissing Sandstone Member, Mercer Member, and uppermost Homewood Sandstone Member, are present (Figure 1-8). The regional dip of the Pottsville Formation measured in the west portion of the facility is between 1.5 and 3.5 m per 1.6 km (5-11.5 ft per mile) to the south.

The Sharon Member is a gray to black, sandy to micaceous shale containing thin coal, underclay, and sandstone lenses. The Mercer Member of the Pottsville Formation consists of silty to carbonaceous shale with abundant thin, discontinuous sandstone lenses in the upper portion. Regionally, the Mercer Member has also been noted to contain interbeds of coal.

The Homewood Sandstone Member is the uppermost unit of the Pottsville Formation. It typically occurs as a caprock on bedrock highs in the subsurface, and ranges from well-sorted, coarse-grained, white quartzose sandstone to a tan, poorly sorted, clay-bonded, micaceous, medium- to fine-grained sandstone. Thin shale layers are prevalent in the Homewood Member as indicated by a darker gray color.

1.4.4 Hydrogeology

1.4.4.1 Regional Hydrogeology

Sand and gravel aquifers are present in the buried valley and outwash deposits in Portage County, as described in the *Phase I Remedial Investigation Report for High Priority AOCs at the RVAAP, Ravenna, Ohio* (USACE 1998). Generally, these saturated zones are too thin and localized to provide large quantities of water for industrial or public water supplies; however, yields are sufficient for residential water supplies. Lateral extent and continuity of these aquifers are unknown. Recharge of these units is derived from surface water infiltration of precipitation and surface streams. Specific groundwater recharge and discharge areas at the facility have not been delineated. The regional potentiometric surface at the facility for unconsolidated surficial

deposits and bedrock is presented in Figures 1-9 and 1-10, respectively (Environmental Quality Management, Inc. [EQM] 2014).

The thickness of unconsolidated surficial deposits at the facility ranges from thin to absent in the eastern and northeastern portion of the facility to an estimated 150 ft (46 m) in the central portion of the facility. The water table (Figure 1-9) is encountered within the unconsolidated zone in many areas of the facility. Because of the heterogeneous nature of the unconsolidated glacial material, groundwater flow patterns are difficult to determine. Laterally, most groundwater flow in the surficial deposits likely follows topographic contours and stream drainage patterns (Figure 1-9), with preferential flow along pathways (e.g., sand seams, channel deposits, or other stratigraphic discontinuities) having higher permeability than surrounding clay or silt-rich material. Aquifer recharge from precipitation likely occurs via infiltration along root zones, desiccation cracks, and partings within the soil column.

Beneath the facility, the principal bedrock aquifer is within the Sharon Sandstone Conglomerate Unit (referred to as the Sharon Conglomerate Aquifer) (Figure 1-11). Depending on overburden thickness, the Sharon Conglomerate aquifer ranges from an unconfined to a leaky artesian aquifer hydraulically. According to one source, yields from onsite supply wells completed within the Sharon Conglomerate range from 30 to 400 gallons per minute (gpm) (United States Army Toxic and Hazardous Materials Agency 1978). Yields of 5-200 gpm have also been reported for onsite bedrock wells completed in the Sharon Conglomerate (Kammer 1982).

Other, less important, local bedrock aquifers include the Homewood Sandstone (Figure 1-10), which is generally thinner and only capable of well yields less than 10 gpm, and the Connoquennissing Sandstone. Wells completed in the Connoquennissing Sandstone in Portage County yield from 5 to 100 gpm, but are typically less productive than the Sharon Conglomerate due to lower permeability in the sandstone.

In general, the hydraulic gradient in the Sharon Conglomerate aquifer results in a regional eastward flow of groundwater (Figure 1-11) that appears to be more uniform than flow directions in unconsolidated deposits (Figure 1-9) because local surface topography influences the latter. Due to the lack of well data in the western portion of the facility, general flow patterns are difficult to discern. For much of the eastern half of the facility, hydraulic head elevations in bedrock are higher than those in overlying unconsolidated deposits, indicating an upward vertical hydraulic gradient. These data suggest there is a confining layer separating the two aquifers in some areas. In the far eastern area, there is little difference in the head elevations, suggesting a hydraulic connection exists between the two.

1.4.4.2 Groundwater Usage and Domestic Water Supply

The former RVAAP historically used groundwater for both domestic and industrial supplies. Groundwater utilized at the former RVAAP during past operations was obtained from production wells located throughout the facility, with most wells screened in the Sharon Conglomerate. The Army discontinued use of most of the groundwater production wells prior to 1993, when the facility was placed in modified caretaker status. Currently, one of the four original groundwater production wells remains in use by the OHARNG. This well, located in the former

Administration Area, is not used as a potable water source, but supplies non-potable water for sanitary purposes for active-use buildings on the facility.

In addition, as of 2011, the OHARNG has installed two bedrock aquifer production wells at the facility. These two OHARNG supply wells were completed in the Sharon Conglomerate near Buildings 1067 and 1068 within the former Administration Area. There is also one inactive non-potable supply well just south of Winklepeck Burning Grounds along the east side of George Road, which was formerly used to supply water for environmental restoration activities.

The closest population center to the facility, the city of Newton Falls, obtains municipal water supplies from the east branch of the Mahoning River. Currently, most groundwater use in the area surrounding the facility is for domestic and livestock supply, with the Sharon Conglomerate acting as the major producing aquifer in the area. The Connoquennissing Sandstone Member and Homewood Sandstone Member also provide limited groundwater supplies, primarily to the western half of the facility. Unconsolidated deposits can also be an important source of groundwater. Many of the domestic wells and small public water supplies located near the facility obtain sustainable quantities of water from wells completed in unconsolidated, surficial deposits.

In the unconsolidated aquifer, groundwater flows predominantly eastward; however, the unconsolidated zone shows numerous local flow variations influenced by topography and drainage patterns (Figure 1-9). The local variations in flow direction suggest the following: (1) groundwater in the unconsolidated deposits is generally in direct hydraulic communication with surface water, and (2) surface water drainage ways may also act as groundwater discharge locations. In addition, topographic ridges between surface water drainage features act as groundwater divides in the unconsolidated deposits.

Local groundwater within and surrounding the facility contains proportionately high levels of iron, manganese, and naturally occurring carbonate compounds. As such, it is classified as "hard" water. Hard water has an associated metallic taste that can be unpalatable if not properly treated for human consumption (OHARNG 2008).

1.4.4.3 Regional Surface Water

The facility resides within the Mahoning River watershed, which is part of the Ohio River basin. The west branch of the Mahoning River is the main surface stream in the area. The west branch flows adjacent to the west end of the facility, generally north to south, before flowing into the Michael J. Kirwan Reservoir south of State Route 5 (Figure 1-1). The west branch flows out of the reservoir and parallels the southern facility boundary before joining the Mahoning River east of the facility.

The western and northern portions of the facility display low hills and a dendritic surface drainage pattern. The eastern and southern portions are characterized by an undulating to moderately level surface, with less dissection of the surface drainage. The facility is marked with marshy areas and flowing and intermittent streams whose headwaters are located in the upland areas of the facility.

The three primary watercourses that drain the facility are as follows (Figure 1-3):

- South fork of Eagle Creek
- Sand Creek
- Hinkley Creek

All of these watercourses have many associated tributaries. Sand Creek, with a drainage area of 13.9 square miles (36 square km), flows generally in a northeast direction to its confluence with the south fork of Eagle Creek. In turn, the south fork of Eagle Creek continues in a northerly direction for 2.7 miles (4.3 km) to its confluence with Eagle Creek. The drainage area of the south fork of Eagle Creek is 26.2 square miles (67.8 square km), including the area drained by Sand Creek. Hinkley Creek originates just southeast of the intersection between State Route 88 and State Route 303 to the north of the facility. Hinkley Creek, with a drainage area of 11.0 square miles (28.5 square km), flows in a southerly direction through the facility, and converges with the west branch of the Mahoning River south of the facility (USACE 2001).

Approximately one-third of the facility meets the regulatory definition of a wetland, with the majority of the wetland areas located in the eastern portion of the facility. Wetland areas at the facility include seasonal wetlands, wet fields, and forested wetlands. Many of the wetland areas are the result of natural drainage or beaver activity; however, some wetland areas are associated with anthropogenic settling ponds and drainage areas.

Approximately 50 ponds are scattered throughout the facility. Many were constructed within natural drainage ways to function as settling ponds or basins for process effluent and runoff. Others are natural in origin, resulting from glacial action or beaver activity. Water bodies at the facility support aquatic vegetation and biota. Stormwater runoff is controlled primarily by natural drainage, except in former operations areas where an extensive storm sewer network helps to direct runoff to drainage ditches and settling ponds. Additionally, the storm sewer system was one of the primary drainage mechanisms for process effluent during the period that production facilities were in operation.

1.4.5 Climate

The general climate of the area where the facility is located is continental and characterized by moderately warm and humid summers, reasonably cold and cloudy winters, and wide variations in precipitation from year to year. Climate data for the facility, presented below, were obtained from available National Weather Service records for the 30-year period of record from 1981 to 2010 at the Youngstown Regional Airport, Ohio *(http://www.nws.noaa.gov/climate/xmacis.php?wfo=cle)*. Wind speed data for Youngstown, Ohio, are from the National Climatic Data Center *(http://www.ncdc.noaa.gov/data-access/quick-links#wind)* for the available 66-year period of record from 1930 through 1996.

Average annual rainfall in the area is 38.86 inches (98.7 cm), with the highest monthly average occurring in July (4.31 inches [10.9 cm]) and the lowest monthly average occurring in February (2.15 inches [5.46 cm]). Average annual snowfall totals approximately 63.4 inches (161.0 cm) with the highest monthly average occurring in January (17.1 inches [43.43 cm]). Due to the

influence of lake-effect snowfall events associated with Lake Erie, located approximately 35 miles (56.3 km) northwest of the facility, snowfall totals vary widely throughout northeastern Ohio.

The average annual daily temperature in the area is 49.3 degrees Fahrenheit (ºF), with an average daily high temperature of 59.0ºF and an average daily low temperature of 39.7ºF. The record high temperature of 100ºF occurred in July 1988, and the record low temperature of -22ºF occurred in January 1994. The prevailing wind direction at the former RVAAP is from the west-southwest, with the highest average wind speed occurring in January (12 miles [19.3 km] per hour) and the lowest average wind speed occurring in August (7 miles [11.3 km] per hour). As per the National Climatic Data Center, 20 storm events (category Thunderstorm Wind) were reported between January 1, 1996 and July 31, 2013 *(http://tinyurl.com/k2kn47o).* The area is susceptible to tornadoes; minor structural damage to several buildings on facility property occurred as the result of a tornado in 1985.

1.5 REPORT ORGANIZATION

This SI Report is organized into the following sections:

- ***Chapter 1 (Introduction)***—Provides an overview of the purpose and scope of this SI, a general facility description, demography, and land use of the facility. This section provides an overview of the environmental setting at the facility.

- ***Chapter 2 (Site Description and Operational History)***—Provides the site description and land use history of the site. The physical property characteristics, military operations, and a summary of past investigations are included.

- ***Chapter 3 (Historical Operations)***—Summarizes the historical operations, investigations, and removal actions at the AOC.

- ***Chapter 4 (Field Investigation)***—Addresses the scope of activities performed under this SI. This section discusses sampling rationale for placement of environmental media sampling locations, field activity procedures, laboratory methods, and protocols. Included in this section are descriptions of the pre-mobilization activities and field sampling methodologies for subsurface soil incremental sampling methodology (ISM) sampling. Deviations from the work plan are outlined. Site surveying and collection and characterization of investigation-derived wastes (IDW) generated during this SI are discussed.

- ***Chapter 5 (Data Evaluation and Summary of Analytical Results)***—Provides the data evaluation process used for this SI, a summary of subsurface soil sampling results, and a presentation of the comparison of the maximum reported concentrations of SRCs to the most stringent Resident Receptor FWCUGs to identify the presence of potential contamination. The results of the WOE evaluation are provided in this section, as well as a discussion of the IDW characterization results.

- ***Chapter 6 (Exposure Pathways)***—Summarizes physical conditions, and hydrological and hydrogeological settings; and provides conclusions for the exposure pathways identified for soil, air, surface water, and groundwater.

- ***Chapter 7 (Summary and Conclusions)***—Summarizes findings and conclusions of this SI.

- ***Chapter 8 (References)***—Lists references used for this report.

Report appendices contain the summarized investigation data as follows:

- Appendix A – Historical Aerial Photographs

- Appendix B – Field Activity Forms

- Appendix C – Boring Logs

- Appendix D – Data Verification Report

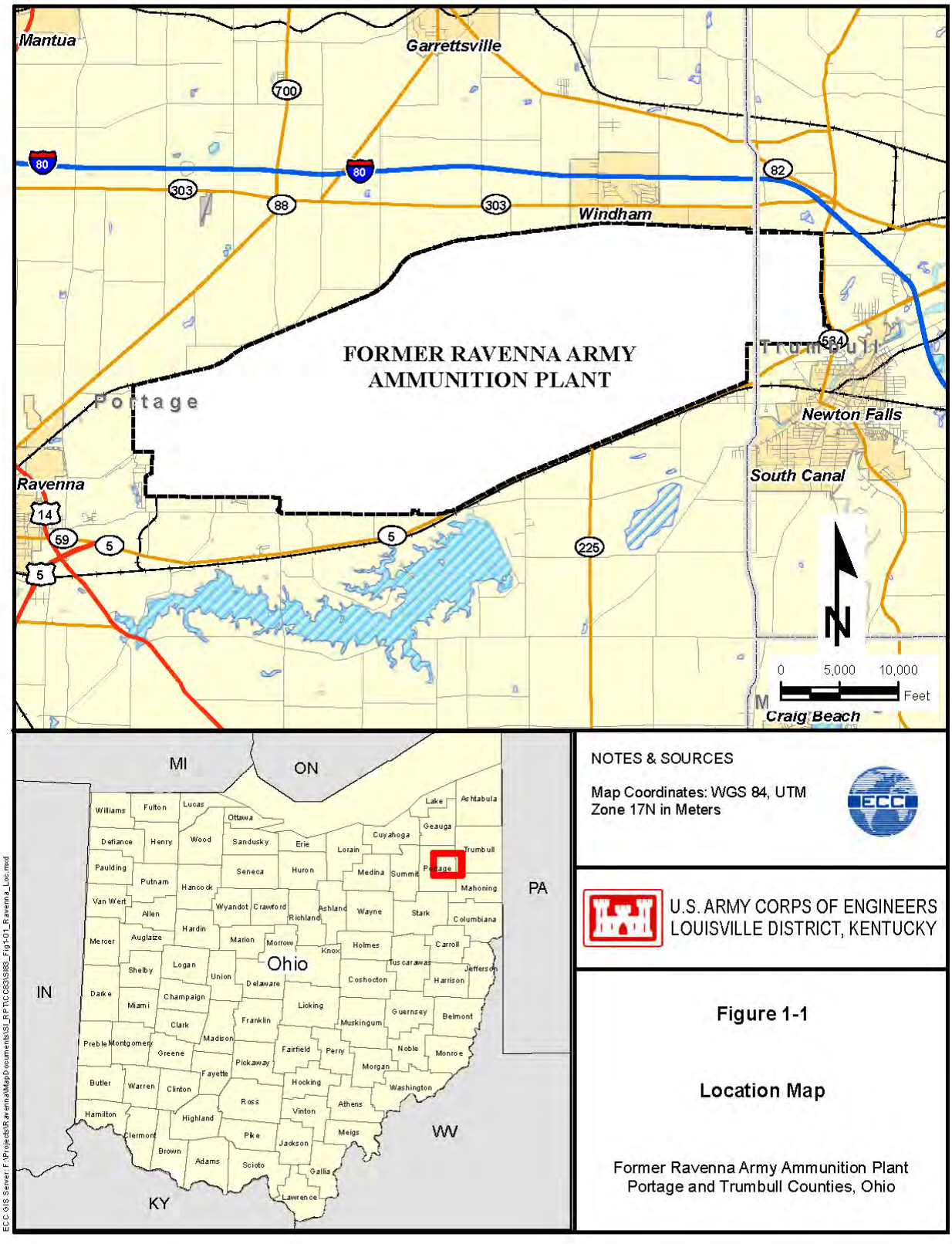
- Appendix E – Laboratory Analytical Results, Laboratory Data, and Chain of Custody Forms

- Appendix F – Data Validation Report

- Appendix G – IDW Disposal Letter Report

- Appendix H – Site Photographs

- Appendix I – Comment Response Table and Regulatory Correspondence


Mantua
Garrettsville
Windham
FORMER RAVENNA ARMY
AMMUNITION PLANT
Portage
Ravenna
Newton Falls
South Canal
Craig Beach
0 5,000 10,000
Feet
N
MI
ON
PA
IN
WV
KY
Ohio
NOTES & SOURCES
Map Coordinates: WGS 84, UTM
Zone 17N in Meters
U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT, KENTUCKY
Figure 1-1
Location Map
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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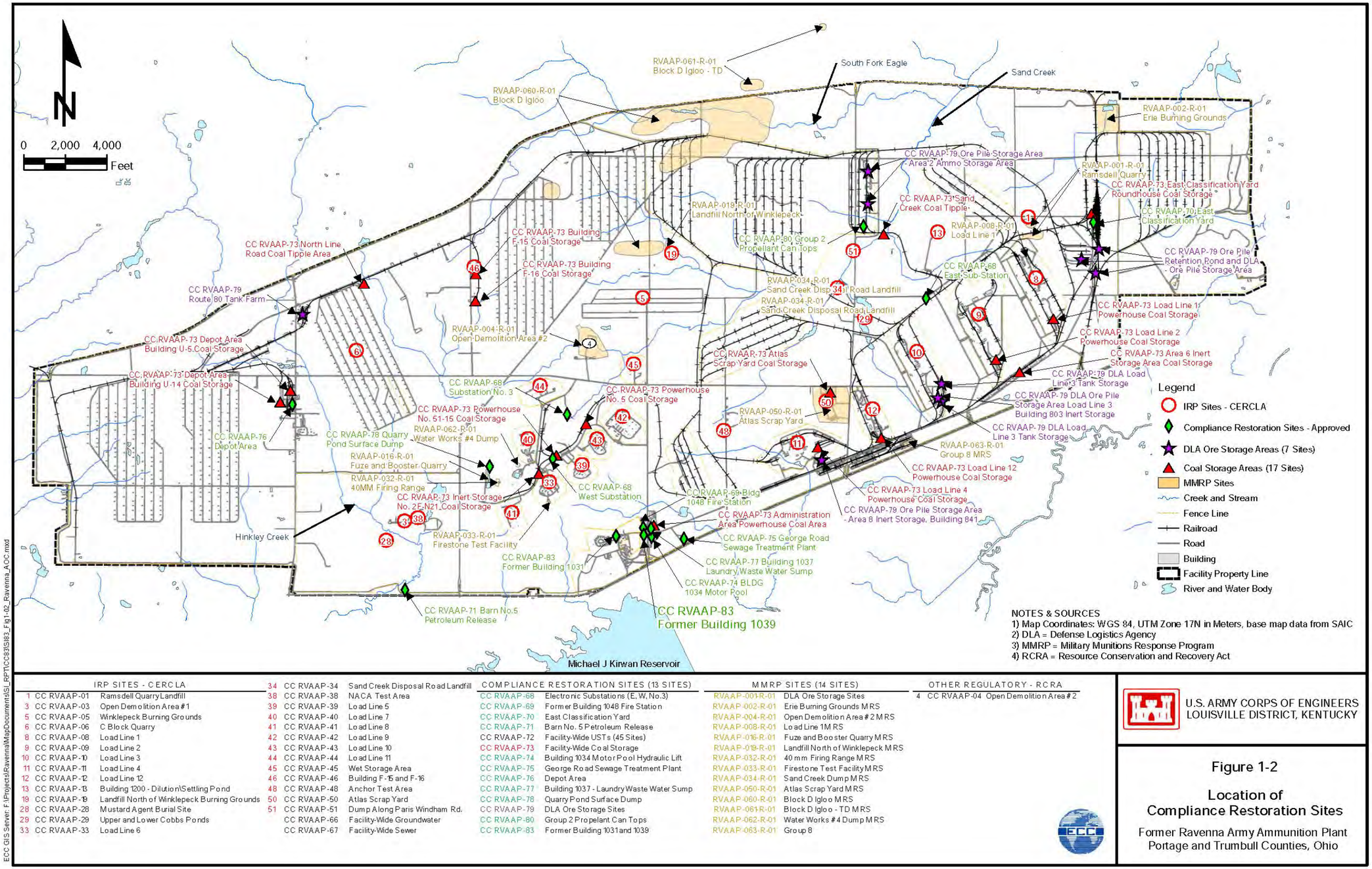

IRP SITES - CERCLA									
1	CC RVAAP-01	Ramsdell Quarry Landfill	34	CC RVAAP-34	Sand Creek Disposal Road Landfill	4	CC RVAAP-04	Open Demolition Area # 2	
3	CC RVAAP-03	Open Demolition Area # 1	38	CC RVAAP-38	NACA Test Area				
5	CC RVAAP-05	Winklepeck Burning Grounds	39	CC RVAAP-39	Load Line 5				
6	CC RVAAP-06	C Block Quarry	40	CC RVAAP-40	Load Line 7				
8	CC RVAAP-08	Load Line 1	41	CC RVAAP-41	Load Line 8				
9	CC RVAAP-09	Load Line 2	42	CC RVAAP-42	Load Line 9				
10	CC RVAAP-10	Load Line 3	43	CC RVAAP-43	Load Line 10				
11	CC RVAAP-11	Load Line 4	44	CC RVAAP-44	Load Line 11				
12	CC RVAAP-12	Load Line 12	45	CC RVAAP-45	Wet Storage Area				
13	CC RVAAP-13	Building 1200 - Dilution\Settling Pond	46	CC RVAAP-46	Building F-15 and F-16				
19	CC RVAAP-19	Landfill North of Winklepeck Burning Grounds	48	CC RVAAP-48	Anchor Test Area				
28	CC RVAAP-28	Mustard Agent Burial Site	50	CC RVAAP-50	Atlas Scrap Yard				
29	CC RVAAP-29	Upper and Lower Cobbs Ponds	51	CC RVAAP-51	Dump Along Paris Windham Rd.				
33	CC RVAAP-33	Load Line 6		CC RVAAP-66	Facility-Wide Groundwater				
				CC RVAAP-67	Facility-Wide Sewer				

COMPLIANCE RESTORATION SITES (13 SITES)		MMRP SITES (14 SITES)	
CC RVAAP-68	Electronic Substations (E, W, No.3)	RVAAP-001-R-01	DLA Ore Storage Sites
CC RVAAP-69	Former Building 1048 Fire Station	RVAAP-002-R-01	Erie Burning Grounds MRS
CC RVAAP-70	East Classification Yard	RVAAP-004-R-01	Open Demolition Area # 2 MRS
CC RVAAP-71	Barn No. 5 Petroleum Release	RVAAP-008-R-01	Load Line 1 MRS
CC RVAAP-72	Facility-Wide USTs (45 Sites)	RVAAP-016-R-01	Fuze and Booster Quarry MRS
CC RVAAP-73	Facility-Wide Coal Storage	RVAAP-019-R-01	Landfill North of Winklepeck MRS
CC RVAAP-74	Building 1034 Motor Pool Hydraulic Lift	RVAAP-032-R-01	40 mm Firing Range MRS
CC RVAAP-75	George Road Sewage Treatment Plant	RVAAP-033-R-01	Firestone Test Facility MRS
CC RVAAP-76	Depot Area	RVAAP-034-R-01	Sand Creek Dump MRS
CC RVAAP-77	Building 1037 - Laundry Waste Water Sump	RVAAP-050-R-01	Atlas Scrap Yard MRS
CC RVAAP-78	Quarry Pond Surface Dump	RVAAP-060-R-01	Block D Igloo MRS
CC RVAAP-79	DLA Ore Storage Sites	RVAAP-061-R-01	Block D Igloo - TD MRS
CC RVAAP-80	Group 2 Propelant Can Tops	RVAAP-062-R-01	Water Works # 4 Dump MRS
CC RVAAP-83	Former Building 1031 and 1039	RVAAP-063-R-01	Group 8

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Figure 1-2

Location of Compliance Restoration Sites

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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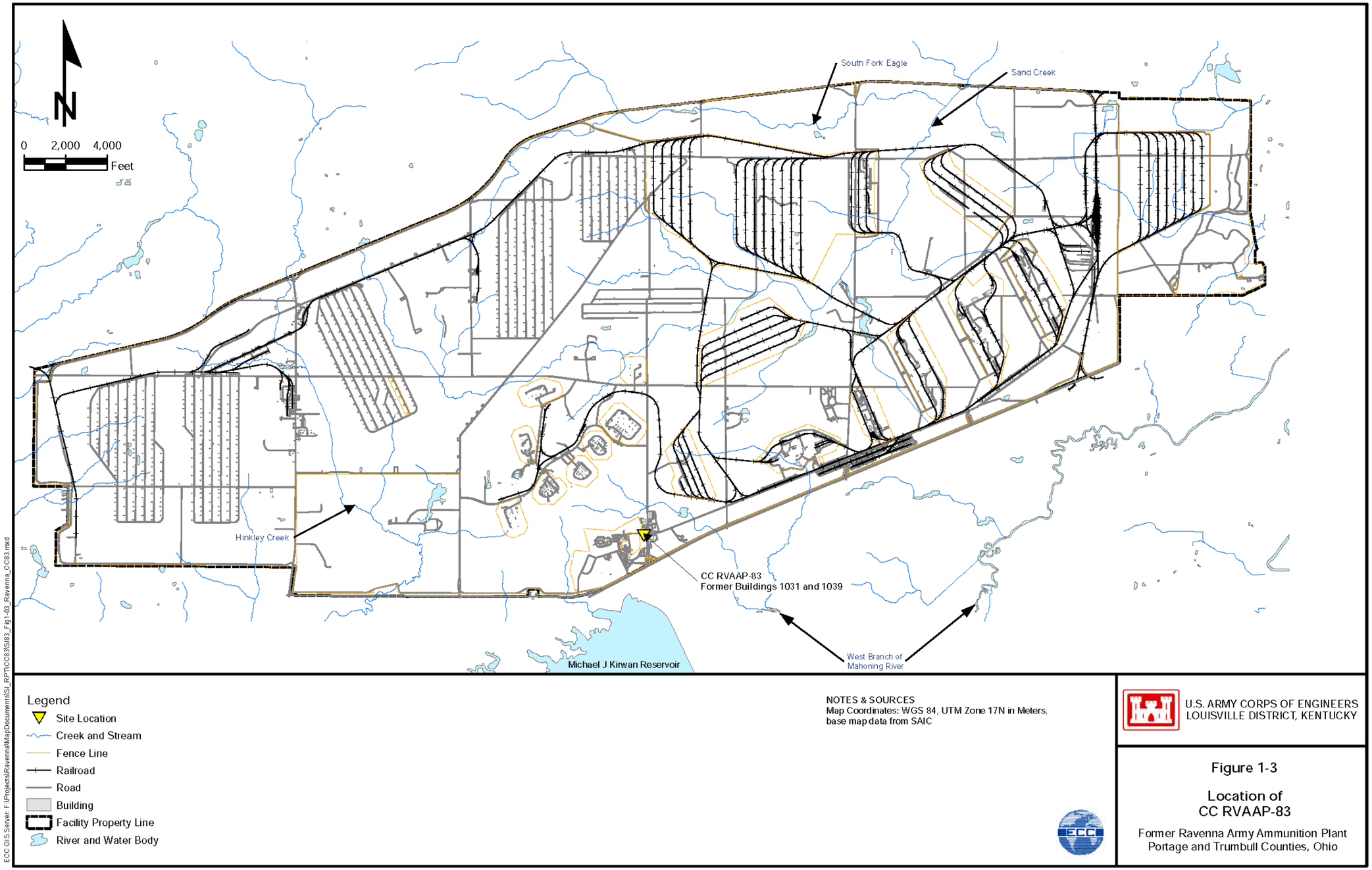
N
0 2,000 4,000
Feet
South Fork Eagle
Sand Creek
Hinkley Creek
CC RVAAP-83
Former Buildings 1031 and 1039
West Branch of
Mahoning River
Michael J Kirwan Reservoir
Legend
Site Location
Creek and Stream
Fence Line
Railroad
Road
Building
Facility Property Line
River and Water Body
NOTES & SOURCES
Map Coordinates: WGS 84, UTM Zone 17N in Meters,
base map data from SAIC
U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT, KENTUCKY
Figure 1-3
Location of
CC RVAAP-83
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
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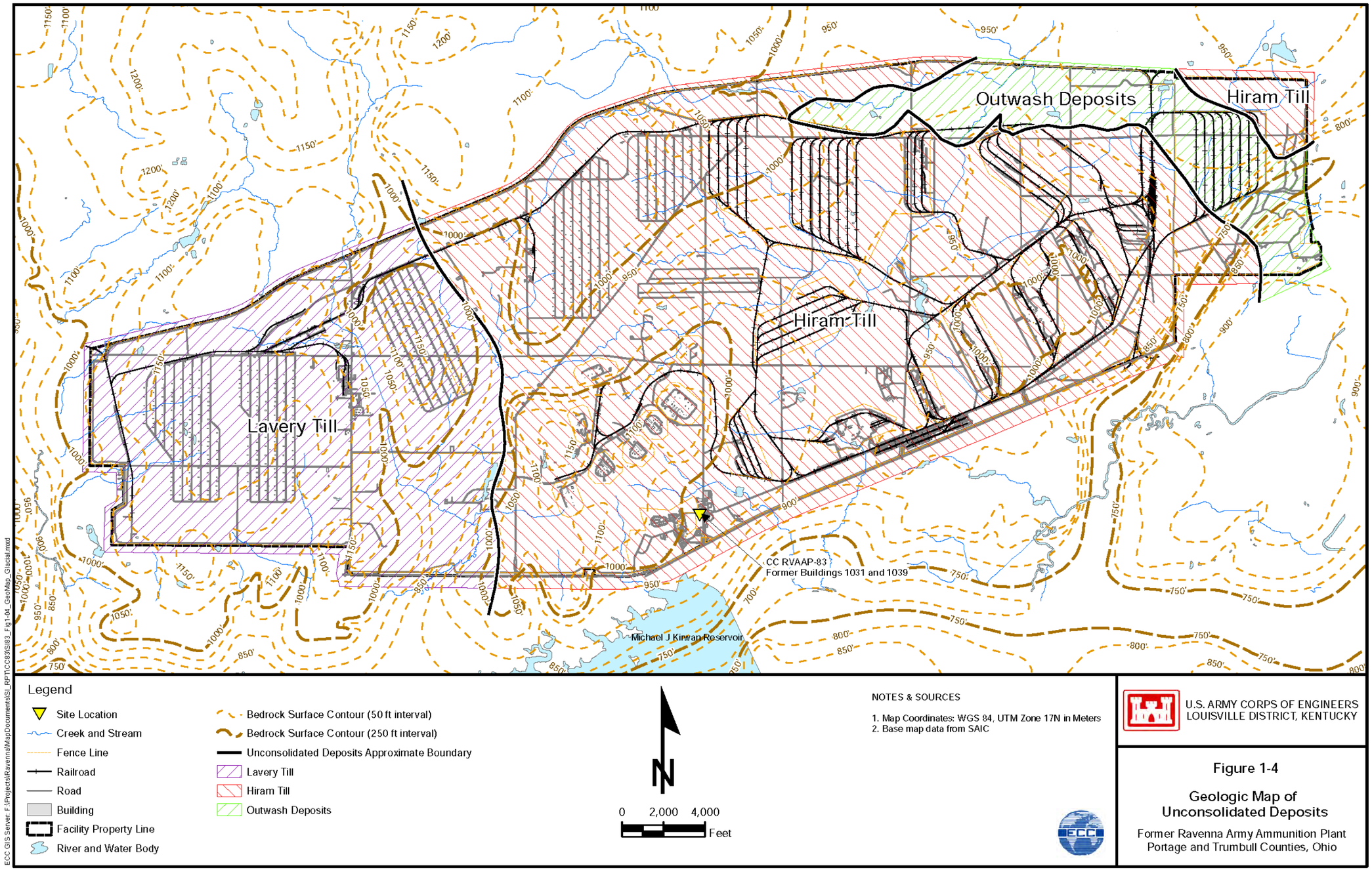

Figure 1-4

Geologic Map of Unconsolidated Deposits

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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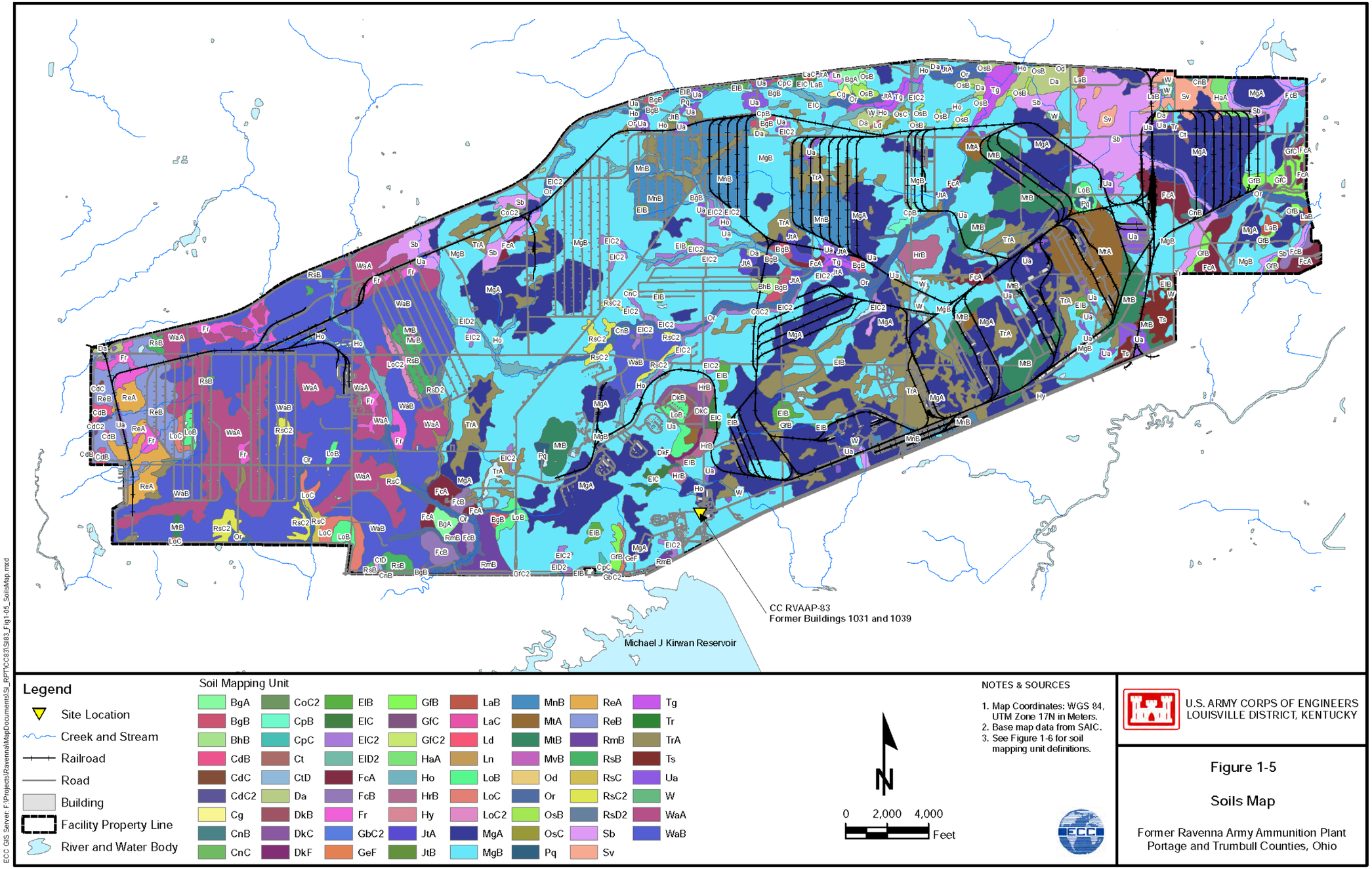
CC RVAAP-83
Former Buildings 1031 and 1039
Michael J Kirwan Reservoir
Legend
Site Location
Creek and Stream
Railroad
Road
Building
Facility Property Line
River and Water Body
Soil Mapping Unit
BgA BgB BhB CdB CdC CdC2 Cg CnB CnC CoC2 CpB CpC Ct CtD Da DkB DkC DkF EIB EIC EIC2 EID2 FcA FcB Fr GbC2 GeF GfB GfC GfC2 HaA Ho HrB Hy JtA JtB LaB LaC Ld Ln LoB LoC LoC2 MgA MgB MnB MtA MtB MvB Od Or OsB OsC Pq ReA ReB RmB RsB RsC RsC2 RsD2 Sb Sv Tg Tr TrA Ts Ua W WaA WaB
NOTES & SOURCES
1. Map Coordinates: WGS 84, UTM Zone 17N in Meters.
2. Base map data from SAIC.
3. See Figure 1-6 for soil mapping unit definitions.
N
0 2,000 4,000
Feet
U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT, KENTUCKY
Figure 1-5
Soils Map
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
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Legend

Soil Mapping Unit

- BgA, Bogart silt loam, 0-2% slopes
- BgB, Bogart silt loam, 2-6% slopes
- BhB, Bogart-Haskins complex, 2-6% slopes
- CdB, Canfield silt loam, 2-6% slopes
- CdC, Canfield silt loam, 6-12% slopes
- CdC2, Canfield silt loam, 6-12% slopes, moderately eroded
- Cg, Carlisle muck
- CnB, Chili loam, 2-6% slopes
- CnC, Chili loam, 6-12% slopes
- CoC2, Chili gravelly loam, 6-12% slopes, moderately eroded
- CpB, Chili silt loam, 2-6% slopes
- CpC, Chili silt loam, 6-12% slopes
- Ct, Chili-Oshtemo complex
- CtD, Chili-Oshtemo complex, 12-18% slopes
- Da, Damascus loam
- DkB, Dekalb channery loam, 2-6% slopes
- DkC, Dekalb channery loam, 6-12% slopes
- DkF, Dekalb channery loam, 25-70% slopes
- ElB, Ellsworth silt loam, 2-6% slopes
- ElC, Ellsworth silt loam, 6-12% slopes
- ElC2, Ellsworth silt loam, 6-12% slopes, moderately eroded
- ElD2, Ellsworth silt loam, 12-18% slopes, moderately eroded
- FcA, Fitchville silt loam, 0-2% slopes
- FcB, Fitchville silt loam, 2-6% slopes
- Fr, Frenchtown silt loam
- GbC2, Geeburg silt loam, 6-12% slopes, moderately eroded
- GeF, Geeburg and Glenford silt loams, steep
- GfB, Glenford silt loam, 2-6% slopes
- GfC, Glenford silt loam, 6-12% slopes
- GfC2, Glenford silt loam, 6-12% slopes, moderately eroded
- HaA, Haskins loam, 0-2% slopes
- Ho, Holly silt loam
- HrB, Hornell silt loam, 3-8% slopes
- Hy, Holly silt loam, frequently flooded
- JtA, Jimtown loam, 0-2% slopes
- JtB, Jimtown loam, 2-6% slopes
- LaB, Lakin loamy sand, 2-6% slopes
- LaC, Lakin loamy sand, 6-12% slopes
- Ld, Linwood muck
- Ln, Lorain silty clay loam
- LoB, Loudonville silt loam, 2-6% slopes
- LoC, Loudonville silt loam, 6-12% slopes
- LoC2, Loudonville silt loam, 6-12% slopes, moderately eroded
- MgA, Mahoning silt loam, 0-2% slopes
- MgB, Mahoning silt loam, 2-6% slopes
- MnB, Mahoning-Urban land complex, undulating
- MtA, Mitiwanga silt loam, 0-2% slopes
- MtB, Mitiwanga silt loam, 2-6% slopes
- MvB, Mitiwanga silt loam, 2-6% slopes, moderately well drained variant
- Od, Olmsted loam
- Or, Orrville silt loam
- OsB, Oshtemo sandy loam, 2-6% slopes
- OsC, Oshtemo sandy loam, 6-12% slopes
- Pq, Pits, quarries
- ReA, Ravenna silt loam, 0-2% slopes
- ReB, Ravenna silt loam, 2-6% slopes
- RmB, Remsen silt loam, 2-6% slopes
- RsB, Rittman silt loam, 2-6% slopes
- RsC, Rittman silt loam, 6-12% slopes
- RsC2, Rittman silt loam, 6-12% slopes, moderately eroded
- RsD2, Rittman silt loam, 12-18% slopes, moderately eroded
- Sb, Sebring slit loam
- Sv, Sebring silt loam, dark surface variant
- Tg, Tioga loam
- Tr, Trumbull silt loam
- TrA, Trumbull silt loam, 0-2% slopes
- Ts, Trumbull silty clay loam
- Ua, Udorthents
- W, Water
- WaA, Wadsworth silt loam, 0-2% slopes
- WaB, Wadsworth silt loam, 2-6% slopes

NOTES & SOURCES

1. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed 12/28/2012.
2. See Figure 1-5 for soils map.

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Figure 1-6

Description of
Soil Mapping Units

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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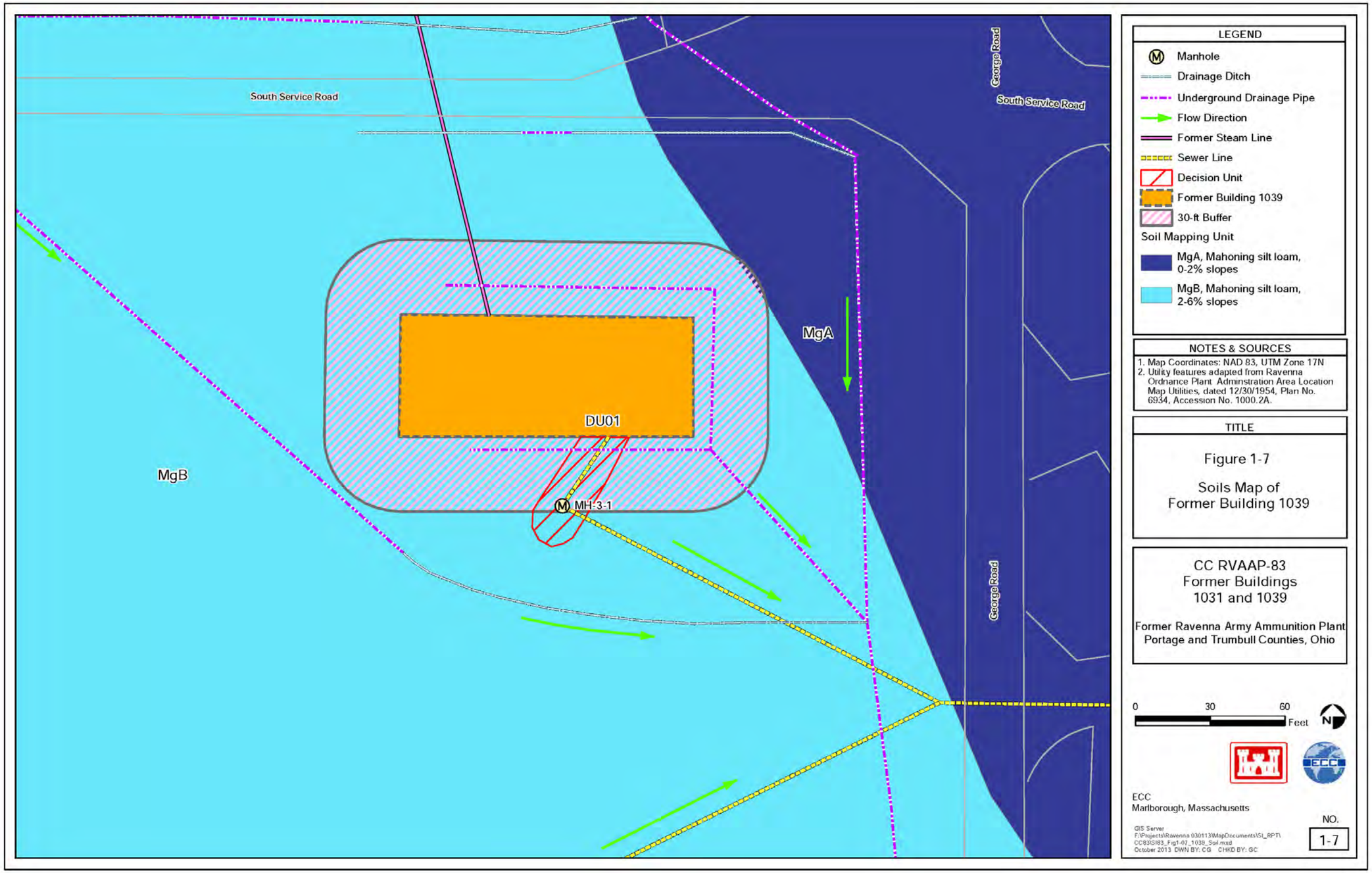
South Service Road
George Road
South Service Road
MgA
DU01
MgB
MH-3-1
George Road
LEGEND
Manhole
Drainage Ditch
Underground Drainage Pipe
Flow Direction
Former Steam Line
Sewer Line
Decision Unit
Former Building 1039
30-ft Buffer
Soil Mapping Unit
MgA, Mahoning silt loam, 0-2% slopes
MgB, Mahoning silt loam, 2-6% slopes
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N
2. Utility features adapted from Ravenna Ordnance Plant Administration Area Location Map Utilities, dated 12/30/1954, Plan No. 6934, Accession No. 1000.2A.
TITLE
Figure 1-7
Soils Map of
Former Building 1039
CC RVAAP-83
Former Buildings
1031 and 1039
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
0
30
60
Feet
N
ECC
Marlborough, Massachusetts
GIS Server
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CCB3SI83_Fig1-07_1039_Soil.mxd
October 2013 DWN BY: CG CHKD BY: GC
NO.
1-7

1104

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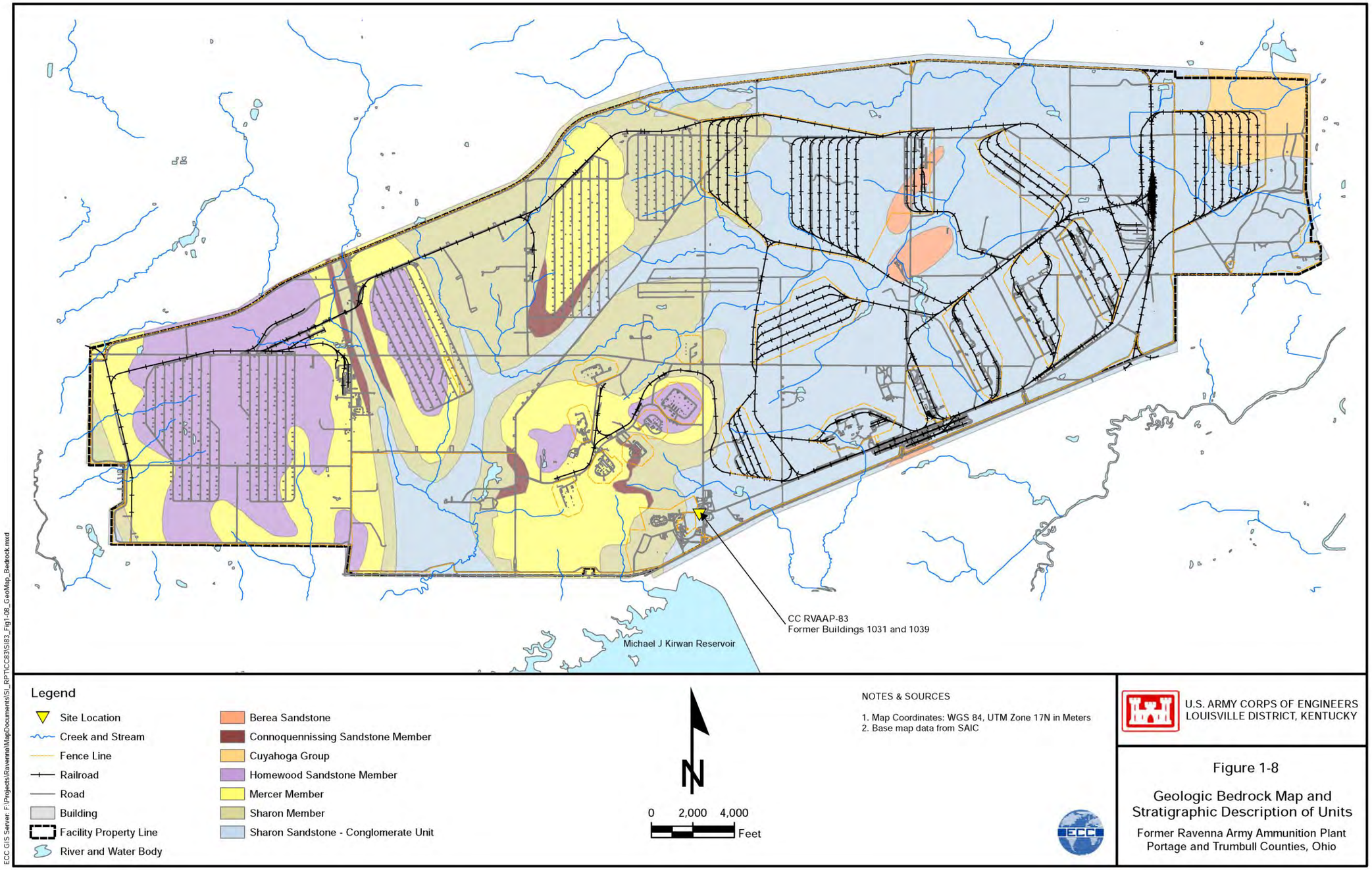

Figure 1-8

Geologic Bedrock Map and Stratigraphic Description of Units

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

1116

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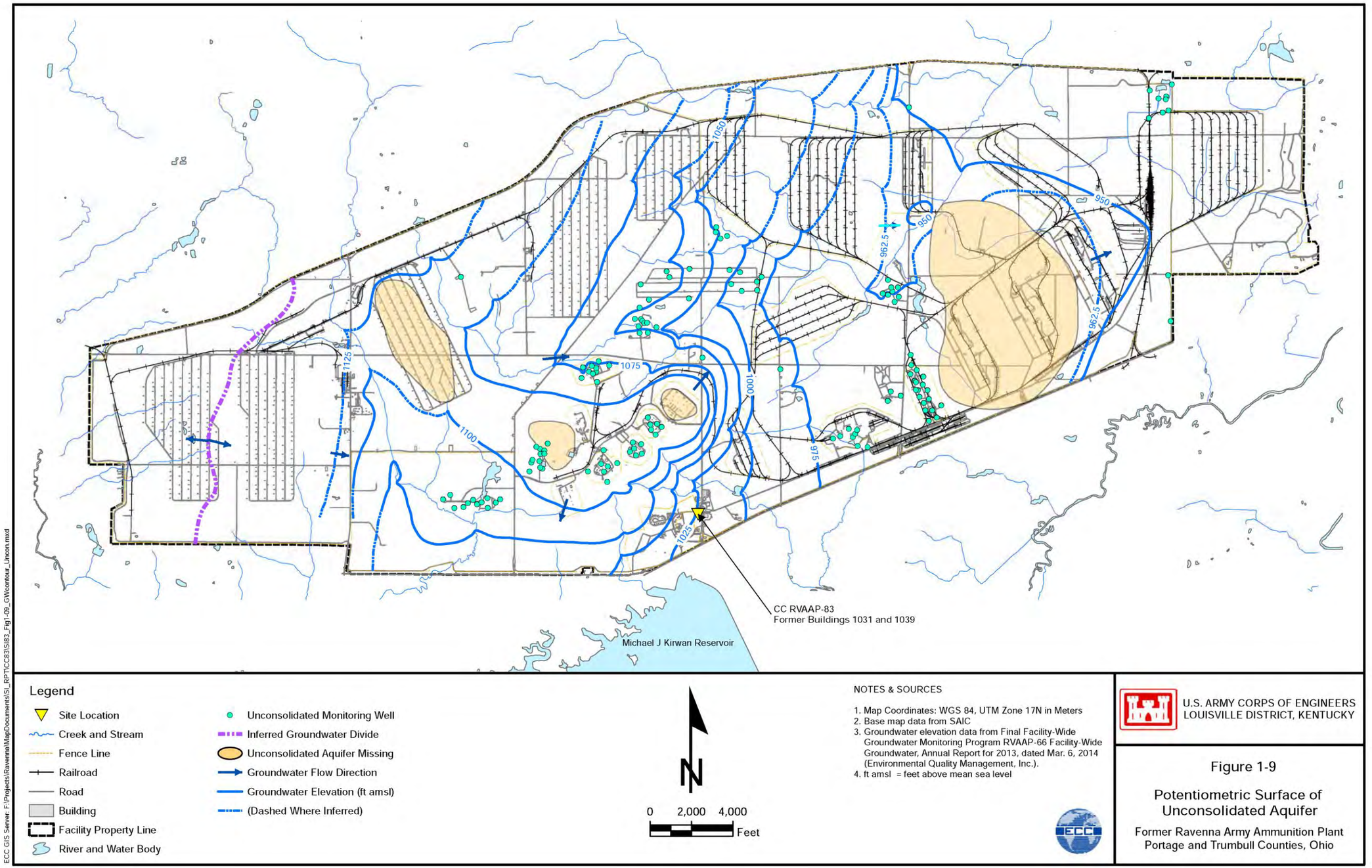

Figure 1-9

Potentiometric Surface of Unconsolidated Aquifer

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

1128

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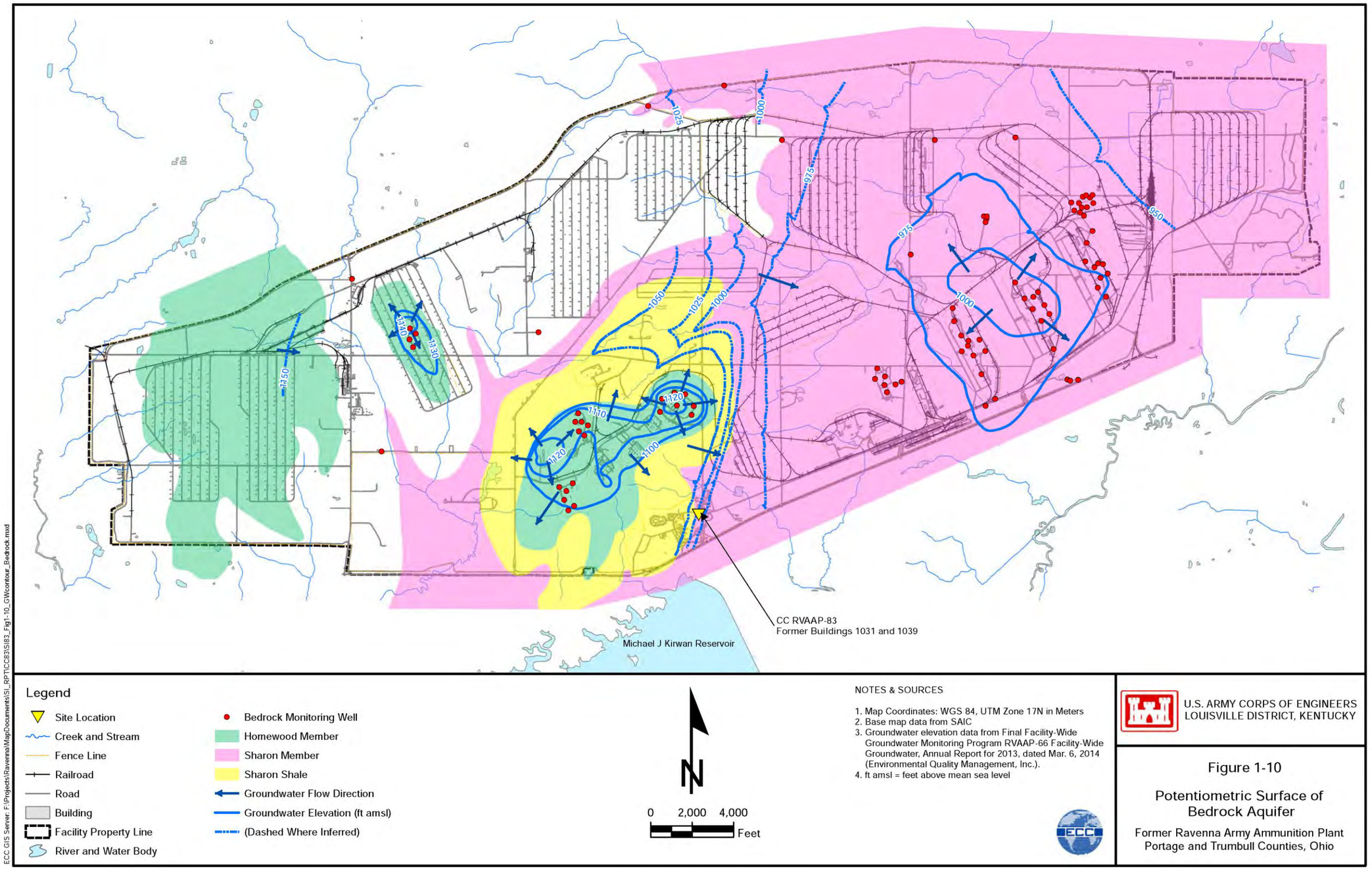
1025
1000
975
950
1050
1140
1130
1150
1120
1110
1100
CC RVAAP-83
Former Buildings 1031 and 1039
Michael J Kirwan Reservoir
ECC GIS Server: F:\Projects\Ravenna\MapDocuments\SI_RPT\CC83\SI83_Fig1-10_GWcontour_Bedrock.mxd
Legend
Site Location
Creek and Stream
Fence Line
Railroad
Road
Building
Facility Property Line
River and Water Body
Bedrock Monitoring Well
Homewood Member
Sharon Member
Sharon Shale
Groundwater Flow Direction
Groundwater Elevation (ft amsl)
(Dashed Where Inferred)
N
0 2,000 4,000
Feet
NOTES & SOURCES
1. Map Coordinates: WGS 84, UTM Zone 17N in Meters
2. Base map data from SAIC
3. Groundwater elevation data from Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater, Annual Report for 2013, dated Mar. 6, 2014 (Environmental Quality Management, Inc.).
4. ft amsl = feet above mean sea level
U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT, KENTUCKY
Figure 1-10
Potentiometric Surface of Bedrock Aquifer
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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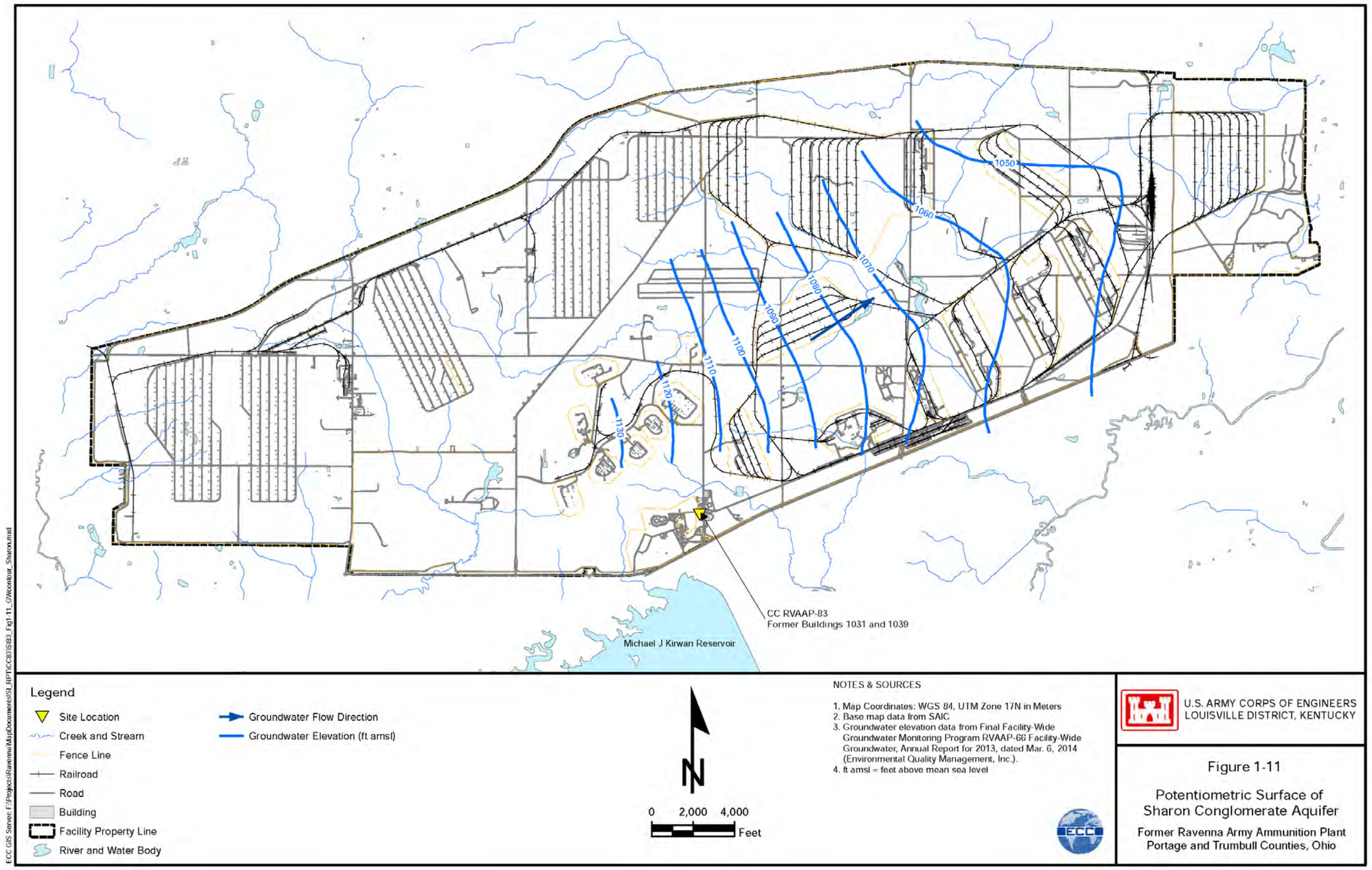
1050
1060
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1080
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1100
1110
1120
1130
CC RVAAP-83
Former Buildings 1031 and 1039
Michael J Kirwan Reservoir
Legend
Site Location
Creek and Stream
Fence Line
Railroad
Road
Building
Facility Property Line
River and Water Body
Groundwater Flow Direction
Groundwater Elevation (ft amsl)
N
0 2,000 4,000
Feet
NOTES & SOURCES
1. Map Coordinates: WGS 84, UTM Zone 17N in Meters
2. Base map data from SAIC
3. Groundwater elevation data from Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater, Annual Report for 2013, dated Mar. 6, 2014 (Environmental Quality Management, Inc.).
4. ft amsl = feet above mean sea level
U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT, KENTUCKY
Figure 1-11
Potentiometric Surface of
Sharon Conglomerate Aquifer
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
ECC GIS Server: F:\Projects\Ravenna\MapDocuments\SI_RPT\CC83\SI83_Fig1-11_GWcontour_Sharon.mxd

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2. SITE DESCRIPTION AND OPERATIONAL HISTORY

2.1 SITE DESCRIPTION

The CR site CC RVAAP-83 is located in the former Administration Area of the installation, which is centered in the southern central portion of the facility. The Former Building 1039 footprint is located at the southwest corner of the intersection of South Service Road and George Road (Figure 2-1). Nearby buildings include Building 1037 (office space) and Building 1034 (maintenance equipment storage).

CC RVAAP-83 is defined as the footprint of the former one-story laboratory building and a 30-ft buffer area around the perimeter of the building footprint. The building footprint of this building is approximately 6,100 square ft.

The laboratory building was demolished in 2006 and 2007. The demolition contractor, prior to demolishing the building, removed all laboratory equipment, removed and disposed of all asbestos containing panels, inspected the building interior for explosive residues, conducted Exspray testing, and flashed the building drain lines with detonation cord to eliminate explosive residue from the drain lines. After these pre-demolition activities were completed, the building was demolished and the scrap metal, wood, and brick were sorted and shipped offsite for disposal. The building footprint was backfilled with clean soil, graded, and seeded as part of the demolition activities. The surrounding area is grass-covered and no water bodies are present on the site.

2.2 LAND USE AND HISTORY

Former Building 1039 was built in 1942, and was utilized as a laboratory and photo laboratory. Quality assurance (QA)/quality control (QC) samples from load lines were analyzed in this former laboratory. The structure contained three powder test rooms for the routine analyses of lead azide, mercury fulminate, and percussion element mixes. During operations, the building contained and operated a photography laboratory, a chemistry laboratory, and a medical x-ray facility. The photo laboratory was historically used for large-scale photo development activities until its closure in the early 1970s.

Former Building 1039 was used extensively during World War II, and again during the Korean War; however, there was a limited amount of activity in this building during the Vietnam War. Between wars, the use of the laboratory was halted. During these times, the laboratory was demilitarized and remained dormant. Former Building 1039 was closed in 1972.

Based on interviews with facility personnel conducted in 2011 by ECC during the HRR (ECC 2012b), a sump was reported to have once existed on the south exterior wall of the Former Building 1039 laboratory. The sump was used to collect discharge from the building to settle out contaminants prior to discharge to the George Road Sewage Treatment Plant. The sump was reported to have been constructed of lead-lined concrete approximately 6 ft in depth with dimensions of 6 ft by 6 ft. The sump was filled with sawdust to absorb the collected contaminants and settled material.

Design drawings for Building 1039 were examined during the HRR. Drawings depicted features including plumbing, heating, lighting, intended room use, roofing, foundation, and landscaping. However, none of the drawings verified the existence of a sump nor included details regarding the sump at Former Building 1039 described by interviewees (ECC 2011a, 2011b).

Historical photographs taken between 1937 and 2009 were also examined during the HRR (Appendix O of the HRR) (ECC 2012b). The historical aerial photographs were analyzed to identify potential effects of the building use, the relationship between the site and the surrounding areas, and the chronological development of the site. The former laboratory building (Building 1039) is not present on the 1937 or 1940 aerial photographs and first appears on the 1950 aerial photograph. The building exterior remained unchanged during this time period, with no evidence of any major additions or alterations. The building is not present in the 2009 aerials as demolition of Former Building 1039 took place during 2006 and 2007. Appendix A contains historical aerial photographs of the CR site.

The ground surface inside the former building footprint is covered with grass, which was planted as part of site restoration activities after building demolition conducted from 2006 to 2007 by Lakeshore Engineering Services, Inc. (LES) (LES 2007). Following demolition, steel, wood, brick and concrete were sorted and recycled offsite. The basement of the former building was filled with clean soil (LES 2007). The surrounding area is grass covered and no water bodies are present at the site.

The potential contaminants associated with former operations at Building 1039 are chemicals used in the generation of x-ray acid/silver mix solutions; chemicals associated with the analysis of powder test room materials (i.e., lead azide, mercury fulminate); and chemicals used in percussion element mixes; paints, shellac, fuels, tapes, and adhesives (RVAAP 2013).

2.3 PREVIOUS INVESTIGATIONS

In May 2006, LES performed Expray field tests prior to demolition activities at Former Building 1039. Expray is an aerosol-based field test kit for the detection and identification of Group A explosives (e.g., 2,4,6-trinitrotoluene [TNT] and trinitrobenzene), Group B explosives (e.g., cyclotrimethylene trinitramine [RDX] and cyclotetramethylene tetranitramine [HMX]), and compounds containing inorganic nitrates that are used in improvised explosives (e.g., ammonium nitrate/fuel oil). The application of the aerosol to the test area results in a colormetric result. A green colormetric result is considered a negative result. A red colormetric result is considered a positive result. Expray is often used as a pre-blast detection tool. As reported in the Final Completion Report by LES (LES 2007), of the 46 Expray field tests performed at Former Building 1039 in May 2006, there were five separate positive results in the following locations:

- Room 1 (interior) – (HMX/RDX) (1 positive)
- Room 4 (interior) – (TNT) (2 positive)
- Lab Room (interior) – (HMX/RDX) (1 positive)
- Room 9 (interior) – (HMX/RDX) (1 positive)

Expray test results from Former Building 1039 field tests, one negative and two positive, are presented in the Week No. 1 Weekly Report included in the Final Completion Report by LES (LES 2007). The positive results were from a field test performed on the interior basement wall near the ground and a portion of interior wall near a faucet fixture on the first floor. The negative result was from a field test performed on a portion of interior wall in the basement at eye level. The drain lines within Former Building 1039 were cleared of potential explosive residue by explosive flashings by the demolition contractor as part of the demolition activities due to the positive Expray field test results.

The material used for backfill at Former Building 1039 was documented in the LES Final Completion Report. Fourteen loads of backfill material from Load Line 9 were used to backfill the basement of the Former Building 1039 site to within 2 ft of the ground surface. The remaining material used for backfill was reported to be top soil provided from an offsite source that was used to backfill the top 2 ft of the basement area of the former building site. This fill material was sampled and analyzed in February 2007 for the RVAAP Full Analytical Suite prior to being used. The reported results were below the instrument detection limits with the exception of some metals (total of 18) which were below their respective Ohio EPA Generic Direct-Contact Soil Standard Summary criteria (LES 2007). It was documented in the LES Final Completion Report that 14 loads of backfill material from Load Line 9 were used to backfill the basement of the Former Building 1039 site to within 2 ft of the ground surface.

No documented evidence of impact from former and/or current military operations or use of military munitions was discovered during the HRR evaluation at Former Building 1039. Further, no documented evidence of the presence of aboveground storage tanks or underground storage tanks or containerized hazardous, toxic, and radioactive waste at Former Building 1039 was discovered during the HRR (ECC 2012b).

ECC examined design drawings for Former Building 1039 as part of the HRR (ECC 2012b). The drawings did not show the presence of a sump at Former Building 1039. The sump within Building 1039 has been previously described by individuals interviewed in 2011 by ECC (ECC 2012b). Mr. Wolfgang (ECC 2011a) and Mr. McGee (ECC 2011b) provided detailed descriptions of a 6 ft deep, lead-lined concrete sump located along the south exterior wall of Former Building 1039. There are no records documenting the demolition of the reported sump and no drawings were found to confirm the location of the sump. The LES Final Completion Report (LES 2007) does not mention the sump area nor demolition or abandonment of the sump.

The reported sump was described in the HRR as being located along the southern exterior wall of the former building and was reportedly used to collect discharge from the building's floor drains and sink traps, which then discharged to the sewer system. Due to the unknown presence or potential environmental impacts of this sump, additional investigation at Former Building 1039 was recommended in the vicinity of the reported sump area (ECC 2012b).

Aside from the information provided by interviewees, there is no other documented evidence of a sump associated with Building 1039 (ECC 2012b).

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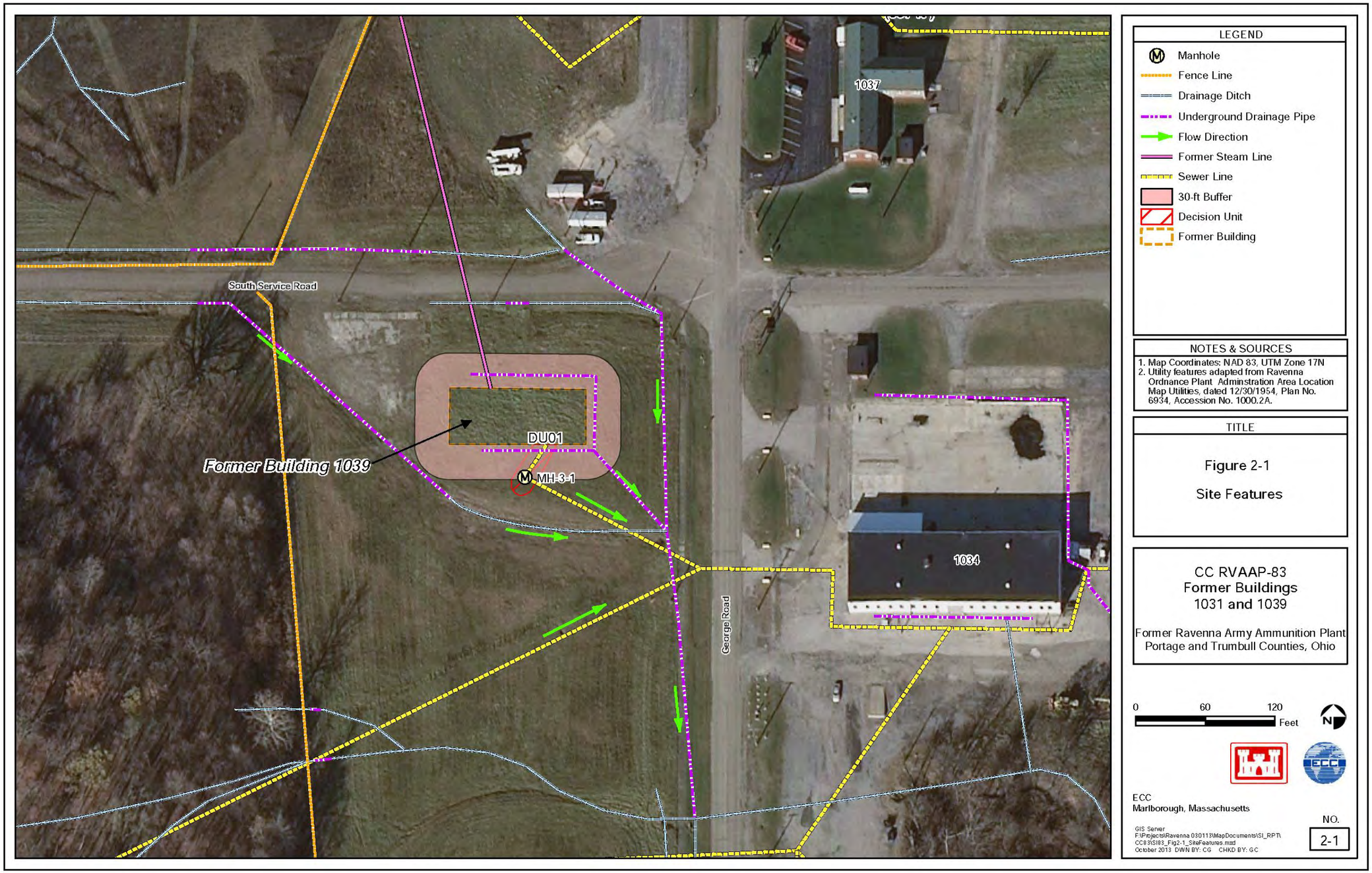
South Service Road
Former Building 1039
DU01
MH-3-1
1037
1034
George Road
LEGEND
Manhole
Fence Line
Drainage Ditch
Underground Drainage Pipe
Flow Direction
Former Steam Line
Sewer Line
30-ft Buffer
Decision Unit
Former Building
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N
2. Utility features adapted from Ravenna Ordnance Plant Adminstration Area Location Map Utilities, dated 12/30/1954, Plan No. 6934, Accession No. 1000.2A.
TITLE
Figure 2-1
Site Features
CC RVAAP-83
Former Buildings
1031 and 1039
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
0
60
120
Feet
N
ECC
Marlborough, Massachusetts
NO.
2-1
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CC8SI83_Fig2-1_SiteFeatures.mxd
October 2013 DWN BY: CG CHKD BY: GC

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3. HISTORICAL OPERATIONS

Based on the findings of the HRR (ECC 2012b), there are no documented releases of hazardous, toxic, or radioactive waste at this CR site. The nature of the former operations conducted within Building 1039 is summarized in Table 3-1, which includes descriptions of potential contaminants associated with these activities.

Table 3-1: Summary of Previous Operations, Investigations, and Removal Actions at CC RVAAP-83

Operations	Reported Documentation	Evidence/Description/Potential Contaminants
Past Operations - Former Building 1039		
Operations Involving Hazardous, Toxic, or Radioactive Waste	Yes	– Hazardous material used in quality assurance/quality control testing of samples collected from the load lines and the activity of photo development. – Chemicals related to the former generation of x-ray acid/silver mix solutions and the laboratory analysis of powder test room materials (i.e., lead azide, mercury fulminate), percussion element mixes, paints, shellac, metals, fuels, and tapes or adhesives. – Historical records review interviewees describe the construction and location of a sump associated with the building.
Previous Investigations/Removal Actions – Former Building 1039		
Year Conducted	**Type of Investigation/ Action**	**Findings**
2006/2007	Demolition of Building 1039	– Qualitative positive test results (i.e., Expray testing) for explosive residue on the building interior. Five positive Expray test results that indicated the presence of explosive residues were discovered in 4 rooms. – The drain lines within the building were cleared of potential explosive residue by explosive flashings by the demolition contractor as part of the demolition activities due to the positive Expray field test results. – No mention in the demolition completion report of the demolition or presence of a sump as described by HRR interviewees.
2011	HRR	– The building was heated by steam from Power House #6. – The building was connected to the George Road Treatment System; – No evidence or documentation of a hazardous, toxic, or radioactive release was discovered. – Two interviewees described the existence of a sump to have been located adjacent to the exterior of the southern side of the building. – No evidence or documentation of a sump was discovered. – No documentation of sump demolition was discovered in the *Final Completion Report Munitions Response for the Demolition of Load Lines 5, 7, Building 1039, Transite Removal at Building T-11604 Removal of Remaining Concrete and Miscellaneous Debris at Load Lines 6, 9, and 11* (Lakeshore Engineering Services, Inc. 2007).

Source: Historical Records Review (Environmental Chemical Corporation 2012).

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4. FIELD INVESTIGATION

Work for this SI was conducted in accordance with the *Final Site Inspection and Remedial Investigation Work Plan Addendum at Compliance Restoration Sites CC RVAAP-71 Barn No. 5 Petroleum Release and CC RVAAP-83 Former Buildings 1031 and 1039, Revision 1, Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2013). The field work was completed following the *Facility-Wide Sampling and Analysis Plan (FWSAP) for Environmental Investigations at the RVAAP, Ravenna, Ohio* (Science Applications International Corporation [SAIC] 2011a) dated February 24, 2011. The subsurface soil samples collected for this SI are presented in Table 4-1.

4.1 SAMPLING RATIONALE

Subsurface soil sampling was conducted at the CC RVAAP-83 to determine the presence of potential contamination associated with Former Building 1039, as described in the Final SI/Remedial Investigation (RI) Work Plan (ECC 2013). The existence of the former sump in Building 1039 is not depicted on any design drawing or visible on aerial photographs of the site. The existence of the former sump has only been mentioned during two interviews conducted as part of the HRR (ECC 2012b). No other documented evidence of the sump's existence was identified during the HRR. The DU location, sampling depths, and soil boring locations were based upon information obtained from the two interviewees' testimonies, and field judgment in consultation with the USACE Project Manager during the SI.

The sampling plan inclusive of the location for the decision unit (DU), sample locations, and analytical suite for the SI at this AOC was based on the following detailed information provided in the HRR (ECC 2012b):

- Two HRR interviewees described the former sump as being constructed of lead-lined concrete, cubic in shape (6 ft wide, 6 ft long, and 6 ft deep), and located adjacent to the exterior southern side of Former Building 1039. The top of the sump was reportedly covered with wood to keep out rainwater. The two HRR interviewees stated the purpose of the sump was to settle out solids prior to wastewater discharging to the sewer system from Former Building 1039.

- Based upon the interviewee testimony and design drawing showing the location of the sanitary sewer line and manhole, the DU was sited between the southern exterior of Former Building 1039 and manhole MH-3-1), sample locations, and analytical suite along the direction of the sewer line.

- The water level in the former sump is unknown; however, at manhole MH-3-1, there was an influent pipe at approximately 7 ft below ground surface (bgs), leading from the outlet of the former sump at an elevation greater than the MH-3-1 influent elevation to allow for gravity induced water flow.

- As the water level in the former sump was below the ground surface and there was no direct discharge to ground surface from the former sump, no surface soil contamination is expected. Therefore, this SI focuses on the subsurface soil at this AOC.

- One DU was defined as the subsurface soil sampling area. The DU was located to encompass a region 10 ft on either side of the sewer line between MH-3-1 and the exterior southern wall of Former Building 1039, as the former sump location was reported by HRR interviewees to be adjacent to the exterior southern wall of Former Building 1039 and to have drained to the sanitary sewer.

- The horizontal and vertical ISM sampling depths were based upon a former sump depth of 6 ft bgs and the manhole MH-3-1influent pipe located 7 ft bgs. Sample depths of 1-4, 4-7, and 7-10 ft bgs were selected as the depths are required to determine the presence or absence of potential contamination attributed to the former sump and associated piping. Additionally, one composite subsurface soil sample was collected from 7 to 13 ft bgs to evaluate the presence or absence of potential contamination to a depth of 13 ft bgs.

Table 4-2 provides the sampling rationale for each sample collected.

4.2 PRE-MOBILIZATION ACTIVITIES

Prior to the field investigation, a series of pre-mobilization activities were undertaken to ensure that all applicable requirements were met. These included providing necessary notifications to the Army, Ohio EPA, and other stakeholders.

ECC personnel mobilized to the facility on August 12, 2013 to conduct a site walk and pre-mark the DU and direct-push boring locations at CC RVAAP-83. The pre-mobilization tasks included the following activities:

- Conducting a site walk
- Delineating the DU
- Locating the soil borings
- Decontaminating the sampling equipment

4.2.1 Site Walk

ECC personnel mobilized to the facility on August 12, 2013 to conduct a site walk to assess current site conditions and to note any potential health and safety hazards that could affect the SI field work.

4.2.2 Soil Sampling Locations

One DU (DU01) was established for the collection of subsurface soil samples for this SI. The DU is located south of the Building 1039 footprint, which is identified by Seibert markers. The DU runs diagonally from the former south exterior wall of Former Building 1039 to manhole MH-3-1, following the sewer line in this area. The original DU location was originally based on information gathered as part of the HRR, including reports of an area where a sump was once located. However, the area of the DU and the proposed direct-push soil boring locations were both revised based on information obtained onsite as detailed in Section 4.3.

A total of eight direct-push soil boring locations were located within DU01 for subsurface soil sample collection. The DU area and soil boring locations are shown on Figure 4-1.

4.2.2 Munitions and Explosives of Concern and Utility Clearance Surveys

Based on HRR findings (ECC 2012b) and documentation from the sump removal project, munitions and explosives of concern clearances were not required or conducted at the Former Building 1039. No documentation of military munitions being historically located or stored onsite was discovered.

ECC met with Vista Sciences Corporation representatives on October 23, 2012. During this meeting, ECC inquired of Mr. James D. McGee, Vista Sciences Corporation Project Manager for the former RVAAP, about utility clearance protocols at the facility. Mr. McGee initially suggested that ECC contact the OHARNG regarding utility clearance. However, after his review of the sites, Mr. McGee reported that any utility located within these areas would either have been removed or, if still in place, inactive and not energized. Active utilities were not encountered during any of the drilling activities conducted at CC RVAAP-83.

4.2.3 Site Clearing Activities

Site clearing activities were not required at the AOC. This AOC is located in an area with low brush, tall grass, and an access road adjacent to the AOC. Therefore, the site was easily accessible by vehicles and drilling equipment.

4.2.4 Site Security

No specific site security was needed at CC RVAAP-83. However, each work day prior to mobilizing to the AOC, Camp Ravenna Range Control was notified that ECC and subcontractor personnel would be working at the AOC.

4.2.5 Equipment Decontamination

Prior to beginning soil sampling, all sampling equipment was decontaminated at a pre-designated area within Building 1036. For this purpose, a 5-square ft piece of plastic sheeting was placed on the concrete floor of the building in the designated decontamination area.

Five-gallon buckets were used to contain brushes, potable water with Alconox® wash, and potable water rinse. Other decontamination fluids consisted of pesticide grade isopropyl alcohol, a 10 percent nitric acid solution, and laboratory supplied deionized (DI) water contained in spray bottles. Following the Alconox® wash with brushes and potable water rinse, sampling equipment was sprayed with isopropyl alcohol, sprayed with the 10 percent nitric acid solution, rinsed with DI water, and then wrapped in aluminum foil. Sufficient sampling equipment was brought to the site each morning to allow for sampling of the DU area without the need to decontaminate equipment. All sampling equipment was decontaminated inside Building 1036 at the end of each work day in preparation for sampling the following day.

Prior to commencing subsurface soil sampling, all direct-push drilling rods and equipment were decontaminated using a high pressure steam cleaner and brushes. A temporary decontamination pad was constructed outside of Building 1036 and lined with plastic sheeting. The drilling equipment was then placed on a temporary steel rack within the decontamination pad, and the equipment was thoroughly cleaned. Following conclusion of subsurface soil sampling, drilling equipment was decontaminated using a high pressure steam cleaner.

During subsurface soil sampling at Former Building 1039, direct-push steel samplers were decontaminated as necessary using 5-gallon buckets, Alconox® wash and brushes, potable water rinse, pesticide grade isopropyl alcohol, a 10 percent nitric acid solution, and laboratory-supplied DI water contained in spray bottles. The decontamination area was set up on plastic sheeting off the northern side of Building 1036.

All decontamination fluids were containerized in a Department of Transportation-approved 55-gallon closed steel drum located within secondary containment inside Building 1036. The drum was labeled with contents, date of initial generation, and contact information.

All sampling equipment was decontaminated in accordance with the procedures outlined in Section 5.6.2.9 of the FWSAP (SAIC 2011b).

4.3 DEVIATIONS FROM THE WORK PLAN

Deviations from the *Final Site Inspection and Remedial Investigation Work Plan Addendum at Compliance Restoration Sites CC RVAAP-71 Barn No. 5 Petroleum Release and CC RVAAP-83 Former Buildings 1031 and 1039, Revision 1, Ravenna Army Ammunition Plant, Ravenna, Ohio* (ECC 2013) for field work conducted at Former Building 1039 were as follows:

- Adjusted soil boring locations
- Adjusted depth intervals for the vertical subsurface soil ISM sampling
- Additional horizontal subsurface soil ISM sample collected at 7-10 ft bgs

As shown in the *Final Work Plan Addendum* on Figure B.6-1, DU01 is an area along the middle portion of the south side of the Former Building 1039 footprint that extends in a southwest direction to encompass the area immediately surrounding manhole MH-3-1 (ECC 2013). This area covers the suspected location of a former sump (suspected source area) and associated piping between the sump and the manhole (ECC 2012b). No evidence of an influent pipe leading to the manhole from the northwest (toward Former Building 1039) was discovered upon removal of the manhole cover and inspection of the manhole interior. However, there was evidence of one influent pipe accessing the manhole from a northeasterly direction. Based on this additional information, and in consultation with onsite USACE Technical Managers, DU01 was relocated to encompass the area from the manhole to the side of the Former Building 1039 building footprint in a northeasterly direction. The soil boring locations were relocated accordingly to within the revised DU01 area. Figure 4-1 shows the relocated soil borings and area of DU01.

As per the Final Work Plan Addendum (ECC 2013), vertical subsurface soil ISM samples were to have been collected from 1 to 7 ft bgs at each soil boring location at DU1. However, upon measuring the depth of the bottom of the manhole MH-3-1 from the ground surface, it was discovered that the bottom of the manhole (and the influent pipe entering the bottom of the manhole) was measured at 7 ft bgs. Therefore, upon consultation with onsite USACE Technical Managers, it was determined that the 1- to 7-ft bgs interval would not provide representative characterization of the soils potentially impacted by the former sump and associated piping. Therefore, the subsurface soil sampling interval was revised to 4-10 ft bgs so that subsurface soils at depths below the bottom of the manhole and the influent pipe would be collected from each soil boring. An additional horizontal subsurface soil ISM sample was collected from the 7- to 10-ft bgs interval. These subsurface soil sampling locations are shown in Figure 4-1.

4.4 FIELD SAMPLING

All field activities and sampling procedures at Former Building 1039 were performed in accordance with Section 5.0 of the FWSAP (SAIC 2011a) with the exception of the deviations noted above. Field work was comprised of collecting vertical (4-10 ft bgs) and horizontal (1-4, 4-7, and 7-10 ft bgs) subsurface soil samples, as well as an additional soil boring (7-13 ft bgs) sample using ISM at DU01. Surface soils were not sampled since a release from the sump would have potentially only impacted subsurface soils.

Between August 12 and 14, 2013, eight soil borings were advanced to 10 ft bgs at DU01. The locations of the borings are shown on Figure 4-1. Subsurface soil ISM samples (1-4, 4-7, and 4-10 ft bgs) were collected within the DU at each of the boring locations. A deep soil boring (DSB) sample (7-13 ft bgs) was collected at soil boring SB05. A photoionization detector (PID) was used for the measurement of total volatile organic compounds (VOCs) at each boring to facilitate discrete sampling for the purpose of VOC analysis.

The subsurface soil ISM samples and the DSB sample (7-13 ft bgs) were analyzed for the following analytes:

- VOCs using USEPA Method SW-846, 8260C/5035
- Semivolatile organic compounds (SVOCs) using USEPA Method SW-846, 8270D and 8270D selective ion monitoring (SIM)/3550
- Target Analyte List (TAL) Metals using USEPA Method SW-846, 6010C/7471B
- Explosives using USEPA Method SW-846, 8330B
- Propellants using USEPA Methods Nitrocellulose 9056 Modified and Nitroguanidine 8330B

In addition to the above analyses, one vertical subsurface soil ISM sample (4-10 ft bgs) from soil boring SB07 (Sample ID 083SB-0012M-0001-SO) was analyzed for the RVAAP Full Suite analysis, which includes VOCs, SVOCs, TAL metals, pesticides, polychlorinated biphenyls

(PCBs), explosives and propellants, as defined in the Facility-Wide Quality Assurance Project Plan Section 5.4.5 (SAIC 2011b). Table 4-1 presents a sample collection summary for DU01 at Former Building 1039.

Samples collected during the SI were laboratory-analyzed at CT Laboratories, LLC of Baraboo, Wisconsin. Preparation and analyses for chemical parameters were performed according to the methods listed in Table 4-3.

QA split samples were collected separately for the USACE. These samples are identified in Table 4-1. The USACE QA split samples were laboratory-analyzed at Microbac Laboratories, Inc. of Marietta, Ohio. All analytical procedures were completed in accordance with applicable professional standards, USEPA requirements, government regulations and guidelines, Department of Defense Quality Systems Manual Version 4.2, USACE–Louisville District analytical QA standards, and specific project goals and requirements.

4.4.1 Subsurface Soil Sampling

Three horizontal subsurface soil ISM samples were collected at DU01: one from the 1- to 4-ft bgs interval, one from the 4- to 7-ft bgs interval, and one from the 7- to 10-ft bgs interval. A vertical ISM sample was collected at each of the eight boring locations from the 4- to 10-ft bgs interval. A DSB sample was collected from one soil boring location at the 7- to 13-ft bgs interval.

Subsurface soil samples were collected using a Geoprobe® Model 6620DT direct-push drill rig. The procedures for hydraulic direct-push sampling were performed in accordance with Section 5.5.2.5.3 of the FWSAP (SAIC 2011a). Samples were collected using 5-ft long stainless steel sampling rods lined with acetate Macro-core® samplers. Each sample was collected using a dedicated liner specific for that interval. The 5-ft stainless steel sampler was advanced twice at each boring location to reach the depth of 10 ft bgs and three times at one boring location to reach the depth of 13 ft bgs. The sampler was then retrieved from the desired depth and the liner removed. The liner was cut open length-wise and the soil was immediately field-screened with a PID. Samples for headspace screening were collected at 2-ft intervals along the entire sampler using stainless steel scoopulas and placed in 8-ounce glass jars. The jars were then capped with aluminum foil and a plastic lid and allowed to warm for approximately 10 minutes. The tip of the PID was then inserted into the jar through the aluminum foil and the reading recorded on the boring log. If elevated readings were noted, a sample was collected and analyzed for VOCs using a disposable Terracore® sampler at that interval. The VOC sample was collected from the DSB sample prior to compositing the sample to avoid the loss of volatiles.

The liner containing the soil was photographed and soil characteristics for each interval were then logged on a soil boring log. A summary of sampling information was logged on the field log forms. Boring logs and field log forms from the site investigation are presented in Appendix C. Photographs are presented in Appendix H.

4.4.1.1 Horizontal Incremental Sampling Methodology Soil Sampling

Subsurface soil was collected at each of the eight borings from the 1- to 4-ft bgs interval to create the depth interval-specific subsurface soil ISM sample. Soil was collected by running a stainless steel scoopula along the length of the liner from 1 to 4 ft to collect a representative sample from each boring. The same procedure was performed for the 4- to 7- and 7- to 10-ft bgs intervals. Sufficient soil was collected from each soil boring sample interval to generate the minimum 1 kilogram of soil required for an ISM sample. All sample containers were labeled and placed in a cooler with ice following collection.

4.4.1.2 Vertical Incremental Sampling Methodology Soil Sampling

Eight vertical subsurface soil ISM samples were collected from the 4- to 10-ft bgs interval. Soil was collected by running a stainless steel scoopula along the length of the liner from 4 to 5 ft and from 5 to 10 ft to collect a representative sample. Sufficient soil was collected from the 4- to 10-ft bgs interval to generate the minimum 1 kilogram of soil required for an ISM sample. All sample containers were labeled and placed in a cooler with ice following collection.

4.4.1.3 Deep Soil Boring Sampling

One DSB was advanced at Former Building 1039 to characterize the subsurface soils to 13 ft bgs. The boring was advanced to a depth of 13 ft bgs and a sample was collected from the 7- to 13-ft bgs interval. The VOC sample was collected prior to collecting the composite sample. Soil for the composite portion of the sample was collected by running a stainless steel scoopula along the length of the liner from 7 to 10 ft and from 10 to 13 ft. The soil was then mixed with a stainless steel spoon in a stainless steel bowl to collect a representative sample. These were collected in accordance with sampling procedures as described in Section 5.5.2.5 in the FWSAP (SAIC 2011a) and as presented in Section 4.2 of Appendix A of the Final Work Plan Addendum (ECC 2013). The sample container was labeled and placed in a cooler with ice following collection. The DSB sample at Former Building 1039 was collected from soil boring SB05.

4.4.2 Field Quality Assurance/Quality Control Sampling Procedures

QC samples were collected in accordance with Section 5.4.7 of the Facility-Wide Field Sampling Plan (SAIC 2011c). Field duplicate samples were collected at a frequency of 10 percent (1 per 10 soil samples). Matrix spike (MS)/matrix spike duplicate (MSD) samples were collected at a frequency of 5 percent (1 per 20 soil samples).

A field duplicate sample was collected at one soil boring location, SB03, at the 4- to 10-ft bgs interval. An MS/MSD sample was collected at one soil boring location, SB02, at the 4- to 10-ft bgs interval. The field duplicate and MS/MSD were derived from the same sampling point as their respective primary samples and using the same sample collection methods. The samples were then submitted for the same analyses as the primary samples (blind to the contract laboratory for the field duplicate sample). One equipment rinsate blank sample was collected from hand tool soil collection equipment. Trip blanks accompanied all shipments containing VOC samples.

QA split samples were collected for USACE at two soil boring locations (SB03 and SB05) and submitted to the USACE contracted laboratory for independent analyses. At these boring locations, the drill rig was offset approximately 6 inches from the initial boring location. The QA split samples were collected from the same subsurface interval as the primary samples and using the same sample collection methods. A vertical subsurface soil ISM QA sample from SB03 was collected at the 4- to 10-ft bgs interval and analyzed for VOCs, methyl tert-butyl ether (MTBE), SVOCs, TAL metals, propellants, and explosives. The vertical subsurface soil ISM QA sample collected at SB05 was collected from the 4- to 10-ft bgs interval and analyzed for SVOCs, TAL metals, and explosives.

A source water blank sample was collected on March 14, 2013 from the DI water used during direct push equipment decontamination. The source water blank sample was analyzed for TAL metals, explosives, propellants, herbicides, PCBs, pesticides, SVOCs, total petroleum hydrocarbon (TPH) diesel range organics (DRO)/gasoline range organics (GRO), and VOCs. This source water was brought onsite by the drilling subcontractor (Frontz Drilling) and originated from a private well located at the company's facility in Wooster, Ohio. Frontz Drilling has been hired as a drilling subcontractor by previous RVAAP contractors (e.g., SAIC) and has supplied potable water for decontamination purposes during numerous field events. The source water blank sample results are provided in Appendix D. The type and number of QA/QC samples are provided in Table 4-1.

4.5 SURVEYING

Campbell & Associates, Inc., of Akron, Ohio, was subcontracted by ECC to survey all soil boring locations at Former Building 1039. The horizontal coordinates and relative elevations of all sampling locations and the building footprint corners of Former Building 1039 were determined to within 0.3 m (1 ft) and 0.01 m, respectively. Michael McMahon, an employee of Campbell & Associates, Inc. and a licensed surveyor in the state of Ohio, performed the survey. All survey data were reported in North American Datum 1983 Universal Transverse Mercator Zone 17 North, in meters.

4.6 INVESTIGATION-DERIVED WASTE

IDW materials generated during field activities included soil cuttings from subsurface soil sampling and decontamination fluids. All IDW was containerized in Department of Transportation approved 55-gallon drums, properly sealed and labeled, and placed in a designated area within Building 1036. The drum containing IDW fluids was placed on a heavy duty polyethylene secondary containment pallet.

4.6.1 Collection and Containerization

All waste generated during this SI was properly handled, labeled, characterized, and managed in accordance with Section 8.0 of the FWSAP (SAIC 2011a), federal and state of Ohio large quantity generator requirements, and the RVAAP Installation Hazardous Waste Management Plan (Base Realignment and Closure Office 2009).

4.6.2 Characterization for Disposal

Waste disposal characterization samples were collected by ECC personnel on August 15, 2013. Samples were comprised of liquid IDW consisting of decontamination fluids, and solid IDW consisting of soil cuttings. IDW analysis included both liquid and solid Toxicity Characteristic Leaching Procedure, and Reactivity, Corrosivity, and Ignitability analysis.

4.6.3 Transportation and Disposal

On November 27, 2013, Ohio EPA approved the IDW disposal letter report for the transport and disposal of the accumulated IDW generated during this SI. The IDW disposal letter report and Ohio EPA approval are provided in Appendix G. On December 23, 2013, the drummed IDW was transported (under a non-hazardous waste manifest) by Emerald Environmental Services, Inc. and disposed of at Vexor Technology in Medina, Ohio. The manifests are provided in Appendix G.

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Table 4-1: Summary of Samples Collected in August 2013 at CC RVAAP-83

Location	Sample Location/Soil Boring	Sample ID	Matrix	Depth (ft)	Sampling Method	Date	TPH DRO	TPH GRO	VOC/MTBE	VOC	SVOC	TAL Metals	PCB	Pesticides	Explosives	Propellants	Herbicides	Hexavalent Chromium
Subsurface Soil																		
Bldg 1039	DU01	083SB-0015M-0001-SO	SB	7-10	ISM	12-Aug-13					X	X			X	X		
Bldg 1039	DU01	083SB-0015M-0001-SO	SB	7-10	ISM	14-Aug-13			X									
Bldg 1039	DU01	083SB-0001M-0001-SO	SB	1-4	ISM	12-Aug-13					X	X			X	X		
Bldg 1039	DU01	083SB-0001M-0001-SO	SB	1-4	ISM	14-Aug-13			X									
Bldg 1039	DU01	083SB-0002M-0001-SO	SB	4-7	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	DU01	083SB-0002M-0001-SO	SB	4-7	ISM	14-Aug-13			X									
Bldg 1039	SB01	083SB-0003M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB02	083SB-0004M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB02	083SB-0004M-0002-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB03	083SB-0005M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB03	083SB-0006M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB03	083SB-0007M-0001-SO	SB	4-10	ISM	12-Aug-13			X		X	X			X	X		
Bldg 1039	SB04	083SB-0008M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB05	083SB-0009M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB05	083SB-0010M-0001-SO	SB	4-10	ISM	12-Aug-13					X	X			X			
Bldg 1039	SB05	083SB-0014-0001-SO	SB	7-13	Composite	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB06	083SB-0011M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Bldg 1039	SB07	083SB-0012M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X	X	X	X	X		
Bldg 1039	SB08	083SB-0013M-0001-SO	SB	4-10	ISM	12-Aug-13				X	X	X			X	X		
Field Quality Control – Source Water*																		
NA	Source Water (ECC bottled decontamination water)	070-0057-0001-Source Water	QC	Non-dedicated hand sampling tools	NA	12-Dec-12	X	X		X	X	X	X	X	X	X	X	
NA	Source Water (Driller decontamination water)	079-0007-0001-Source Water	QC	Direct-Push Tools	NA	14-Mar-13	X	X		X	X	X	X	X	X	X	X	X
Field Quality Control – Equipment Rinsate*																		
NA	Equipment Rinsate Blank	083SB-0023-0001-ER	QC	Non-dedicated hand sampling tools during sampling event	NA	15-Aug-13		X		X	X	X	X	X	X	X		
Field Quality Control – Trip Blanks*																		
NA	Trip Blank	070-0060-0001-TB	QC	NA	NA	12-Dec-12			X									
NA	Trip Blank	070SB-005-0001-TB	QC	NA	NA	12-Dec-12		X										
NA	Trip Blank	079-0008-0001-TB	QC	NA	NA	14-Mar-13			X									
NA	Trip Blank	079-0009-0001-TB	QC	NA	NA	14-Mar-13		X										
NA	Trip Blank	083SB-0004-0001-TB	QC	NA	NA	15-Aug-13			X									
NA	Trip Blank	083SB-0016-0001-TB	QC	NA	NA	12-Aug-13			X									
NA	Trip Blank	083SB-0017-0001-TB	QA	NA	NA	12-Aug-13			X									
NA	Trip Blank	083SB-0018-0001-TB	QC	NA	NA	12-Aug-13			X									
NA	Trip Blank	083SB-0020-0001-TB	QC	NA	NA	14-Aug-13			X									

Notes:

Field Duplicate	Matrix Spike/Matrix Spike Duplicate	Full Suite	Quality Assurance

Propellants include nitroguanidine, nitrocellulose, and nitroglycerin.

DRO = Diesel Range Organics.
DU = Decision Unit.
ER = Equipment Rinsate.
GRO = Gasoline Range Organics.
ID = Identification.
ISM = Incremental sampling methodology.
MTBE = Methyl tert-butyl ether.
NA = Not applicable.
PCB = Polychlorinated biphenyl.
QA = Quality assurance.
QC = Quality control.
SB = Soil Boring.
SVOC = Semivolatile organic compound.
TAL = Target Analyte List.
TB = Trip Blank.
TPH = Total petroleum hydrocarbon.
VOC = Volatile organic compound.

- Programmatic QC samples collected at dates indicated in the table

1774 **Table 4-2: Summary of Soil Sampling Rationale, August 2013 at CC RVAAP-83**
1775

Sample Type	Depth (ft bgs)	Location (DU/SB)	Sample ID	Date Sampled	Comments/Rationale
ISM	1-4	DU01	083SB-0001M-0001-SO	12-Aug-13	Determine the horizontal presence or absence of potential contamination in subsurface soil.
ISM	4-7	DU01	083SB-0002M-0001-SO	12-Aug-13	Determine the horizontal presence or absence of potential contamination in subsurface soil.
ISM	7-10	DU01	083SB-0015M-0001-SO	12-Aug-13	Determine the horizontal presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB01	083SB-0003M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB02	083SB-0004M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB02	083SB-0004M-0002-SO	12-Aug-13	QC. MS/MSD sample of 083SB-0004M-0001-SO.
ISM	4-10	SB03	083SB-0005M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB03	083SB-0006M-0001-SO	12-Aug-13	QC. FD sample of 083SB-0005M-0001-SO.
ISM	4-10	SB03	083SB-0007M-0001-SO	12-Aug-13	QA. Split sample of 083SB-0005M-0001-SO.
ISM	4-10	SB04	083SB-0008M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB05	083SB-0009M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB05	083SB-0010M-0001-SO	12-Aug-13	QA. Split sample of 083SB-0009M-0001-SO.
ISM	4-10	SB06	083SB-0011M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
ISM	4-10	SB07	083SB-0012M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil. Analyzed for Ravenna Army Ammunition Plant Full Suite analysis.
ISM	4-10	SB08	083SB-0013M-0001-SO	12-Aug-13	Determine the vertical presence or absence of potential contamination in subsurface soil.
Composite	7-13	SB05	083SB-0014-0001-SO	12-Aug-13	Determine presence or absence of potential contamination in soil to a depth of 13 ft bgs.
Grab	NA	Trip Blank	083SB-0016-0001-TB	12-Aug-13	QC. Trip Blank.
Grab	NA	Trip Blank	083SB-0017-0001-TB	12-Aug-13	QA. Trip Blank.
Grab	NA	Trip Blank	083SB-0004-0001-TB	15-Aug-13	QC. Trip Blank.
Grab	NA	Trip Blank	083SB-0020-0001-TB	14-Aug-13	QC. Trip Blank.
Grab	NA	Trip Blank	083SB-0018-0001-TB	12-Aug-13	QC. Trip Blank.

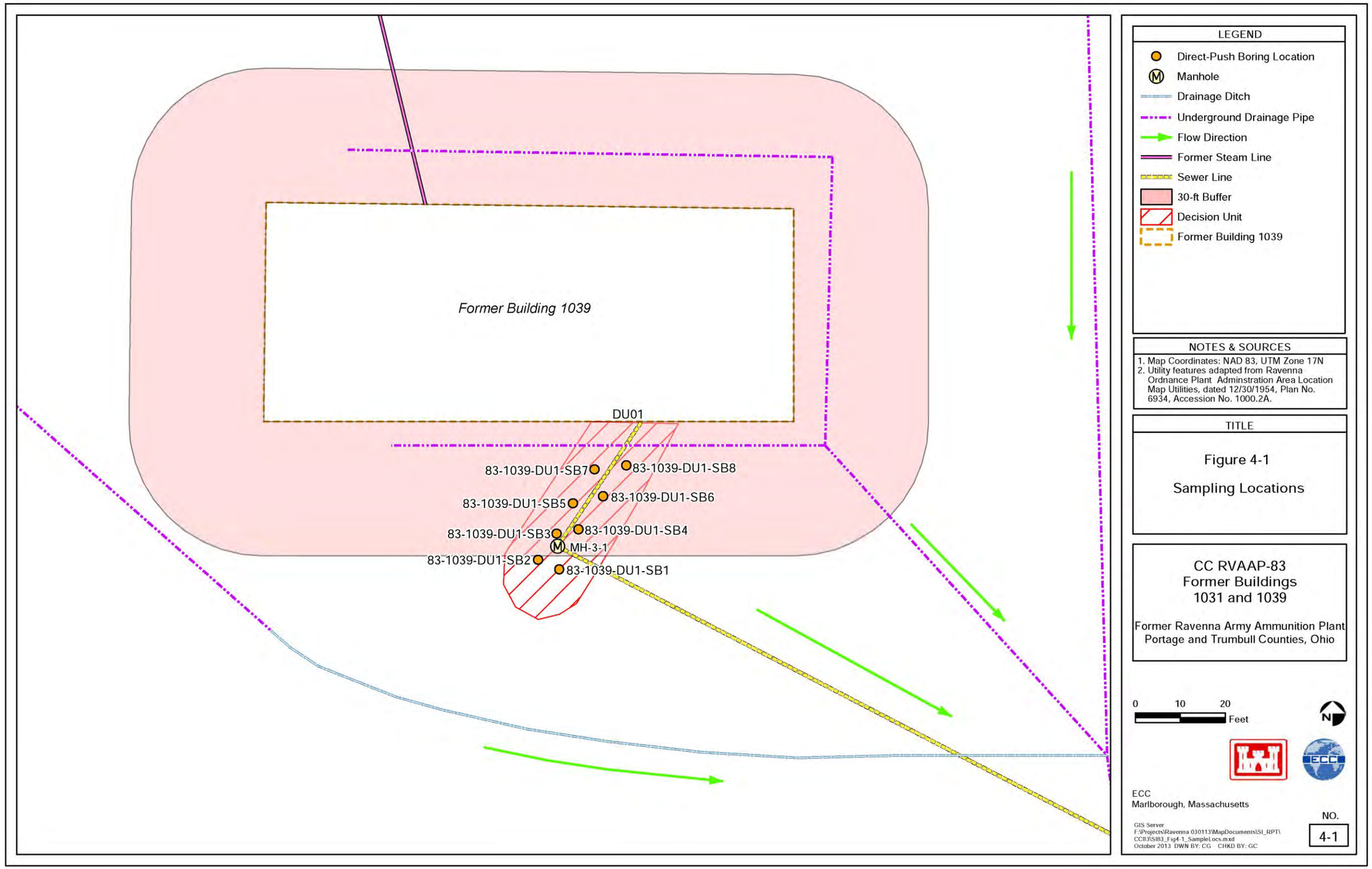
Notes:

bgs	=	Below ground surface.
DU	=	Decision Unit.
FD	=	Field duplicate.
ft	=	Feet.
ID	=	Identification.
ISM	=	Incremental sampling methodology.
MS	=	Matrix spike.
MSD	=	Matrix spike duplicate.
NA	=	Not applicable.
QA	=	Quality assurance.
QC	=	Quality control.
SB	=	Soil boring.

1793 **Table 4-3: Sample Preparation and Analytical Methods, August 2013, CC RVAAP-83**
1794

Parameter	Soil[(1)]		Aqueous	
	Preparation	Analysis	Preparation	Analysis
Propellants*	9056 Modified	Nitrocellulose 9056 Modified	SW8330	SW8330
	SW8330	Nitroguanidine SW8330B	E353.2	E353.2
	NA	NA	9056M	9056M[(1)]
TAL Metals	SW3015	Metals SW6010C	SW3050B	SW6020
	SW7471B	Mercury SW7471B	SW7470A	SW7470A
	NA	NA	SW3050B	SW6010C[(1)]
TPH GRO	NA	NA	SW5030B	SW8015V Modified
			SW5030B	SW8015C[(1)]
TPH DRO	NA	NA	SW3520C	SW8015D Modified
			SW3520C	SW8015C[(1)]
Pesticides	SW3546	SW8081B	SW3520C	SW8081
			SW3520C	SW8081B
Explosives	SW8330B	SW8330B	SW8330A	SW8330A
			SW8330B	SW8330B
PCB	SW3540C	SW8082A	SW3520C	SW8082
			SW3520C	SW8082A[(1)]
Herbicides	NA	NA	SW3510C	SW8151A
VOC**	SW5035	SW8260C	SW5030B	SW8260B
SVOC***	SW3550	SW8270D/SW8270D SIM	SW3510C	SW8270C
			SW3510C	SW8270D[(1)]
			SW3510C	SW8270D/SIM[(1)]

Notes:
All soil samples, except for VOCs, undergo incremental sample preparation by air drying, then passed through a rotary hammer mill, and sieved.
1. Analytical method performed by CT Laboratories, LLC other methods are for TestAmerica Laboratory analysis of equipment rinsate blanks.
* Propellant nitroglycerin reported by explosives method (SW8330B).
** Includes benzene, ethylbenzene, toluene, total xylenes, and methyl tert-butyl ether.
*** Includes polycyclic aromatic hydrocarbon using SIM mode.
DRO = Diesel range organic.
GRO = Gasoline range organic.
PCB = Polychlorinated biphenyl.
TAL = Target Analyte List.
TPH = Total petroleum hydrocarbon.
SIM = Selected ion monitoring.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.


Former Building 1039
DU01
83-1039-DU1-SB7
83-1039-DU1-SB8
83-1039-DU1-SB5
83-1039-DU1-SB6
83-1039-DU1-SB3
83-1039-DU1-SB4
MH-3-1
83-1039-DU1-SB2
83-1039-DU1-SB1
LEGEND
Direct-Push Boring Location
Manhole
Drainage Ditch
Underground Drainage Pipe
Flow Direction
Former Steam Line
Sewer Line
30-ft Buffer
Decision Unit
Former Building 1039
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N
2. Utility features adapted from Ravenna Ordnance Plant Adminstration Area Location Map Utilities, dated 12/30/1954, Plan No. 6934, Accession No. 1000.2A.
TITLE
Figure 4-1
Sampling Locations
CC RVAAP-83
Former Buildings
1031 and 1039
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
0 10 20
Feet
N
ECC
Marlborough, Massachusetts
NO.
4-1
GIS Server
F:\Projects\Ravenna 030113\MapDocuments\SI_RPT\CC83\SI83_Fig4-1_SampleLocs.mxd
October 2013 DWN BY: CG CHKD BY: GC

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5. DATA EVALUATION AND SUMMARY OF ANALYTICAL RESULTS

This chapter summarizes the analytical sampling results for the Former Building 1039 at CC RVAAP-83. The laboratory analytical data for this SI are provided in Appendix E.

5.1 DATA EVALUATION

The data collected during this SI were verified and validated in accordance with the procedures outlined in the FWSAP (SAIC 2011b). The processes used to evaluate the analytical data are described in this section. The completed data verification report is included in Appendix D and the data validation report is included as Appendix F. Chemical data reported as non-detect were reported as not detected in the summary of analytical results tables included in Chapter 5 and at the Limit of Detection in Appendix D.

5.1.1 Soil Sampling Intervals

The soil sampling intervals defined for this SI are as follows:

- Subsurface Soil Horizontal Profile (1-4, 4-7, and 7-10 ft bgs)
- Subsurface Soil Boring Vertical Profile (4-10 ft bgs)
- DSB (7-13 ft bgs)

5.1.2 Data Verification, Validation, and Determination of Potential Contamination

5.1.2.1 Data Verification and Validation

Data verification was performed on the subsurface soil samples. The analytical results were reported by the laboratory in accordance with the FWSAP (SAIC 2010).

Data qualifiers were assigned to each result based on the laboratory (i.e., TestAmerica of North Canton, Ohio) QA review and verification criteria. The SI analytical results were qualified as follows:

- "U" is not detected.
- "UJ" is not detected and the reporting limit is an estimated value.
- "J" denotes that the analyte was positively identified, but the associated numerical value is an approximate concentration of the analyte in the sample.
- "R" indicates that the result is not usable.

In addition to assigning qualifiers, the verification process also selected the appropriate result to use when re-analyses or dilutions were performed. Where laboratory surrogate recovery data or laboratory QC samples were outside of analytical method specifications, the verification chemist determined whether or not laboratory re-analysis should be used in place of an original reported

result. If the laboratory reported results for both diluted and undiluted samples, diluted sample results were used for those analytes that exceeded the calibration range of the undiluted sample. A complete discussion of verification process results is contained in the Data Verification Report (Appendix D).

A data validation report was completed for all six CR sites inclusive of Site CC RVAAP-83, where ECC conducted SIs. The *Final Data Validation Report for Compliance Restoration Sites: RVAAP-70 East Classification Yard, RVAAP-71 Barn No. 5 Petroleum Release, RVAAP-72 Facility-Wide Underground Storage Tanks, RVAAP-75 George Road Sewer Treatment Plant Mercury Spill, RVAAP-77 Building 1037 Laundry Waste Water Sump and RVAAP-83 Former Buildings 1031 and 1039* was issued by North Wind Services and MEC^{x} in August 2014. The report is provided in Appendix F. In general, the data validation performed for the CC RVAAP-83 SI indicates that no false negatives or false positives were identified, and the results are usable for their intended purposes.

5.1.2.2 Determination of Potential Contamination

This section provides an outline of the process used to determine if potential contamination is present at this AOC. Per the *Facility-Wide Human Health Risk Assessment Manual* (USACE 2005), a chemical detected at a concentration greater than the established background value, which is not an essential nutrient, or screened out through a frequency of detection evaluation is identified as an SRC. An SRC may, or may not, be related to the former operations at the site. The maximum detected concentration of each SRC is then compared to the most stringent FWCUG for the Resident Receptor between the adult and child using the Target Cancer Risk (TCR) level of 10^{-6} or the Target Hazard Quotient (THQ) of 0.1 for each SRC, as outlined in the *Final Facility-Wide Human Health Cleanup Goals for RVAAP* (SAIC 2010). Both risk levels (carcinogenic and non-carcinogenic) were assessed for the Resident Receptor (adult and child) to determine which one was the most stringent for comparison to each SRC. The specific criteria used to identify SRCs and potential contamination at the AOC are described below:

- ***Background Screening***—The maximum detected concentrations of inorganic chemicals were compared to the RVAAP background concentrations, where established. If exceedances of background concentrations occurred, the respective inorganic chemicals were identified as SRCs. Several inorganic chemicals were screened against a background concentration of 0 milligrams per kilogram (mg/kg) (e.g., cadmium, silver). A value of 0 mg/kg was assigned as background when the chemical was not detected in any of the samples collected during the background study.

- ***Screening of Essential Human Nutrients***—Chemicals that are essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium) are an integral part of the human food supply and often added to foods as supplements. The USEPA recommends these chemicals not be evaluated unless they are grossly elevated relative to background concentrations or would exhibit toxicity at the observed concentrations (USEPA 1989).

- ***Frequency of Detection/WOE***—A frequency of detection evaluation was not completed as part of the WOE since less than 20 soil samples were collected during this investigation. Therefore, frequency of detection was not used to further screen the identified SRCs as part of this SI. The SRCs that exceeded the most stringent Resident Receptor FWCUGs using the TCR level of 10^{-6} or THQ = 0.1 for non-carcinogenic risks were then evaluated using a WOE approach, to determine if the SRC is AOC-related. A WOE evaluation considers the SRCs that exceeded their FWCUGs, as described above, to determine if the chemical should be identified as potential contamination. If the results of the WOE evaluation indicated that potential contamination was present, then an additional investigation, such as an RI, is recommended. However, if no potential contamination was identified, then NFA is recommended.

If no FWCUG has been developed for the particular chemical, then the USEPA's Regional Screening Levels (RSLs) (USEPA 2014) for the Residential Receptor were used for comparison using the same TCR of 10^{-6} and THQ of 0.1. The National Guard Trainee FWCUGs and the USEPA Industrial RSLs (November 2014) are provided on the data summary tables in this section for comparison purposes only and were not used to determine whether or not chemicals were identified as potential contamination. If potential contamination is identified in this SI, it indicates that further investigation under CERCLA, in the form of an RI, is warranted at this AOC.

Tables 5-1 and 5-2 provide a summary of the SRCs identified in the subsurface soil at CC RVAAP-83. The complete laboratory analytical data packages, including laboratory analytical results tables with final qualifiers, are included in Appendix E.

5.2 SUMMARY OF HORIZONTAL SUBSURFACE SOIL ANALYTICAL RESULTS

CC RVAAP-83 subsurface soil sampling data were evaluated to identify the SRCs at the AOC. Three horizontal subsurface soil ISM samples were collected from one DU in order to determine the presence or absence of subsurface soil contamination. One ISM sample was collected from the 1- to 4-ft bgs interval, one ISM sample was collected from the 4- to 7-ft bgs interval, and one ISM was collected from the 7- to 10-ft bgs interval. A total of eight soil borings were advanced at DU01 to obtain the horizontal subsurface soil ISM samples. The ISM subsurface soil samples were analyzed for VOCs, SVOCs, TAL metals, explosives, and propellants.

Table 5-1 presents the determination of SRCs in the subsurface soil at Former Building 1039 CC RVAAP-83. The identified SRCs in subsurface soil are shown in Figures 5-1 and 5-2for organic chemicals and Figure 5-3 for inorganic chemicals.

The following organic and inorganic SRCs have been identified in the horizontal subsurface soil at CC RVAAP-83 Former Building 1039:

- Several SVOCs, primarily polycyclic aromatic hydrocarbon [PAH] compounds, have been identified as SRCs, as these chemicals were detected at low or estimated concentrations in all three horizontal subsurface soil ISM samples.

- Two metals (antimony and lead) were identified as SRCs as these chemicals were detected in the horizontal subsurface soil ISM samples at concentrations greater than the background criteria.
  - Antimony was detected in the 1- to 4-ft and 4- to 7-ft bgs interval samples, at concentrations greater than the background criteria.
  - Lead was only detected in the 1- to 4-ft bgs interval subsurface soil sample.
- No metals were detected at concentrations greater than the background criteria in the 7- to 10-ft bgs interval subsurface soil sample.

Tables 5-2 and 5-3 provide a summary of the analytical results for organic and inorganic chemicals detected in subsurface soil at CC RVAAP-83, respectively. The organic and inorganic chemicals detected in the subsurface soil samples are shown in Figures 5-1, 5-2, and Figure 5-3. Complete copies of all the laboratory data packages and laboratory analytical results summary tables are presented in Appendix E.

The analytical results from the horizontal subsurface soil samples are summarized in the following sections.

5.2.1 Volatile Organic Compounds

All three horizontal subsurface soil ISM samples from DU01 were analyzed for VOCs and MTBE. No VOCs (including MTBE compounds) were detected in any of the horizontal subsurface soil ISM samples. VOCs were not identified as potential contaminants at this AOC.

5.2.2 Semivolatile Organic Compounds

All three horizontal subsurface soil ISM samples from DU01 were analyzed for SVOCs. SVOCs were not detected at concentrations exceeding their respective Resident Receptor FWCUG or RSL in any of the horizontal subsurface soil ISM samples. Therefore, no SVOCs were identified as potential contaminants at this AOC.

5.2.3 Target Analyte List Metals

All three horizontal subsurface soil ISM samples from DU01 were analyzed for TAL metals analysis. TAL metals were not detected in the subsurface soil samples at concentrations exceeding their respective Resident Receptor FWCUGs or RSLs in any of the horizontal subsurface soil ISM samples. Therefore, metals were not identified as potential contaminants at this AOC.

5.2.4 Explosives and Propellants

All three horizontal subsurface soil ISM samples from DU01 were analyzed for explosives and propellants analysis. No explosive or propellant chemicals were detected in any of the horizontal

subsurface soil ISM samples above the detection limits. Therefore, explosives and propellants were not identified as potential contaminants at this AOC.

5.3 SUMMARY OF VERTICAL SUBSURFACE SOIL ANALYTICAL RESULTS

Eight vertical subsurface soil ISM samples and one field duplicate sample (at soil boring SB03) were collected at DU01 as part of this SI. A total of eight soil borings ranging in depth from 4 to10 ft bgs were advanced at DU01 to obtain the vertical subsurface soil ISM samples. The samples were analyzed for VOCs, SVOCs, TAL metals, explosives, and propellants.

The following organic and inorganic SRCs have been identified in the vertical subsurface soil at CC RVAAP-83 Former Building 1039:

- Several SVOCs, primarily PAH compounds, were identified as SRCs as these chemicals were detected at low or estimated concentrations in the vertical subsurface soil samples. No background values have been established for these chemicals.

- Three metals (antimony, beryllium, and cadmium) were identified as SRCs as these chemicals were detected in the vertical subsurface soil samples above background criteria. No background value has been established for cadmium and a value of zero has been applied as the background for this chemical.

In addition to the primary subsurface soil samples collected for this SI, one vertical ISM sample was collected between 4 and 10 ft bgs at soil boring SB07 and analyzed for RVAAP Full-Suite analysis for QA/QC purposes. This analysis includes VOCs, SVOCs, TAL metals, PCBs, pesticides, explosives, and propellants. One SRC was identified in the vertical subsurface soil ISM sample collected for the RVAAP Full Suite analysis, as follows:

- One pesticide (delta-hexachlorocyclohexane [delta-BHC]) was identified as an SRC in the vertical subsurface soil ISM sample, as the pesticide was detected at a low estimated concentration of 1.1 J micrograms per kilogram (µg/kg). No background value has been established for this chemical.

The analytical results from the vertical subsurface soil samples are summarized in the following sections.

5.3.1 Volatile Organic Compounds

All vertical subsurface soil ISM samples from DU01 were analyzed for VOCs. No VOC chemicals were detected in any of the vertical subsurface soil ISM samples. Therefore, VOCs were not identified as potential contaminants at this AOC.

5.3.2 Semivolatile Organic Compounds

All vertical subsurface soil ISM samples from DU01 were analyzed for SVOCs. SVOCs were not detected in any of the vertical subsurface soil ISM samples at concentrations exceeding their

respective Resident Receptor FWCUGs or RSLs. Therefore, SVOCs were not identified as potential contaminants at this AOC.

5.3.3 Target Analyte List Metals

All vertical subsurface soil ISM samples from DU01 were analyzed for TAL metals analysis. Analytical results were compared to established background values where applicable. TAL metals were not detected at concentrations exceeding their respective Resident Receptor FWCUGs or RSLs in any of the vertical subsurface soil ISM samples. Therefore, metals were not identified as potential contaminants at this AOC.

5.3.4 Explosives and Propellants

All vertical subsurface soil ISM samples from DU01 were analyzed for explosives and propellants analysis. No explosive or propellant chemicals were detected in any of the vertical subsurface soil ISM samples. Therefore, explosive and propellants were not identified as potential contaminants at this AOC.

5.3.5 Pesticides

One vertical subsurface soil ISM sample was collected from soil boring location SB07 at DU01 and was submitted for a RVAAP Full Suite analysis which includes VOCs, SVOCs, TAL metals, explosives, propellants, PCBs, and pesticides.

- One pesticide (delta-BHC) was detected at an estimated concentration of 1.1 J µg/kg. An FWCUG has not been established for delta-BHC and there are no USEPA Residential RSL (USEPA 2014) criteria established for this chemical. Pesticide compounds are not SRCs.

In summary, no VOCs, SVOCs, TAL metals, explosives, propellants, PCBs, and pesticides were detected at concentrations exceeding their respective FWCUGs or RSLs in the vertical subsurface soil samples. Therefore, no potential contaminants were identified in the vertical subsurface soil samples collected at this AOC.

5.4 SUMMARY OF DEEP SOIL BORING SAMPLE ANALYTICAL RESULTS

One composite subsurface soil sample was collected between 7 and 13 ft bgs at soil boring SB05 within DU01. This sample was analyzed for VOCs, SVOCs, TAL metals, explosives, and propellants.

SRCs were identified in the DSB sample as follows:

- Eleven PAH compounds, 2-methylnaphthalene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene, were identified as SRCs as these

chemicals were detected in the DSB sample at low concentrations. No background criteria have been established for these chemicals in soils.

The analytical results from the subsurface soil sample collected between 7 and 13 ft bgs are summarized in the following sections.

5.4.1 Volatile Organic Compounds

The DSB sample from DU01 was analyzed for VOCs. No VOCs were detected in the DSB sample. Therefore, VOCs were not identified as potential contaminants at this AOC.

5.4.2 Semivolatile Organic Compounds

The DSB sample from DU01 was analyzed for SVOCs. The reported SVOCs values and estimated values were not detected at concentrations exceeding their respective Resident Receptor FWCUGs or RSLs in the DSB sample. Therefore, SVOCs were not identified as potential contaminants at this AOC.

5.4.3 Target Analyte List Metals

The DSB sample from DU01 was analyzed for TAL metals analysis. Analytical results were compared to established background values, where applicable. TAL metals were not detected at concentrations exceeding their respective background criteria in the DSB sample. Therefore, metals were not identified as potential contaminants at this AOC.

5.4.4 Explosives and Propellants

The DSB sample from DU01 was analyzed for explosives and propellants. No explosive or propellant chemicals were detected in the DSB sample. Therefore, explosive and propellants were not identified as potential contaminants at this AOC.

5.5 INVESTIGATION-DERIVED WASTE ANALYTICAL RESULTS

A description of the waste streams generated during this SI, along with the Toxicity Characteristic Leaching Procedure waste characterization analysis results and disposal recommendations, are provided in the IDW disposal letter report (Appendix G).

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2143 **Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013 at CC RVAAP-83**
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Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification
1,1,1-Trichloroethane	71-55-6	0/13	None	None	None	No	Not Detected
1,1,2,2-Tetrachloroethane	79-34-5	0/13	None	None	None	No	Not Detected
1,1,2-Trichloroethane	79-00-5	0/13	None	None	None	No	Not Detected
1,1-Dichloroethane	75-34-3	0/13	None	None	None	No	Not Detected
1,1-Dichloroethene	75-35-4	0/13	None	None	None	No	Not Detected
1,2-Dibromoethane (EDB)	106-93-4	0/13	None	None	None	No	Not Detected
1,2-Dichloroethane	107-06-2	0/13	None	None	None	No	Not Detected
1,2-Dichloroethene	156-59-2	0/13	None	None	None	No	Not Detected
1,2-Dichloropropane	78-87-5	0/13	None	None	None	No	Not Detected
2-Butanone (MEK)	78-93-3	0/13	None	None	None	No	Not Detected
2-Hexanone	591-78-6	0/13	None	None	None	No	Not Detected
4-Methyl-2-pentanone (MIBK)	108-10-1	0/13	None	None	None	No	Not Detected
Acetone	67-64-1	0/13	None	None	None	No	Not Detected
Benzene	71-43-2	0/13	None	None	None	No	Not Detected
Bromochloromethane	74-97-5	0/13	None	None	None	No	Not Detected
Bromodichloromethane	75-27-4	0/13	None	None	None	No	Not Detected
Bromoform	75-25-2	0/13	None	None	None	No	Not Detected
Bromomethane	74-83-9	0/13	None	None	None	No	Not Detected
Carbon Disulfide	75-15-0	0/13	None	None	None	No	Not Detected
Carbon Tetrachloride	56-23-5	0/13	None	None	None	No	Not Detected
Chlorobenzene	108-90-7	0/13	None	None	None	No	Not Detected
Chloroethane	75-00-3	0/13	None	None	None	No	Not Detected
Chloroform	67-66-3	0/13	None	None	None	No	Not Detected
Chloromethane	74-87-3	0/13	None	None	None	No	Not Detected

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Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013 at CC RVAAP-83 (continued)

Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[a]	SRC (Yes/No)	SRC Justification	Analyte
Volatile Organic Compounds (µg/kg)								
cis-1,2-Dichloroethylene	156-59-2	0/13	None	None	None	None	No	Not Detected
cis-1,3-Dichloropropene	542-75-6	0/13	None	None	None	None	No	Not Detected
Dibromochloromethane	124-48-1	0/13	None	None	None	None	No	Not Detected
Ethylbenzene	100-41-4	0/13	None	None	None	None	No	Not Detected
m,p-Xylene	106-42-3	0/13	None	None	None	None	No	Not Detected
Methylene Chloride	75-09-2	0/13	None	None	None	None	No	Not Detected
o-Xylene	95-47-6	0/13	None	None	None	None	No	Not Detected
Styrene	100-42-5	0/13	None	None	None	None	No	Not Detected
Methyl Tert-Butyl Ether	1634-04-4	0/3	None	None	None	None	No	Not Detected
Tetrachloroethene	127-18-4	0/13	None	None	None	None	No	Not Detected
Toluene	108-88-3	0/13	None	None	None	None	No	Not Detected
trans-1,2-Dichloroethene	156-60-5	0/13	None	None	None	None	No	Not Detected
trans-1,3-Dichloropropene	10061-02-6	0/13	None	None	None	None	No	Not Detected
Trichloroethene	79-01-6	0/13	None	None	None	None	No	Not Detected
Vinyl Chloride	75-01-4	0/13	None	None	None	None	No	Not Detected
Xylenes, Total	1330-20-7	0/13	None	None	None	None	No	Not Detected
Semivolatile Organic Compounds (µg/kg)								
2-Methylnaphthalene	95-48-7	**13/13**	**1.2**	**3.7**	**2.50**	**None**	**Yes**	**Detected Organic**
Acenaphthene	83-32-9	**9/13**	**0.52**	**2**	**1.26**	**None**	**Yes**	**Detected Organic**
Acenaphthylene	208-96-8	**1/13**	**0.46**	**0.46**	**0.46**	**None**	**Yes**	**Detected Organic**
Anthracene	120-12-7	**6/13**	**1**	**7.5**	**4.25**	**None**	**Yes**	**Detected Organic**
Benzo(a)anthracene	56-55-3	**8/13**	**1.5**	**16**	**8.75**	**None**	**Yes**	**Detected Organic**
Benzo(a)pyrene	50-32-8	**12/13**	**0.45**	**6.8**	**3.62**	**None**	**Yes**	**Detected Organic**
Benzo(b)fluoranthene	205-99-2	**13/13**	**3.2**	**16**	**9.60**	**None**	**Yes**	**Detected Organic**
Benzo(g,h,i)perylene	191-24-2	**13/13**	**1.5**	**8.3**	**4.90**	**None**	**Yes**	**Detected Organic**

Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013, at CC RVAAP-83 (continued)

Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification	Analyte
Semivolatile Organic Compounds (µg/kg)								
Benzo(k)fluoranthene	207-08-9	**8/13**	**0.57**	**3.1**	**1.83**	**None**	**Yes**	**Detected Organic**
Chrysene	218-01-9	**13/13**	**4.1**	**16**	**10.05**	**None**	**Yes**	**Detected Organic**
Dibenz(a,h)anthracene	53-70-3	**13/13**	**0.57**	**1.9**	**1.23**	**None**	**Yes**	**Detected Organic**
Fluoranthene	206-44-0	**13/13**	**1.1**	**24**	**12.55**	**None**	**Yes**	**Detected Organic**
Fluorene	86-73-7	**12/13**	**0.49**	**2.9**	**1.69**	**None**	**Yes**	**Detected Organic**
Indeno(1,2,3-c,d)Pyrene	193-39-5	**13/13**	**0.58**	**5.2**	**2.89**	**None**	**Yes**	**Detected Organic**
Naphthalene	91-20-3	**13/13**	**1.5**	**3.7**	**2.60**	**None**	**Yes**	**Detected Organic**
Phenanthrene	85-01-8	**13/13**	**3.9**	**23**	**13.45**	**None**	**Yes**	**Detected Organic**
Pyrene	129-00-0	**13/13**	**0.72**	**18**	**9.36**	**None**	**Yes**	**Detected Organic**
2,4-Dimethylphenol	105-67-9	0/13	None	None	None	None	No	Not Detected
2,4-Dichlorophenol	120-83-2	0/13	None	None	None	None	No	Not Detected
2,4,5-Trichlorophenol	95-95-4	0/13	None	None	None	None	No	Not Detected
2,4,6-Trichlorophenol	88-06-2	0/13	None	None	None	None	No	Not Detected
3,3'-Dichlorobenzidine	91-94-1	0/13	None	None	None	None	No	Not Detected
Phenol	108-95-2	0/13	None	None	None	None	No	Not Detected
1,4-Dichlorobenzene	106-46-7	0/13	None	None	None	None	No	Not Detected
1,3-Dichlorobenzene	541-73-1	0/13	None	None	None	None	No	Not Detected
1,2,4-Trichlorobenzene	120-82-1	0/13	None	None	None	None	No	Not Detected
3-Nitroaniline	99-09-2	0/13	None	None	None	None	No	Not Detected
2-Chloronaphthalene	91-58-7	0/13	None	None	None	None	No	Not Detected
Bis(2-chloroethoxy)methane	111-91-1	0/13	None	None	None	None	No	Not Detected
2-Nitroaniline	88-74-4	0/13	None	None	None	None	No	Not Detected
1,2-Dichlorobenzene	95-50-1	0/13	None	None	None	None	No	Not Detected
2,4-Dinitrotoluene	121-14-2	0/13	None	None	None	None	No	Not Detected

Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013, at CC RVAAP-83 (continued)

Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification	Analyte
Semivolatile Organic Compounds (µg/kg)								
2,6-Dinitrotoluene	606-20-2	0/13	None	None	None	None	No	Not Detected
Dibenzofuran	132-64-9	0/13	None	None	None	None	No	Not Detected
Pentachlorophenol	87-86-5	0/13	None	None	None	None	No	Not Detected
4-Bromophenyl phenyl ether	101-55-3	0/13	None	None	None	None	No	Not Detected
Bis(2-chloroethyl) ether	111-44-4	0/13	None	None	None	None	No	Not Detected
4-Chlorophenyl phenyl ether	7005-72-3	0/13	None	None	None	None	No	Not Detected
2,4-Dinitrophenol	51-28-5	0/13	None	None	None	None	No	Not Detected
2-Methyl-4,6-dinitrophenol	534-52-1	0/13	None	None	None	None	No	Not Detected
Carbazole	86-74-8	0/13	None	None	None	None	No	Not Detected
Hexachlorobenzene	118-74-1	0/13	None	None	None	None	No	Not Detected
2-Nitrophenol	88-75-5	0/13	None	None	None	None	No	Not Detected
Benzoic acid	65-85-0	0/13	None	None	None	None	No	Not Detected
4-Nitroaniline	100-01-6	0/13	None	None	None	None	No	Not Detected
Bis(2-chloroisopropyl) ether	108-60-1	0/13	None	None	None	None	No	Not Detected
Hexachloroethane	67-72-1	0/13	None	None	None	None	No	Not Detected
2-Chlorophenol	95-57-8	0/13	None	None	None	None	No	Not Detected
4-Chloro-3-methylphenol	59-50-7	0/13	None	None	None	None	No	Not Detected
4-Chloroaniline	106-47-8	0/13	None	None	None	None	No	Not Detected
4-Nitrophenol	100-02-7	0/13	None	None	None	None	No	Not Detected
2-Methylphenol	95-48-7	0/13	None	None	None	None	No	Not Detected
N-Nitrosodiphenylamine	86-30-6/122-39-4	0/13	None	None	None	None	No	Not Detected
Isophorone	78-59-1	0/13	None	None	None	None	No	Not Detected
Hexachlorocyclopentadiene	77-47-4	0/13	None	None	None	None	No	Not Detected

Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013, at CC RVAAP-83 (continued)

Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification	Analyte
Semivolatile Organic Compounds (µg/kg)								
Di-n-octyl phthalate	117-84-0	**1/13**	**91**	**91**	**91**	**None**	**Yes**	**Detected Organic**
Nitrobenzene	98-95-3	0/13	None	None	None	None	No	Not Detected
Hexachlorobutadiene	87-68-3	0/13	None	None	None	None	No	Not Detected
Dimethyl phthalate	131-11-3	0/13	None	None	None	None	No	Not Detected
Diethyl phthalate	84-66-2	0/13	None	None	None	None	No	Not Detected
4-Methylphenol	1319-77-3	0/13	None	None	None	None	No	Not Detected
N-Nitroso-di-n-propylamine	621-64-7	0/13	None	None	None	None	No	Not Detected
Butylbenzyl phthalate	85-68-7	0/13	None	None	None	None	No	Not Detected
Benzyl alcohol	100-51-6	0/13	None	None	None	None	No	Not Detected
Di-n-butyl phthalate	84-74-2	**2/13**	**90**	**140**	**115**	**None**	**Yes**	**Detected Organic**
Pesticides (µg/kg)								
Aldrin	309-00-2	0/1	None	None	None	None	No	Not Detected
alpha-BHC	319-84-6	0/1	None	None	None	None	No	Not Detected
alpha-Chlordane	5103-71-9	0/1	None	None	None	None	No	Not Detected
alpha-Endosulfan	959-98-8	0/1	None	None	None	None	No	Not Detected
beta-BHC	319-85-7	0/1	None	None	None	None	No	Not Detected
beta-Endosulfan	33213-65-9	0/1	None	None	None	None	No	Not Detected
delta-BHC	**75-99-0**	**1/1**	**1.1**	**1.1**	**1.10**	**None**	**Yes**	**Detected Organic**
Dieldrin	60-57-1	0/1	None	None	None	None	No	Not Detected
Endosulfan Sulfate	1031-07-8	0/1	None	None	None	None	No	Not Detected
Endrin	72-20-8	0/1	None	None	None	None	No	Not Detected
Endrin Aldehyde	7421-93-4	0/1	None	None	None	None	No	Not Detected
Endrin Ketone	53494-70-5	0/1	None	None	None	None	No	Not Detected
gamma-BHC (Lindane)	58-89-9	0/1	None	None	None	None	No	Not Detected
gamma-Chlordane	5566-34-7	0/1	None	None	None	None	No	Not Detected

2164 **Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013, at CC RVAAP-83 (continued)**
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Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[a]	SRC (Yes/No)	SRC Justification	Analyte
Pesticides (µg/kg)								
Heptachlor	76-44-8	0/1	None	None	None	None	No	Not Detected
Heptachlor Epoxide	1024-57-3	0/1	None	None	None	None	No	Not Detected
Methoxychlor	72-43-5	0/1	None	None	None	None	No	Not Detected
p,p'-DDD	72-54-8	0/1	None	None	None	None	No	Not Detected
p,p'-DDE	72-55-9	0/1	None	None	None	None	No	Not Detected
p,p'-DDT	50-29-3	0/1	None	None	None	None	No	Not Detected
Toxaphene	8001-35-2	0/1	None	None	None	None	No	Not Detected
Polychlorinated Biphenyls (µg/kg)								
PCB-1016 (Arochlor 1016)	12674-11-2	0/1	None	None	None	None	No	Not Detected
PCB-1221 (Arochlor 1221)	11104-28-2	0/1	None	None	None	None	No	Not Detected
PCB-1232 (Arochlor 1232)	11141-16-5	0/1	None	None	None	None	No	Not Detected
PCB-1242 (Arochlor 1242)	53469-21-9	0/1	None	None	None	None	No	Not Detected
PCB-1248 (Arochlor 1248)	12672-29-6	0/1	None	None	None	None	No	Not Detected
PCB-1254 (Arochlor 1254)	11097-69-1	0/1	None	None	None	None	No	Not Detected
PCB-1260 (Arochlor 1260)	11096-82-5	0/1	None	None	None	None	No	Not Detected
PCB-1262 (Arochlor 1262)	37324-23-5	0/1	None	None	None	None	No	Not Detected
PCB-1268 (Arochlor 1268)	11100-14-4	0/1	None	None	None	None	No	Not Detected
Explosives (mg/kg)								
1,3,5-Trinitrobenzene	99-35-4	0/13	None	None	None	None	No	Not Detected
1,3-Dinitrobenzene	99-65-0	0/13	None	None	None	None	No	Not Detected
2,4,6-Trinitrotoluene	118-96-7	0/13	None	None	None	None	No	Not Detected
2,4-Dinitrotoluene	121-14-2	0/13	None	None	None	None	No	Not Detected
2,6-Dinitrotoluene	606-20-2	0/13	None	None	None	None	No	Not Detected
2-Amino-4,6-dinitrotoluene	35572-78-2	0/13	None	None	None	None	No	Not Detected
2-Nitrotoluene	99-08-1	0/13	None	None	None	None	No	Not Detected
3,5-Dinitroaniline	618-87-1	0/13	None	None	None	None	No	Not Detected

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2168 **Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013, at CC RVAAP-83 (continued)**
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Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification	Analyte
Explosives (mg/kg)								
3-Nitrotoluene	88-72-2	0/13	None	None	None	None	No	Not Detected
4-Amino-2,6-Dinitrotoluene	19406-51-0	0/13	None	None	None	None	No	Not Detected
4-Nitrotoluene	99-99-0	0/13	None	None	None	None	No	Not Detected
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	121-82-4	0/13	None	None	None	None	No	Not Detected
Nitrobenzene	98-95-3	0/13	None	None	None	None	No	Not Detected
Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine (HMX)	2691-41-0	0/13	None	None	None	None	No	Not Detected
Pentaerythritol Tetranitrate	78-11-5	0/13	None	None	None	None	No	Not Detected
Tetryl	479-45-8	0/13	None	None	None	None	No	Not Detected
Propellants (mg/kg)								
Nitroguanidine	556-88-7	0/13	None	None	None	None	No	Not Detected
Nitroglycerin	55-63-0	0/13	None	None	None	None	No	Not Detected
Nitrocellulose	9004-70-0	0/13	None	None	None	None	No	Not Detected
Metals (mg/kg)								
Aluminum	7429-90-5	13/13	2,020	17,900	9,960	19,500	No	Below Background
Antimony	7440-36-0	**13/13**	**0.84**	**1.3**	**1.07**	**0.96**	**Yes**	**Exceeds Background**
Arsenic	7440-38-2	13/13	1.9	18.2	10.05	19.8	No	Below Background
Barium	7440-39-3	13/13	11.7	110	60.85	124	No	Below Background
Beryllium	7440-41-7	**13/13**	**0.1**	**0.92**	**0.51**	**0.88**	**Yes**	**Exceeds Background**
Cadmium	7440-43-9	**1/13**	**0.046**	**0.046**	**0.05**	**0**	**Yes**	**Exceeds Background**
Calcium**	7440-70-2	13/13	6,030	46,700	26,365	35,500	No	Essential Nutrient
Chromium	7440-47-3	13/13	3.1	25.5	14.30	27.2	No	Below Background
Cobalt	7440-48-4	13/13	1.8	15.8	8.80	23.2	No	Below Background
Copper	7440-50-8	13/13	3.5	25.4	14.45	32.3	No	Below Background
Iron**	7439-89-6	13/13	4,310	39,100	21,705	35,200	No	Essential Nutrient
Lead	7439-92-1	**13/13**	**1.7**	**21**	**11.35**	**19.1**	**Yes**	**Exceeds Background**

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Table 5-1: Site-Related Chemical Determination for Subsurface Soil Results, August 2013 (continued)

Analyte	CAS Number	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria[(a)]	SRC (Yes/No)	SRC Justification
Magnesium**	7439-95-4	13/13	1,480	11,000	8,790	No	Essential Nutrient
Manganese	7439-96-5	13/13	65.2	594	3,030	No	Below Background
Mercury	7439-97-6	13/13	0.0063	0.034	0.044	No	Below Background
Nickel	7440-02-0	13/13	4.9	37.9	60.7	No	Below Background
Potassium**	7440-09-7	13/13	1,200	1,670	3,350	No	Essential Nutrient
Selenium	7782-49-2	0/13	None	None	None	No	Not Detected
Silver	7440-22-4	0/13	None	None	None	No	Not Detected
Thallium	7440-28-0	0/13	None	None	0.91	No	Not Detected
Sodium**	7440-23-5	13/13	49.2	96.4	145	No	Essential Nutrient
Vanadium	7440-62-2	12/13	14.7	25.6	37.6	No	Below Background
Zinc	7440-66-6	13/13	10	85	93.3	No	Below Background

Notes:

(a) The background concentrations for metals shown in this table were obtained from two sources: (1) The *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (Science International Applications Corporation 2010), and (2) *Final Phase II Remedial Investigation Report for Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio* (Science Applications International Corporation 2001).

Bold indicates analyte identified as an SRC.

Asterisk (**) denotes the chemical is an essential nutrient.

µg/kg = Microgram per kilogram.
BHC = Hexachlorocyclohexane.
CAS = Chemical abstract number.
DDD = p,p'-Dichlorodiphenyldichloroethane.
DDE = p,p'-Dichlorodiphenyldichloroethylene.
DDT = 1,1,1-trichloro-2,2-di(4-chlorophenyl)ethane.
mg/kg = Milligram per kilogram.
PCB = Polychlorinated biphenyl.
SRC = Site-related chemical.

Table 5-2: Summary of Analytical Results for Organic Chemicals Detected in Subsurface Soil Samples Collected August 2013 at CC RVAAP-83

						Sample Type:	Primary	Primary	Primary	Primary	Primary
						Location ID:	83-1039-DU1-SB	83-1039-DU1-SB	83-1039-DU1-SB	83-1039-DU1-SB1	83-1039-DU1-SB2
						Field Sample ID:	083SB-0001M-0001-SO	083SB-0002M-0001-SO	083SB-0015M-0001-SO	083SB-0003M-0001-SO	083SB-0004M-0001-SO
						Lab Sample ID:	337811	337812	337834	337813	337815
						Sample Date:	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013
						Location Type:	Horizontal ISM	Horizontal ISM	Horizontal ISM	Vertical ISM	Vertical ISM
						Sample Depth	1-4	4-7	7-10	4-10	4-10
		Facility-Wide Cleanup Goals			**USEPA RSL**						
			Resident Receptor								
Method/Chemical	**BKG**	**National Guard Trainee**	**Resident Child Farmer**	**Resident Adult Farmer**	**Industrial**	**Residential**					
Semivolatile Organic Compounds (µg/kg)											
2-Methylnaphthalene	None	2,384,000*	30,600*	238,000*			**3.1**	**1.5**	**2.9**	**1.2 J**	**1.6**
Acenaphthene	None	None	None	None	3,300,000	340,000	**1.3 J**	**1.2 J**	**0.52 J**	ND	**2.0**
Acenaphthylene	None	None	None	None	None	None	**0.46 J**	ND	ND	ND	ND
Anthracene	None	None	None	None	17,000,000	1,700,000	**1.1 J**	**2.4**	ND	**1.0 J**	**3.8**
Benzo(a)anthracene	None	4,770	650	221			**4.7**	**5.3**	ND	**1.5 J**	**16.0**
Benzo(a)pyrene	None	477	65	22			**2.6**	**2.1**	**0.59 J**	**0.78 J**	**6.8**
Benzo(b)fluoranthene	None	4,770	650	221			**6.7**	**6.0**	**4.7**	**4.5**	**16.0**
Benzo(g,h,i)perylene	None	None	None	None	None	None	**4.5**	**3.5**	**4.1**	**2.6**	**8.3**
Benzo(k)fluoranthene	None	47,700	6,500	2,210			**1.8**	**1.3 J**	ND	**0.70 J**	**3.1**
Chrysene	None	477,000	65,000	22,100			**4.1**	**5.6**	**12.0**	**7.6**	**14.0 J**
Dibenz(a,h)anthracene	None	477	65	22			**1.1 J**	**0.82 J**	**0.68 J**	**0.62 J**	**1.9**
Di-n-Butyl Phthalate	None	None	None	None	6,200,000	610,000	**140 J**	**90 J**	ND	ND	ND
Di-n-Octylphthalate	None	None	None	None	620,000	61,000	ND	**91 J**	ND	ND	ND
Fluoranthene	None	5,087,00*	163,000*	276,000*			**7.4**	**7.5**	**1.8**	**2.3**	**24.0 J**
Fluorene	None	11,458,000*	243,000*	737,000*			**2.9**	**1.2 J**	**0.67 J**	**0.56 J**	**1.3 J**
Indeno(1,2,3-c,d)pyrene	None	4,770	650	221			**3.2**	**2.2**	**1.1 J**	**1.3 J**	**5.2**
Naphthalene	None	1,541,000*	122,000*	368,000*			**2.6**	**1.9**	**2.6**	**1.5 J**	**1.8**
Phenanthrene	None	None	None	None	None	None	**9.2**	**7.3**	**9.1**	**4.6**	**16.0**
Pyrene	None	3,815,000*	122,000*	207,000*			**5.9**	**5.9**	**1.8**	**2.0**	**18.0**
Pesticides (µg/kg)											
delta-BHC (delta-Hexachlorocyclohexane)	None	None	None	None	None	None	NS	NS	NS	NS	NS

Table 5-2: Summary of Analytical Results for Organic Chemicals Detected in Subsurface Soil Samples Collected August 2013 at CC RVAAP-83 (continued)

						Sample Type:	Primary	Duplicate	Primary	Primary
						Location ID:	83-1039-DU1-SB3	83-1039-DU1-SB3 (FD)	83-1039-DU1-SB4	83-1039-DU1-SB5
						Field Sample ID:	083SB-0005M-0001-SO	083SB-0006M-0001-SO	083SB-0008M-0001-SO	083SB-0009M-0001-SO
						Lab Sample ID:	337818	337820	337822	337824
						Sample Date:	08/12/2013	08/12/2013	08/12/2013	08/12/2013
						Location Type:	Vertical ISM	Vertical ISM	Vertical ISM	Vertical ISM
						Sample Depth	4-10	4-10	4-10	4-10
		Facility-Wide Cleanup Goals			**USEPA RSL**					
			Resident Receptor							
Method/Chemical	**BKG**	**National Guard Trainee**	**Resident Child Farmer**	**Resident Adult Farmer**	**Industrial**	**Residential**				
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene	None	2,384,000*	30,600*	238,000*			**1.9**	**2.0**	**1.7**	**2.8**
Acenaphthene	None	None	None	None	3,300,000	340,000	**0.78 J**	**0.71 J**	ND	**0.54 J**
Acenaphthylene	None	None	None	None	None	None	ND	ND	ND	ND
Anthracene	None	None	None	None	17,000,000	1,700,000	**2.1**	**7.5**	ND	ND
Benzo(a)anthracene	None	4,770	650	221			**7.3**	**11.0**	ND	**2.3**
Benzo(a)pyrene	None	477	65	22			**3.2**	**1.4 J**	**0.45 J**	**1.2 J**
Benzo(b)fluoranthene	None	4,770	650	221			**8.9**	**5.1**	**4.5**	**5.7**
Benzo(g,h,i)perylene	None	None	None	None	None	None	**6.0**	**3.8**	**3.0**	**5.4**
Benzo(k)fluoranthene	None	47,700	6,500	2,210			**1.9**	**0.98 J**	ND	**0.57 J**
Chrysene	None	477,000	65,000	22,100			**8.3**	**8.3**	**9.4**	**9.6**
Dibenz(a,h)anthracene	None	477	65	22			**1.2 J**	**0.75 J**	**0.57 J**	**0.91 J**
Di-n-Butyl Phthalate	None	None	None	None	6,200,000	610,000	ND	ND	ND	ND
Di-n-Octylphthalate	None	None	None	None	620,000	61,000	ND	ND	ND	ND
Fluoranthene	None	5,087,00*	163,000*	276,000*			**10.0**	**4.1**	**1.5 J**	**3.1**
Fluorene	None	11,458,000*	243,000*	737,000*			**0.93 J**	**0.74 J**	**0.62 J**	**0.54 J**
Indeno(1,2,3-c,d)pyrene	None	4,770	650	221			**3.6**	**1.8**	**1.1 J**	**1.9**
Naphthalene	None	1,541,000*	122,000*	368,000*			**2.0**	**2.6**	**1.7**	**2.9**
Phenanthrene	None	None	None	None	None	None	**11.0**	**7.7**	**4.7**	**7.4**
Pyrene	None	3,815,000*	122,000*	207,000*			**8.1**	**3.6**	**1.4 J**	**3.2**
Pesticides (µg/kg)										
delta-BHC (delta-Hexachlorocyclohexane)	None	None	None	None	None	None	NS	NS	NS	NS

Table 5-2: Summary of Analytical Results for Organic Chemicals Detected in Subsurface Soil Samples Collected August 2013 at CC RVAAP-83 (continued)

						Sample Type:	Primary	Primary	Primary	Primary
						Location ID:	83-1039-DU1-SB5	83-1039-DU1-SB6	83-1039-DU1-SB7	83-1039-DU1-SB8
						Field Sample ID:	083SB-0014-0001-SO	083SB-0011M-0001-SO	083SB-0012M-0001-SO	083SB-0013M-0001-SO
						Lab Sample ID:	337832	337826	337828	337830
						Sample Date:	08/12/2013	08/12/2013	08/12/2013	08/12/2013
						Location Type:	DSB Composite	Vertical ISM	Vertical ISM	Vertical ISM
						Sample Depth	7-13	4-10	4-10	4-10
		Facility-Wide Cleanup Goals			**USEPA RSL**					
			Resident Receptor							
Method/Chemical	**BKG**	**National Guard Trainee**	**Resident Child Farmer**	**Resident Adult Farmer**	**Industrial**	**Residential**				
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene	None	2,384,000*	30,600*	238,000*			**3.7**	**2.2**	**2.1**	**1.8**
Acenaphthene	None	None	None	None	3,300,000	340,000	ND	**0.54 J**	**0.57 J**	ND
Acenaphthylene	None	None	None	None	None	None	ND	ND	ND	ND
Anthracene	None	None	None	None	17,000,000	1,700,000	ND	ND	ND	ND
Benzo(a)anthracene	None	4,770	650	221			ND	ND	**2.8**	ND
Benzo(a)pyrene	None	477	65	22			**0.68 J**	**0.75 J**	**1.4 J**	ND
Benzo(b)fluoranthene	None	4,770	650	221			**5.9**	**3.9**	**5.6**	**3.2**
Benzo(g,h,i)perylene	None	None	None	None	None	None	**6.5**	**4.3**	**3.6**	**1.5**
Benzo(k)fluoranthene	None	47,700	6,500	2,210			ND	ND	**0.95 J**	ND
Chrysene	None	477,000	65,000	22,100			**16.0**	**8.6**	**8.3**	**6.5**
Dibenz(a,h)anthracene	None	477	65	22			**0.89 J**	**0.60 J**	**0.66 J**	**0.65 J**
Di-n-Butyl Phthalate	None	None	None	None	6,200,000	610,000	ND	ND	ND	ND
Di-n-Octylphthalate	None	None	None	None	620,000	61,000	ND	ND	ND	ND
Fluoranthene	None	5,087,00*	163,000*	276,000*			**2.5**	**1.5 J**	**4.5**	**1.1 J**
Fluorene	None	11,458,000 *	243,000*	737,000*			ND	**0.49 J**	**0.66 J**	**0.50 J**
Indeno(1,2,3-c,d)pyrene	None	4,770	650	221			**1.4 J**	**1.3 J**	**1.7**	**0.58 J**
Naphthalene	None	1,541,000*	122,000*	368,000*			**3.7**	**2.2**	**2.4**	**2.8**
Phenanthrene	None	None	None	None	None	None	**23.0**	**6.4**	**9.1**	**3.9**
Pyrene	None	3,815,000*	122,000*	207,000*			**2.6**	**1.8**	**3.6**	**0.72 J**
Pesticides (µg/kg)										
delta-BHC (delta-Hexachlorocyclohexane)	None	None	None	None	None	None	NS	NS	**1.1 J**	NS

Notes:
Yellow shading of a result indicates concentration is greater than the FWCUG for the most stringent Resident Receptor.
The FWCUGs used for data comparison are the values for the most stringent Resident Receptor FWCUG between the adult and the child receptor using the Target Cancer Risk (TCR) level of 10^{-6}. The RSLs shown are also the values for the TCR 10^{-6}. Any exceptions are noted with an asterisk (*).
Asterisk (*) indicates non-carcinogenic FWCUGs and RSLs using the Target Hazard Quotient (THQ) = 0.1).
Bold indicates chemical detected.
µg/kg = Micrograms per kilogram.
BKG = Background.
DU = Decision Unit.
ft = Feet.
FWCUG = Facility-Wide Cleanup Goal (Science Applications International Corporation 2010).
ID = Identification.
ISM = Incremental sampling methodology.
J = Estimated value less than reporting limits.
mg/kg = Milligram per kilogram.
NA = Not applicable.
ND = Not detected at the Limit of Detection.
NS = Not sampled.
RSL = Regional Screening Level (USEPA 2014).
RSLs are presented only for chemicals without Resident Receptor FWCUGs.
USEPA = United States Environmental Protection Agency.
Note: The National Guard Trainee FWCUGs and the Industrial RSLs are shown on this table for comparison purposes only.

Table 5-3: Summary of Analytical Results for Inorganic Chemicals Detected in Subsurface Soil Samples Collected August 2013 at CC RVAAP-83

						Sample Type:	Primary	Primary	Primary	Primary	Primary	Primary
						Location ID:	83-1039-DU1-SB	83-1039-DU1-SB	83-1039-DU1-SB	83-1039-DU1-SB1	83-1039-DU1-SB2	83-1039-DU1-SB3
						Field Sample ID:	083SB-0001M-0001-SO	083SB-0002M-0001-SO	083SB-0015M-0001-SO	083SB-0003M-0001-SO	083SB-0004M-0001-SO	083SB-0005M-0001-SO
						Lab Sample ID:	337811	337812	337834	337813	337815	337818
						Sample Date:	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013
						Location Type:	Horizontal ISM	Horizontal ISM	Horizontal ISM	Vertical ISM	Vertical ISM	Vertical ISM
						Sample Depth (ft)	1-4	4-7	7-10	4-10	4-10	4-10
		Facility-Wide Cleanup Goals			**USEPA RSL**							
			Resident Receptor									
Method/Chemical	**BKG**	**National Guard Trainee**	**Resident Child Farmer**	**Resident Adult Farmer**	**Industrial**	**Residential**						
Metals (mg/kg)												
Aluminum	19,500	3,496*	7,380*	52,923*			**11,300**	**12,300**	**2,020**	**17,900**	**10,900**	**12,500**
Antimony	0.96	175*	2.82*	13.6*			**1.0**	**1.1**	**0.86 J**	**0.96**	**1.0 J**	**1.2 J**
Arsenic	19.8	2.78	0.524	0.425			**13.9**	**16.6**	**1.9**	**18.2**	**13.3 J**	**13.9**
Barium	124	351*	1,413*	8,966*			**73.5 J**	**83.4 J**	**11.7 J**	**110 J**	**76.5 J**	**78.1 J**
Beryllium	0.88	None	None	None	200	16	**0.65**	**0.67**	**0.10**	**0.92**	**0.56 J**	**0.68 J**
Cadmium	0	10.9	6.41*	22.3*			ND	ND	ND	ND	ND	ND
Calcium**	35,500	None	None	None	None	None	**23,100**	**31,900**	**6,030**	**46,700**	**31,600**	**28,900 J**
Chromium	27.2	329,763*	8,174*	19,694*			**17.0**	**18.7**	**3.1**	**25.5**	**15.4 J**	**18.3 J**
Cobalt	23.2	7.03	131*	803			**11.9**	**13.7**	**1.8**	**15.8**	**11.1 J**	**11.8 J**
Copper	32.3	25,368*	311*	2,714*			**20.2**	**20.7**	**3.5**	**25.4**	**14.2 J**	**21.3 J**
Iron**	35,200	184,370*	2,313*	19,010*			**24,800**	**27,800**	**4,310**	**39,100**	**25,100**	**27,200**
Lead	19.1	None	None	None	800	400	**21.0**	**12.2**	**1.7**	**16.6**	**8.5 J**	**11.8 J**
Magnesium**	8,790	None	None	None	None	None	**6,070 J**	**8,100 J**	**1,480 J**	**11,000 J**	**6,720 J**	**7,530 J**
Manganese	3,030	35.1*	293*	1,482*			**432**	**515**	**65.2**	**594**	**481**	**428**
Mercury	0.044	172*	2.27*	16.5*			**0.034 J**	**0.010 J**	**0.0076 J**	**0.0090 J**	**0.0072 J**	**0.013 J**
Nickel	60.7	12,639*	155*	1,346*			**27.8**	**31.4**	**4.9**	**37.9**	**24.5 J**	**29.2 J**
Potassium**	3,350	None	None	None	None	None	**1,200**	**1,420**	**1,670**	**1,590**	**1,660**	**1,300**
Sodium **	145	None	None	None	None	None	**49.2**	**68.2**	**87.5**	**66.6**	**67.0**	**55.2**
Vanadium	37.6	2,304*	44.9*	156*			**18.3**	**18.5**	ND	**25.6**	**15.5 J**	**18.8 J**
Zinc	93.3	187,269*	2,321*	19,659*			**60.3**	**63.0**	**10.0**	**85.0**	**46.1 J**	**70.2 J**

Table 5-3: Summary of Analytical Results for Inorganic Chemicals Detected in Subsurface Soil Samples Collected August 2013 at CC RVAAP-83 (Continued)

						Sample Type:	Duplicate	Primary	Primary	Primary	Primary	Primary	Primary
						Location ID:	83-1039-DU1-SB3 (FD)	83-1039-DU1-SB4	83-1039-DU1-SB5	83-1039-DU1-SB5	83-1039-DU1-SB6	83-1039-DU1-SB7	83-1039-DU1-SB8
						Field Sample ID:	083SB-0006M-0001-SO	083SB-0008M-0001-SO	083SB-0009M-0001-SO	083SB-0014-0001-SO	083SB-0011M-0001-SO	083SB-0012M-0001-SO	083SB-0013M-0001-SO
						Lab Sample ID:	337820	337822	337824	337832	337826	337828	337830
						Sample Date:	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013	08/12/2013
						Location Type:	Vertical ISM	Vertical ISM	Vertical ISM	DSB Composite	Vertical ISM	Vertical ISM	Vertical ISM
						Sample Depth (ft)	4-10	4-10	4-10	7-13	4-10	4-10	4-10
		Facility-Wide Cleanup Goals			**USEPA RSL**								
			Resident Receptor										
Method/Chemical	**BKG**	**National Guard Trainee**	**Resident Child Farmer**	**Resident Adult Farmer**	**Industrial**	**Residential**							
Metals (mg/kg)													
Aluminum	19,500	3,496*	7,380*	52,923*			**10,800**	**12,500**	**11,600**	**8,880**	**11,200**	**11,300**	**10,100**
Antimony	0.96	175*	2.82*	13.6*			**1.0 J**	**0.92 J**	**0.92 J**	**0.84 J**	**1.0 J**	**1.1 J**	**1.3 J**
Arsenic	19.8	2.78	0.524	0.425			**12.6**	**11.7**	**11.6**	**7.0**	**12.6**	**11.1**	**11.0**
Barium	124	351*	1,413*	8,966*			**70.2 J**	**80.4 J**	**76.2 J**	**56.3 J**	**79.8 J**	**76.6 J**	**58.6 J**
Beryllium	0.88	None	None	None	200	16	**0.61**	**0.64**	**0.59**	**0.47**	**0.58**	**0.57**	**0.53**
Cadmium	0	10.9	6.41*	22.3*			**0.046 J**	ND	ND	ND	ND	ND	ND
Calcium**	35,500	None	None	None	None	None	**24,400**	**36,200**	**30,500**	**25,200**	**33,900**	**32,200**	**27,400**
Chromium	27.2	329,763*	8,174*	19,694*			**16.2**	**18.5**	**17.6**	**14.8**	**16.6**	**16.2**	**15.1**
Cobalt	23.2	7.03	131*	803			**11.0**	**12.5**	**11.6**	**6.5**	**12.9**	**8.8**	**9.1**
Copper	32.3	25,368*	311*	2,714*			**19.9**	**20.7**	**19.3**	**11.1**	**18.5**	**16.7**	**16.9**
Iron**	35,200	184,370*	2,313*	19,010*			**23,800**	**26,000**	**25,000**	**19,200**	**24,600**	**24,200**	**22,300**
Lead	19.1	None	None	None	800	400	**10.8**	**11.5**	**10.7**	**6.4**	**9.1**	**9.2**	**8.6**
Magnesium**	8,790	None	None	None	None	None	**6,660 J**	**8,800 J**	**8,030 J**	**4,750 J**	**7,730 J**	**6,980 J**	**6,890 J**
Manganese	3,030	35.1*	293*	1,482*			**380**	**441**	**387**	**275**	**482**	**307**	**314**
Mercury	0.044	172*	2.27*	16.5*			**0.012 J**	**0.0097 J**	**0.0097 J**	**0.0075 J**	**0.0073 J**	**0.0065 J**	**0.0063 J**
Nickel	60.7	12,639*	155*	1,346*			**27.0**	**29.9**	**27.9**	**16.5**	**28.9**	**22.7**	**23.0**
Potassium**	3,350	None	None	None	None	None	**1,250**	**1,610**	**1,570**	**1,630**	**1,580**	**1,480**	**1,480**
Sodium **	145	None	None	None	None	None	**53.7**	**72.6**	**76.1**	**81.6**	**91.1**	**85.3**	**96.4**
Vanadium	37.6	2,304*	44.9*	156*			**16.7**	**18.8**	**17.8**	**14.7**	**16.6**	**16.5**	**15.5**
Zinc	93.3	187,269*	2,321*	19,659*			**64.1**	**62.2**	**58.9**	**33.6**	**54.7**	**51.3**	**48.7**

Notes:
Yellow shading of a result indicates concentration is greater than the FWCUG for the most stringent Resident Receptor.
The FWCUGs used for data comparison are the values for the most stringent Resident Receptor FWCUG between the adult and the child receptor using the Target Cancer Risk (TCR) level of 10^{-6}. The RSLs shown are also the values for the TCR 10^{-6}. Any exceptions are noted with an asterisk (*).
Asterisk (*) indicates non-carcinogenic FWCUGs and RSLs using the Target Hazard Quotient (THQ) = 0.1).
Asterisk (**) denotes the chemical is an essential nutrient.
Bold indicates chemical detected.
BKG = Background.
DU = Decision Unit.
ft = Feet.
FWCUG = Facility-Wide Cleanup Goal (Science Applications International Corporation 2010).
ID = Identification.
ISM = Incremental sampling methodology.
J = Estimated value less than reporting limits.
mg/kg = Milligram per kilogram.
ND = Not detected at the Limit of Detection.
RSL = Regional Screening Level (USEPA 2014).
RSLs are presented only for chemicals without Resident Receptor FWCUGs.
USEPA = United States Environmental Protection Agency.
The National Guard Trainee FWCUGs and the Industrial RSLs are shown on this table for comparison purposes only.

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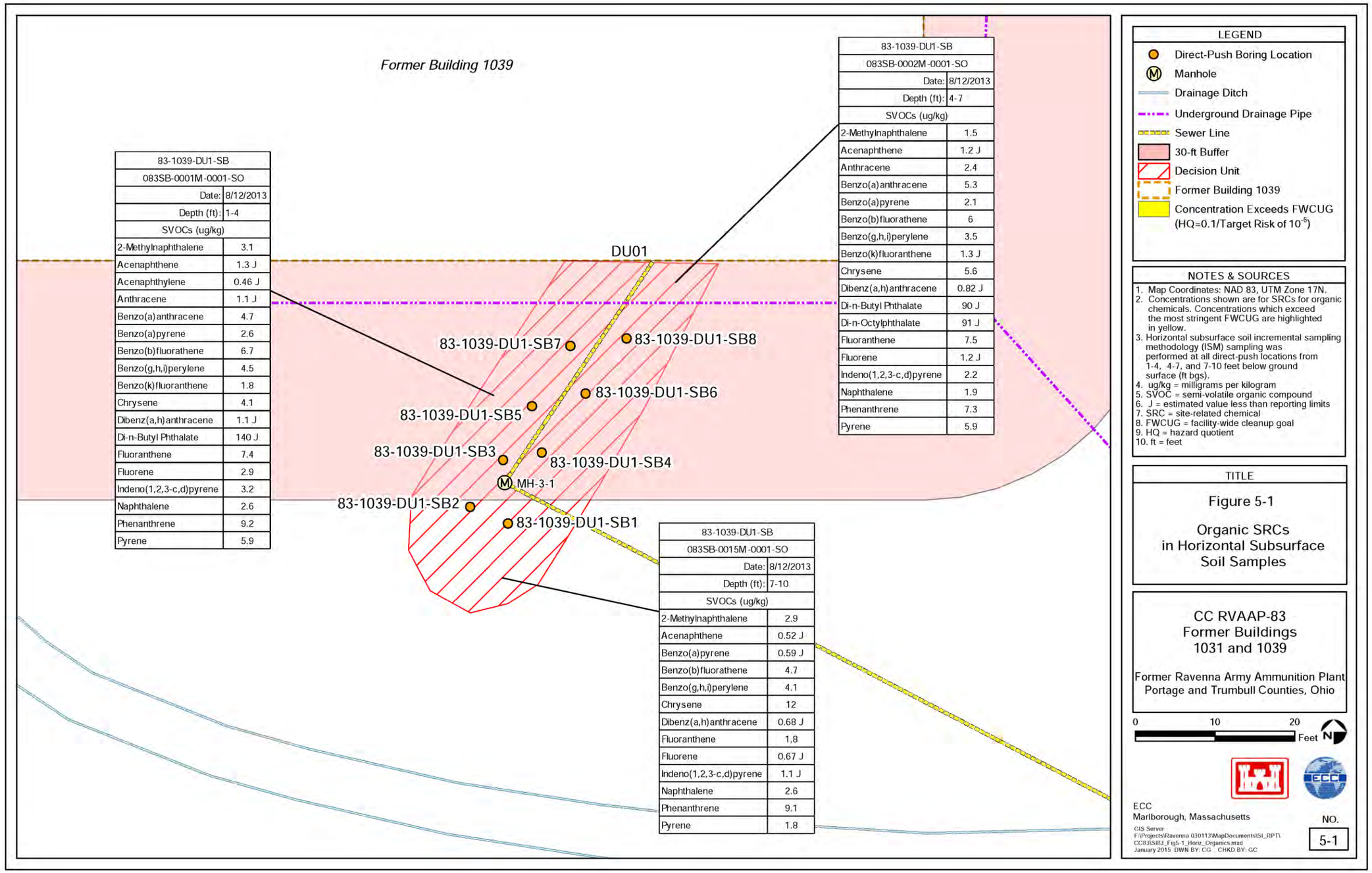
Former Building 1039
DU01
83-1039-DU1-SB7
83-1039-DU1-SB8
83-1039-DU1-SB6
83-1039-DU1-SB5
83-1039-DU1-SB3
83-1039-DU1-SB4
MH-3-1
83-1039-DU1-SB2
83-1039-DU1-SB1
83-1039-DU1-SB
083SB-0001M-0001-SO
Date: 8/12/2013
Depth (ft): 1-4
SVOCs (ug/kg)
2-Methylnaphthalene 3.1
Acenaphthene 1.3 J
Acenaphthylene 0.46 J
Anthracene 1.1 J
Benzo(a)anthracene 4.7
Benzo(a)pyrene 2.6
Benzo(b)fluorathene 6.7
Benzo(g,h,i)perylene 4.5
Benzo(k)fluoranthene 1.8
Chrysene 4.1
Dibenz(a,h)anthracene 1.1 J
Di-n-Butyl Phthalate 140 J
Fluoranthene 7.4
Fluorene 2.9
Indeno(1,2,3-c,d)pyrene 3.2
Naphthalene 2.6
Phenanthrene 9.2
Pyrene 5.9
83-1039-DU1-SB
083SB-0002M-0001-SO
Date: 8/12/2013
Depth (ft): 4-7
SVOCs (ug/kg)
2-Methylnaphthalene 1.5
Acenaphthene 1.2 J
Anthracene 2.4
Benzo(a)anthracene 5.3
Benzo(a)pyrene 2.1
Benzo(b)fluorathene 6
Benzo(g,h,i)perylene 3.5
Benzo(k)fluoranthene 1.3 J
Chrysene 5.6
Dibenz(a,h)anthracene 0.82 J
Di-n-Butyl Phthalate 90 J
Di-n-Octylphthalate 91 J
Fluoranthene 7.5
Fluorene 1.2 J
Indeno(1,2,3-c,d)pyrene 2.2
Naphthalene 1.9
Phenanthrene 7.3
Pyrene 5.9
83-1039-DU1-SB
083SB-0015M-0001-SO
Date: 8/12/2013
Depth (ft): 7-10
SVOCs (ug/kg)
2-Methylnaphthalene 2.9
Acenaphthene 0.52 J
Benzo(a)pyrene 0.59 J
Benzo(b)fluorathene 4.7
Benzo(g,h,i)perylene 4.1
Chrysene 12
Dibenz(a,h)anthracene 0.68 J
Fluoranthene 1.8
Fluorene 0.67 J
Indeno(1,2,3-c,d)pyrene 1.1 J
Naphthalene 2.6
Phenanthrene 9.1
Pyrene 1.8
LEGEND
Direct-Push Boring Location
Manhole
Drainage Ditch
Underground Drainage Pipe
Sewer Line
30-ft Buffer
Decision Unit
Former Building 1039
Concentration Exceeds FWCUG (HQ=0.1/Target Risk of 10-6)
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N.
2. Concentrations shown are for SRCs for organic chemicals. Concentrations which exceed the most stringent FWCUG are highlighted in yellow.
3. Horizontal subsurface soil incremental sampling methodology (ISM) sampling was performed at all direct-push locations from 1-4, 4-7, and 7-10 feet below ground surface (ft bgs).
4. ug/kg = milligrams per kilogram
5. SVOC = semi-volatile organic compound
6. J = estimated value less than reporting limits
7. SRC = site-related chemical
8. FWCUG = facility-wide cleanup goal
9. HQ = hazard quotient
10. ft = feet
TITLE
Figure 5-1
Organic SRCs in Horizontal Subsurface Soil Samples
CC RVAAP-83 Former Buildings 1031 and 1039
Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio
0 10 20 Feet
N
ECC
Marlborough, Massachusetts
GIS Server
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January 2015 DWN BY: CG CHKD BY: GC
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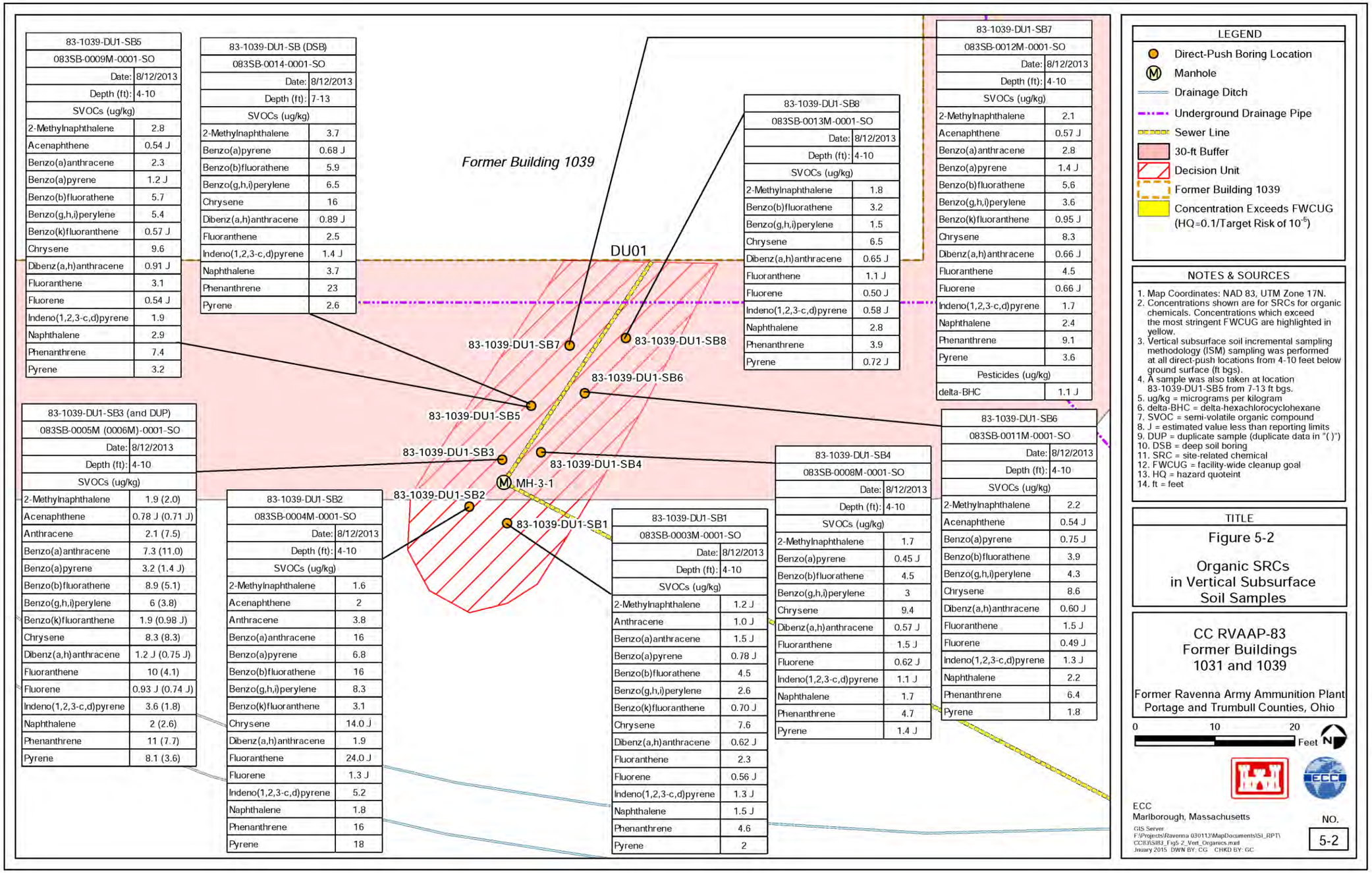
Former Building 1039
DU01
83-1039-DU1-SB7
83-1039-DU1-SB8
83-1039-DU1-SB6
83-1039-DU1-SB5
83-1039-DU1-SB3
83-1039-DU1-SB4
MH-3-1
83-1039-DU1-SB2
83-1039-DU1-SB1
83-1039-DU1-SB5
083SB-0009M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 2.8
Acenaphthene 0.54 J
Benzo(a)anthracene 2.3
Benzo(a)pyrene 1.2 J
Benzo(b)fluorathene 5.7
Benzo(g,h,i)perylene 5.4
Benzo(k)fluoranthene 0.57 J
Chrysene 9.6
Dibenz(a,h)anthracene 0.91 J
Fluoranthene 3.1
Fluorene 0.54 J
Indeno(1,2,3-c,d)pyrene 1.9
Naphthalene 2.9
Phenanthrene 7.4
Pyrene 3.2
83-1039-DU1-SB (DSB)
083SB-0014-0001-SO
Date: 8/12/2013
Depth (ft): 7-13
SVOCs (ug/kg)
2-Methylnaphthalene 3.7
Benzo(a)pyrene 0.68 J
Benzo(b)fluorathene 5.9
Benzo(g,h,i)perylene 6.5
Chrysene 16
Dibenz(a,h)anthracene 0.89 J
Fluoranthene 2.5
Indeno(1,2,3-c,d)pyrene 1.4 J
Naphthalene 3.7
Phenanthrene 23
Pyrene 2.6
83-1039-DU1-SB8
083SB-0013M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 1.8
Benzo(b)fluorathene 3.2
Benzo(g,h,i)perylene 1.5
Chrysene 6.5
Dibenz(a,h)anthracene 0.65 J
Fluoranthene 1.1 J
Fluorene 0.50 J
Indeno(1,2,3-c,d)pyrene 0.58 J
Naphthalene 2.8
Phenanthrene 3.9
Pyrene 0.72 J
83-1039-DU1-SB7
083SB-0012M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 2.1
Acenaphthene 0.57 J
Benzo(a)anthracene 2.8
Benzo(a)pyrene 1.4 J
Benzo(b)fluorathene 5.6
Benzo(g,h,i)perylene 3.6
Benzo(k)fluoranthene 0.95 J
Chrysene 8.3
Dibenz(a,h)anthracene 0.66 J
Fluoranthene 4.5
Fluorene 0.66 J
Indeno(1,2,3-c,d)pyrene 1.7
Naphthalene 2.4
Phenanthrene 9.1
Pyrene 3.6
Pesticides (ug/kg)
delta-BHC 1.1 J
83-1039-DU1-SB3 (and DUP)
083SB-0005M (0006M)-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 1.9 (2.0)
Acenaphthene 0.78 J (0.71 J)
Anthracene 2.1 (7.5)
Benzo(a)anthracene 7.3 (11.0)
Benzo(a)pyrene 3.2 (1.4 J)
Benzo(b)fluorathene 8.9 (5.1)
Benzo(g,h,i)perylene 6 (3.8)
Benzo(k)fluoranthene 1.9 (0.98 J)
Chrysene 8.3 (8.3)
Dibenz(a,h)anthracene 1.2 J (0.75 J)
Fluoranthene 10 (4.1)
Fluorene 0.93 J (0.74 J)
Indeno(1,2,3-c,d)pyrene 3.6 (1.8)
Naphthalene 2 (2.6)
Phenanthrene 11 (7.7)
Pyrene 8.1 (3.6)
83-1039-DU1-SB2
083SB-0004M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 1.6
Acenaphthene 2
Anthracene 3.8
Benzo(a)anthracene 16
Benzo(a)pyrene 6.8
Benzo(b)fluorathene 16
Benzo(g,h,i)perylene 8.3
Benzo(k)fluoranthene 3.1
Chrysene 14.0 J
Dibenz(a,h)anthracene 1.9
Fluoranthene 24.0 J
Fluorene 1.3 J
Indeno(1,2,3-c,d)pyrene 5.2
Naphthalene 1.8
Phenanthrene 16
Pyrene 18
83-1039-DU1-SB1
083SB-0003M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 1.2 J
Anthracene 1.0 J
Benzo(a)anthracene 1.5 J
Benzo(a)pyrene 0.78 J
Benzo(b)fluorathene 4.5
Benzo(g,h,i)perylene 2.6
Benzo(k)fluoranthene 0.70 J
Chrysene 7.6
Dibenz(a,h)anthracene 0.62 J
Fluoranthene 2.3
Fluorene 0.56 J
Indeno(1,2,3-c,d)pyrene 1.3 J
Naphthalene 1.5 J
Phenanthrene 4.6
Pyrene 2
83-1039-DU1-SB4
083SB-0008M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 1.7
Benzo(a)pyrene 0.45 J
Benzo(b)fluorathene 4.5
Benzo(g,h,i)perylene 3
Chrysene 9.4
Dibenz(a,h)anthracene 0.57 J
Fluoranthene 1.5 J
Fluorene 0.62 J
Indeno(1,2,3-c,d)pyrene 1.1 J
Naphthalene 1.7
Phenanthrene 4.7
Pyrene 1.4 J
83-1039-DU1-SB6
083SB-0011M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
SVOCs (ug/kg)
2-Methylnaphthalene 2.2
Acenaphthene 0.54 J
Benzo(a)pyrene 0.75 J
Benzo(b)fluorathene 3.9
Benzo(g,h,i)perylene 4.3
Chrysene 8.6
Dibenz(a,h)anthracene 0.60 J
Fluoranthene 1.5 J
Fluorene 0.49 J
Indeno(1,2,3-c,d)pyrene 1.3 J
Naphthalene 2.2
Phenanthrene 6.4
Pyrene 1.8
LEGEND
Direct-Push Boring Location
Manhole
Drainage Ditch
Underground Drainage Pipe
Sewer Line
30-ft Buffer
Decision Unit
Former Building 1039
Concentration Exceeds FWCUG (HQ=0.1/Target Risk of 10-6)
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N.
2. Concentrations shown are for SRCs for organic chemicals. Concentrations which exceed the most stringent FWCUG are highlighted in yellow.
3. Vertical subsurface soil incremental sampling methodology (ISM) sampling was performed at all direct-push locations from 4-10 feet below ground surface (ft bgs).
4. A sample was also taken at location 83-1039-DU1-SB5 from 7-13 ft bgs.
5. ug/kg = micrograms per kilogram
6. delta-BHC = delta-hexachlorocyclohexane
7. SVOC = semi-volatile organic compound
8. J = estimated value less than reporting limits
9. DUP = duplicate sample (duplicate data in "( )")
10. DSB = deep soil boring
11. SRC = site-related chemical
12. FWCUG = facility-wide cleanup goal
13. HQ = hazard quoteint
14. ft = feet
TITLE
Figure 5-2
Organic SRCs in Vertical Subsurface Soil Samples
CC RVAAP-83
Former Buildings
1031 and 1039
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
0 10 20 Feet
N
ECC
Marlborough, Massachusetts
GIS Server
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January 2015 DWN BY: CG CHKD BY: GC
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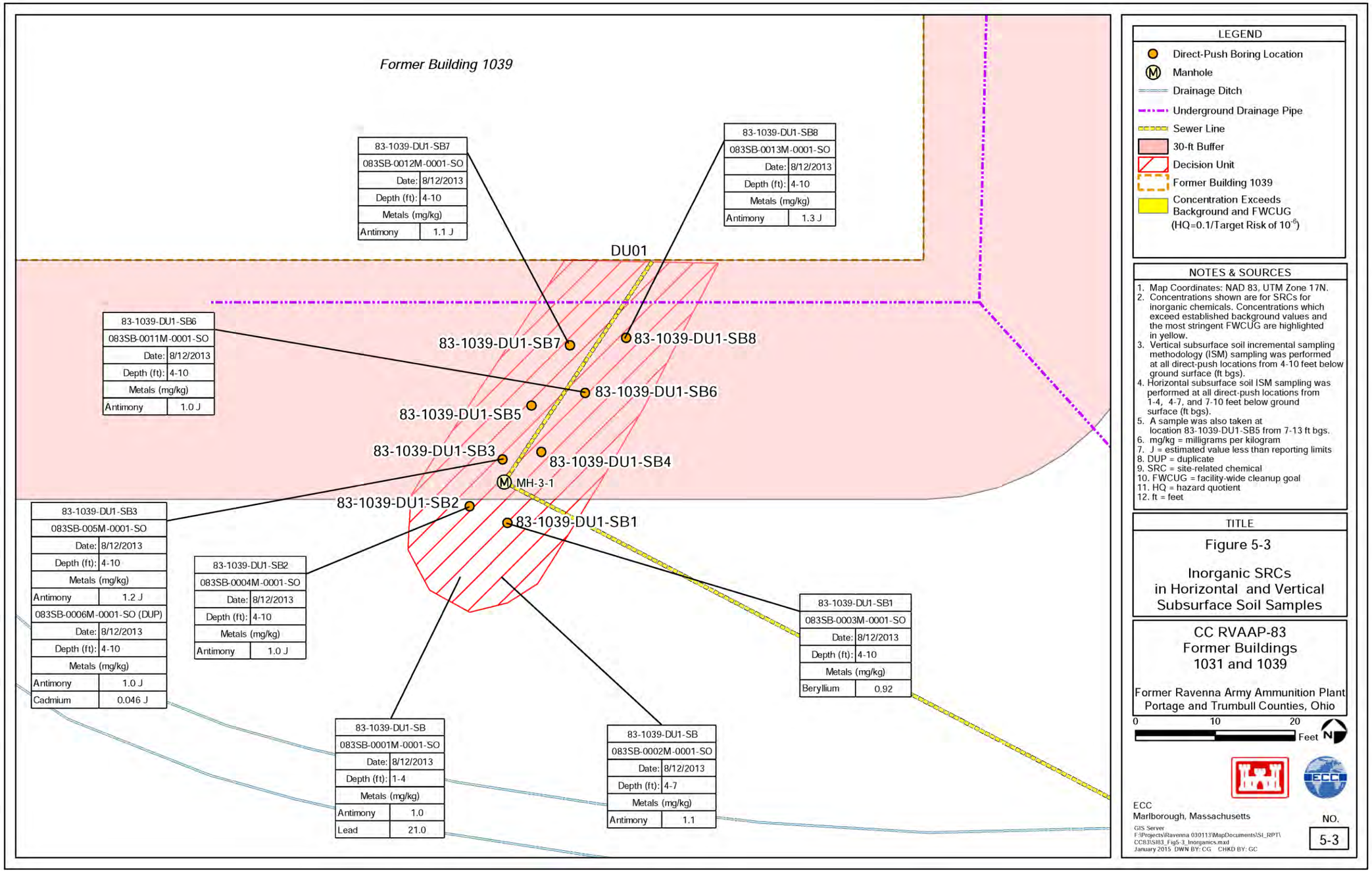
Former Building 1039
DU01
83-1039-DU1-SB7
083SB-0012M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.1 J
83-1039-DU1-SB8
083SB-0013M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.3 J
83-1039-DU1-SB6
083SB-0011M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.0 J
83-1039-DU1-SB7
83-1039-DU1-SB8
83-1039-DU1-SB6
83-1039-DU1-SB5
83-1039-DU1-SB3
83-1039-DU1-SB4
MH-3-1
83-1039-DU1-SB2
83-1039-DU1-SB1
83-1039-DU1-SB3
083SB-005M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.2 J
083SB-0006M-0001-SO (DUP)
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.0 J
Cadmium 0.046 J
83-1039-DU1-SB2
083SB-0004M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Antimony 1.0 J
83-1039-DU1-SB1
083SB-0003M-0001-SO
Date: 8/12/2013
Depth (ft): 4-10
Metals (mg/kg)
Beryllium 0.92
83-1039-DU1-SB
083SB-0001M-0001-SO
Date: 8/12/2013
Depth (ft): 1-4
Metals (mg/kg)
Antimony 1.0
Lead 21.0
83-1039-DU1-SB
083SB-0002M-0001-SO
Date: 8/12/2013
Depth (ft): 4-7
Metals (mg/kg)
Antimony 1.1
LEGEND
Direct-Push Boring Location
Manhole
Drainage Ditch
Underground Drainage Pipe
Sewer Line
30-ft Buffer
Decision Unit
Former Building 1039
Concentration Exceeds Background and FWCUG (HQ=0.1/Target Risk of 10-6)
NOTES & SOURCES
1. Map Coordinates: NAD 83, UTM Zone 17N.
2. Concentrations shown are for SRCs for inorganic chemicals. Concentrations which exceed established background values and the most stringent FWCUG are highlighted in yellow.
3. Vertical subsurface soil incremental sampling methodology (ISM) sampling was performed at all direct-push locations from 4-10 feet below ground surface (ft bgs).
4. Horizontal subsurface soil ISM sampling was performed at all direct-push locations from 1-4, 4-7, and 7-10 feet below ground surface (ft bgs).
5. A sample was also taken at location 83-1039-DU1-SB5 from 7-13 ft bgs.
6. mg/kg = milligrams per kilogram
7. J = estimated value less than reporting limits
8. DUP = duplicate
9. SRC = site-related chemical
10. FWCUG = facility-wide cleanup goal
11. HQ = hazard quotient
12. ft = feet
TITLE
Figure 5-3
Inorganic SRCs in Horizontal and Vertical Subsurface Soil Samples
CC RVAAP-83
Former Buildings 1031 and 1039
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio
0 10 20
Feet
N
ECC
Marlborough, Massachusetts
GIS Server
F:\Projects\Ravenna 030113\MapDocuments\SI_RPT\CC83\SI83_Fig5-3_Inorganics.mxd
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6. EXPOSURE PATHWAYS

6.1 SOIL EXPOSURE AND AIR PATHWAYS

6.1.1 Physical Conditions

The site is located within Hiram Till glacial deposits in an area referred to as the Administration Area. There is predominantly one type of silty loam soil beneath the Former Building 1039 AOC; Mahoning silt loams (0-2 and 2-6 percent slopes). The Mahoning silt loam, 0-2 percent slopes, is present in the northeast portion of the AOC, while the Mahoning silt loam, 2-6 percent slopes, occurs over 90 percent of the AOC (Figure 1-7). The inferred bedrock formation at Former Building 1039 is the Pennsylvanian-age Pottsville Formation, Sharon Sandstone Member, informally referred to as the Sharon Conglomerate Unit (Winslow and White 1966). The Sharon Conglomerate Unit bedrock interface at Former Building 1039 is estimated to be 950-1,000 ft amsl, based on Ohio Department of Natural Resources bedrock topography contours (Figure 1-3).

6.1.2 Soil and Air Targets

Current and future human and ecological (animal and plant) receptors may come into contact with subsurface soil if contaminants are present within the DU at this AOC. The former subsurface sump within Building 1039 had an outlet and associated piping below ground surface. Therefore, any release or leakage from the former sump would potentially occur below ground surface and impact the subsurface soil.

Airborne contamination (e.g., windblown dust) and soil gas vapors are not considered a viable migration or exposure pathway at the AOC. Potential releases of contaminants at Former Building 1039 would likely have been to subsurface soil adjacent to the sump. The operational areas are paved, gravel covered, or currently well vegetated. The facility is located in a humid climate, and soil moisture content is typically high, which reduces the potential for dust generation. No reported organic chemicals were detected in the samples that would pose a risk to soil gas vapors.

6.1.3 Soil and Air Pathway Conclusions

The SI analytical results indicate that no potential contaminants were identified in the subsurface soil collected between 1 and 7 ft bgs or in the deeper 7- to 13-ft bgs sampling intervals. Therefore, the exposure pathways for soil and air are incomplete.

6.2 SURFACE WATER PATHWAY

6.2.1 Hydrological Setting

No surface water or sediment samples were collected as part of this SI as surface water and sediment are not present at the AOC. The closest perennial feature to receive drainage from the former Administration Area is a tributary to the west branch of the Mahoning River located southeast of the site (Figure 1-3).

6.2.2 Surface Water Targets

Surface water targets include human receptors that use surface water for potable water supply or recreation, as well as environmental (e.g., streams, wetlands, sensitive aquatic environments) and physical targets (e.g., public or private water distribution system intakes) that may be affected by potential groundwater contamination on or adjacent to the site. No perennial streams are located at the AOC. There are no observed springs or groundwater discharge points to a surface water body in the vicinity of the site. Therefore, there is no direct exposure pathway for human receptors or ecological targets to surface water at the AOC.

6.2.3 Surface Water Pathway Conclusions

There are no perennial surface water streams or wetlands in the immediate vicinity of the AOC. Surface water flow and sediment transport are not migration pathways for potential contamination related to the Former Building 1039 as these media are not present at the AOC.

6.3 GROUNDWATER PATHWAY

6.3.1 Hydrogeological Setting

Section 1.4.4 presents the general hydrogeological setting for the facility. In April 2011, OHARNG installed two bedrock aquifer wells at the facility within the Sharon Conglomerate for use as an institutional groundwater supply. These potable wells are located near Buildings 1067 (north of the site) and 1068 (southwest of the site) within the former Administration Area. The OHARNG well near Building 1067 is on the west side of George Road, north of Building 1067 and a nearby creek. The second OHARNG well is southeast of Building 1068. There is one inactive non-potable groundwater supply well just south of Winklepeck Burning Grounds along the east side of George Road, which was formerly used to supply water for environmental restoration activities. There are also three monitoring wells located in the vicinity of the AOC, south of the site and within the former Administration Area (referenced as monitoring wells FWGmw-004, FWGmw-015, and FWGmw-016). Monitoring wells FWGmw-004 and FWGmw-015 are screened within the unconsolidated material at 19.5 and 23.5 ft bgs and are located 2,500 ft southwest and 1,500 ft south of Former Building 1039, respectively. Monitoring well FWGmw-016 is screened within the Sharon Conglomerate at a depth of 64.5 ft bgs and is approximately 1,500 ft south of Former Building 1039 (EQM 2014). Based on a review of the soil borings completed for this SI, the depth to water at the AOC is deeper than 13 ft bgs as no groundwater was encountered during the installation of the eight soil borings at CC RVAAP-83.

Based on review of the gauging data from the Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Annual Report for 2013 (EQM 2014), the potentiometric surface in the unconsolidated aquifer is approximately 1,025 ft amsl (Figure 1-9). The generalized potentiometric surface elevation of the Sharon Member bedrock aquifer in the site area is inferred to be approximately 1,020 ft amsl (Figure 1-10), based on facility-wide groundwater monitoring well data from 2013. Top of bedrock is estimated to lie at 980 ft amsl (Figure 1-4). The regional groundwater flow direction in both aquifers beneath the AOC is

generally to the southeast toward a tributary of the west branch of the Mahoning River located southeast of the CR site.

6.3.2 Groundwater Targets

Groundwater receptors include human receptors that use groundwater for potable water supply, as well as environmental receptors (e.g., livestock, fish farms) and environmental receptors (e.g., springs) that may be affected by potential groundwater contamination on or adjacent to the AOC. There are no public, livestock, or commercial groundwater supply wells within the facility. Groundwater in the vicinity of the Former Building 1039 is used solely for onsite activities by OHARNG. It is likely that groundwater may be used in the future, although it has not been specifically designated; therefore, future human receptors may be potentially exposed to groundwater.

6.3.3 Groundwater Pathway Conclusion

The results of this SI indicate that the subsurface soil is not contaminated; therefore, soil is not a potential source of groundwater contamination at this AOC. The groundwater associated with CC RVAAP-83 is being evaluated under the RVAAP-66 Facility-Wide Groundwater.

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7. SUMMARY AND CONCLUSIONS

This chapter provides a summary of the findings and conclusions of this SI conducted by ECC at the Former Building 1039 at CC RVAAP-83. Only subsurface soils were sampled as part of this SI, since any releases from the former sump area would have been to subsurface soils. There are no surface water bodies, wetlands, streams, or sediment onsite, and the groundwater associated with CC RVAAP-83 is currently being addressed separately under RVAAP-66 Facility-Wide Groundwater.

7.1 SUMMARY OF RESULTS

The SI results of the subsurface soil sampling conducted at Former Building 1039 at CC RVAAP-83 are summarized as follows:

- A total of 19 SVOCs including PAH compounds; 1 pesticide (delta-BHC); and 4 metals (antimony, beryllium, cadmium, and lead) were identified as SRCs in the subsurface soil.

- No VOCs, SVOCs, metals, explosives, propellants, PCBs, or pesticides were detected at concentrations exceeding their respective Resident Receptor FWCUGs in the ISM subsurface soil samples collected.

- Therefore, no potential contaminants were identified in the subsurface soil collected at the Former Building 1039 at CC RVAAP-83.

7.2 CONCLUSIONS

The conclusions of this SI conducted at the Former Building 1039 at CC RVAAP-83 are as follows:

- No potential contaminants were identified in subsurface soil sampled at this AOC.

- The results of this SI indicate that the subsurface soil is not contaminated; therefore, soil is not a source of groundwater contamination at this AOC.

The results of this SI indicate that No Further Action (NFA) is warranted for soil at the Former Building 1039 at CC RVAAP-83. Since no additional investigation was previously granted at the Former Building 1031 hospital building, the entire AOC, consisting of both former buildings sites, at CC RVAAP-83 is recommended for NFA.

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8. REFERENCES

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APPENDIX A

Historical Aerial Photographs

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NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

N

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-1
CC RVAAP-83
Former Building 1039
1940 Historical Aerial Photograph
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

ECC GIS Server F:\Projects\Ravenna\MapDocuments\SI_RPT\CC83\SI83_AppA_Aerials.mxd

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NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-2
CC RVAAP-83
Former Building 1039
1952 Historical Aerial Photograph
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

ECC GIS Server F:\Projects\Ravenna\MapDocuments\SI_RPT\CC83\SI83_AppA_Aerials.mxd

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NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-3
CC RVAAP-83
Former Building 1039
1966 Historical Aerial Photograph
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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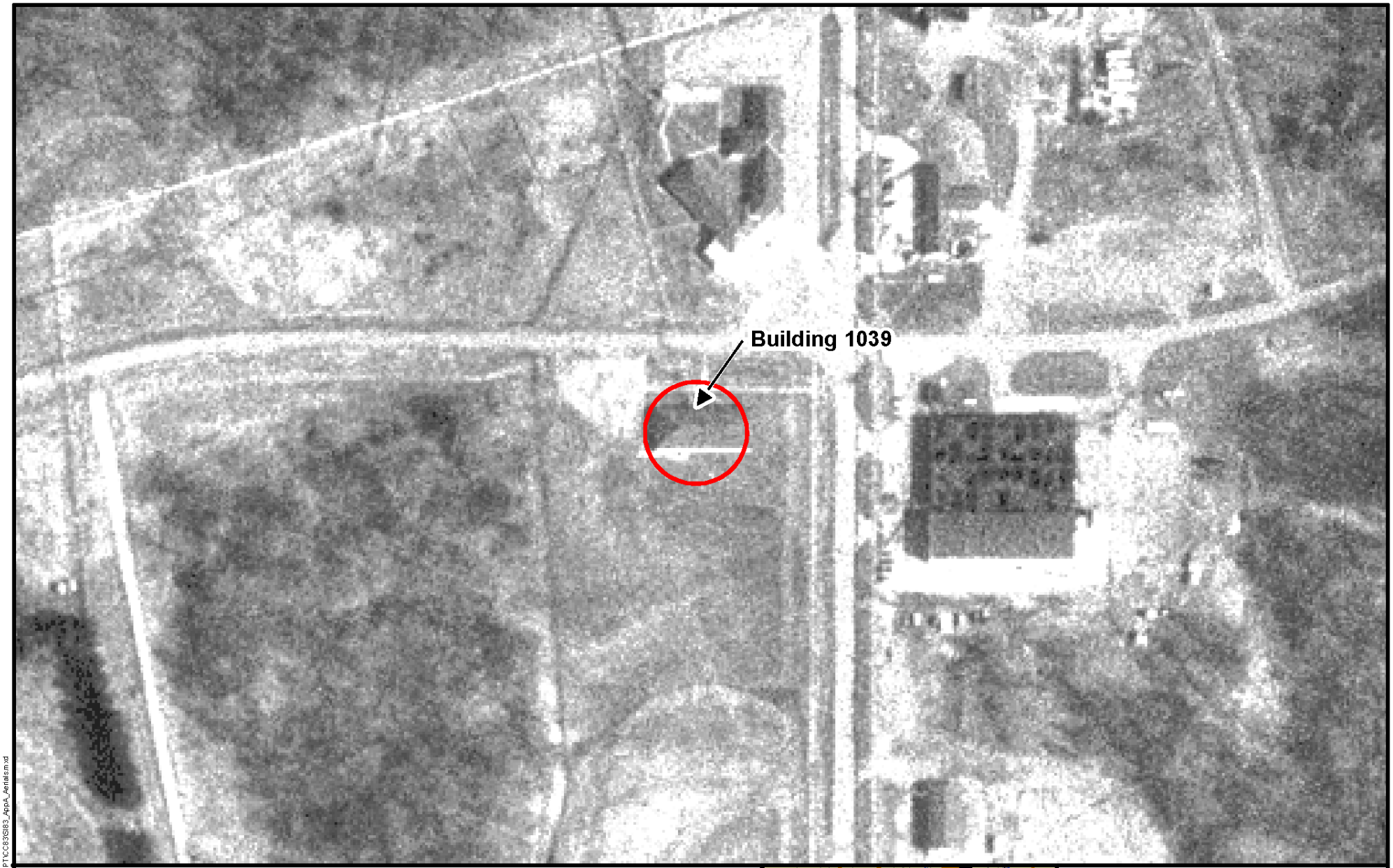

NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-4
CC RVAAP-83
Former Building 1039
1985 Historical Aerial Photograph
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-5
CC RVAAP-83
Former Building 1039
1997 Historical Aerial Photograph
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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NOTES & SOURCES

Map Coordinates: WGS 84, UTM Zone 17N in Meters
Base map data and Aerial Photographs from SAIC

Site Location

0 200 400 Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

Figure A-6
CC RVAAP-83
Former Building 1039
2009 Historical Aerial Photograph

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

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APPENDIX B

Field Activity Forms

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APPENDIX B.1

Sampling Summary Forms

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FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP-83 **CR Site Name:** Bldg 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** 381

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1141 **Weather:** Pt. cldy 68°

Subsurface Sample ID: 0835B-0003M-0001-SO

Duplicate Sample ID: NA

HORIZONTAL: 1-4 FT 0835B-0001M-0001-SO
4-7 FT 0835B-0002M-0001-SO
7-10 FT 0835B-0015M-0001-SO
→ VOC'S FOR THESE 3 SAMPLES COLL. ON 8-14-13

Tube A Time 1133 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B Time 1135 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C Time _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Fronz (driller)

Remarks: NA

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP-83 **CR Site Name:** Bldg 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** 5802

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1215 **Weather:** Pt. Cldy 68°

Subsurface Sample ID: 0835B-0004M-0001-SO

MS/MSD ~~Duplicate~~ Sample ID: 0835B-0004M-0002-SO

Tube A **Time** 1150 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B **Time** 1152 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C **Time** _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Front (driller)

Remarks: NA

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☒ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP-83 **CR Site Name:** Building 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** SB03

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1245 **Weather:** 65° PT Cldy

Subsurface Sample ID: 083SB-0005M-0001-SO

Duplicate Sample ID: ~~083SB-0006M-0001-SO~~ 083SB-0006M-0001-SO
QA ID: 083SB-0007M-0001-SO

Tube A Time 1218 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B Time 1220 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C Time _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Front (driller)

Remarks: ~~QA~~ QA for VOC/MTBE - SVOC - TAL Metals - Propellants + Explosives.

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☒ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP- 83 **CR Site Name:** Bldg 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** SB04

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1315 **Weather:** 78°, Pt. Cldy

Subsurface Sample ID: 083SB-0008M-0001-SO

Duplicate Sample ID: NA

Tube A Time 1249 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B Time 1251 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C Time _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Fronz (driller)

Remarks: NA

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP- 83 **CR Site Name:** Bldg. 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** SB5

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1415 **Weather:** 80° PC Cldy

Subsurface Sample ID: 0835B-0009M-0001-SO

QA ID:
~~Duplicate~~ **Sample ID:** 0835B-0010M-0001-SO
DSB 7-13FT 0835B-0014-0001-SO

Tube A **Time** 1348 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B **Time** 1350 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C **Time** 1352 **Interval Drilled (ft bgs) :** 10-13 **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Franz (driller)

Remarks: ~~N/A~~ QA for SVOC - TAL Metals - Explosives only

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☒ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP-83 **CR Site Name:** Bldg. 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** SB6

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1440 **Weather:** 81° Pt. Cldy

Subsurface Sample ID: 083SB-0011M-0001-SO

Duplicate Sample ID: NA

Tube A Time 1420 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B Time 1422 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C Time _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Franz (driller)

Remarks: NA

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP- 83 **CR Site Name:** Bldg. 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** SB 7

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1455 **Weather:** 81° Pt. Cldy

Subsurface Sample ID: 083SB-0012M-0001-SO

Duplicate Sample ID: NA

Tube A **Time** 1432 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B **Time** 1434 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C **Time** _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Franz (driller)

Remarks: NA

Laboratory Analysis:

☐ VOC ☐ TAL METALS ☐ SVOCs ☐ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☐ PROPELLANTS

☒ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8-12-13

(Signature)

FIELD LOG FORM

SUBSURFACE SOIL SAMPLING

2011 PBA ENVIRONMENTAL INVESTIGATION AND REMEDIATION AT 14 CR SITES

USACE Contract No. W91QR-04-D-0039

Ravenna Army Ammunition Plant, Ravenna, Ohio

CR Site No. CC-RVAAP- 83 **CR Site Name:** Bldg. 1039

Decision Unit: 1 **Building No.** 1039 **Vertical Geoprobe No.** 588

Subsurface Sample Type: ☐ Horizontal ISM ☒ Vertical ISM ☐ Discrete ☐ Composite

Sample Date: 8/12/13 **Time:** 1510 **Weather:** 81° PC cldy

Subsurface Sample ID: 0835B-0013M-0001-SO

Duplicate Sample ID: NA

Tube A Time 1443 **Interval Drilled (ft bgs) :** 0-5 **Recovery (ft/in):** 100

Tube B Time 1445 **Interval Drilled (ft bgs) :** 5-10 **Recovery (ft/in):** 100

Tube C Time _____ **Interval Drilled (ft bgs) :** _____ **Recovery (ft/in):** _____

Field Samplers: RW, CG

Subcontractor (Name/Company): Fronz (driller)

Remarks: NA

Laboratory Analysis:

☒ VOC ☒ TAL METALS ☒ SVOCs ☒ EXPLOSIVES ☐ TPH GRO/DRO ☐ PCBs ☒ PROPELLANTS

☐ FULL SUITE (VOCs, SVOCs, TAL Metals, Explosives, Propellants, PCBs, Pesticides)

☐ MS/MSD Sample Collected

☐ QA Sample Collected

RECORDED BY: _____ **DATE:** 8/12/13
(Signature)

APPENDIX B.2

Health and Safety Forms

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Vision Integrity Results	ECC	DAILY SAFETY MEETING SIGN-IN SHEET

Date: 8-12-13 ~~8-11-13~~ Project Name/Location: Ravenna AAP, Ravenna, OH

Company: ECC Person Conducting Briefing: Jeff Donovan

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Vehicle Awareness – Speed Limit on Base

Lifting Coolers, sampling equipment, lift with your legs

Level D PPE unless upgraded due to site conditions

Use caution when working around drill rig

2. OTHER ISSUES (HASP changes, new AHAs, attendee comments, etc.):

NO NEW AHA'S OR HASP CHANGES

3. DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES TO BE USED:

DRILLERS PERFORM INITIAL OK-CHECK OF EQUIP. W/ PRESSURIZED WATER BEFORE USE. SOIL SAMPLING AT BLD. 1039 LAB.
STAKE BORING LOCATIONS W/ GPS AT BLD 1039 + BORING NO. 5

4. ATTENDEES (Print Name):

1. Jeff Donovan	2. David Conway
3. AL EASTERDAY	4. Zach Noble
5. Catherine Guido	6. Rick Shindler
7. Roxann Williams	8.
9. ERIC CHENG (USACE)	10.
11. Scott Kelly (USACE)	12.
13. MIKE MCMAHON	14. Michael W. McMahon
15. DANIEL TOWNSEND	16.
17.	18.
19.	20.
21.	22.
23.	24.
25.	26.
27.	28.
29.	30.

Vision Integrity Results	ECC	DAILY SAFETY MEETING SIGN-IN SHEET

Date: 8/14/13 Project Name/Location: Ravenna AAP, Ravenna, OH
Company: ECC Person Conducting Briefing: Jeff Donovan

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Vehicle Awareness – Speed Limit on Base
Lifting Coolers, sampling equipment, lift with your legs
Level D PPE unless upgraded due to site conditions
Use caution when working around drill rig

2. OTHER ISSUES (HASP changes, new AHAs, attendee comments, etc.):

- Check for ticks often.
- watch your footing, uneven ground

3. DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES TO BE USED:

CONTINUE MONITORING AT CC83 AND CC74
LOCATE SURVEY POINTS

4. ATTENDEES (Print Name):

1. Jeff Donovan	2. [signature]
3. Catherine Guido	4. Ryan Williams
5. AL FASTENAU	6. Zach Noble
7. [signature]	8. David Compau
9. DAN TOWNSEND	10. [signature]
11. MIKE MCMAHON	12. Michael W. McMahon
13.	14.
15.	16.
17.	18.
19.	20.
21.	22.
23.	24.
25.	26.
27.	28.
29.	30.

ECC	**Environmental Chemical Corporation**	**ACTIVITY HAZARD ANALYSIS TRAINING DOCUMENTATION**

Project Name: Ravenna AAP, Ravenna, OH

Activity Hazard Analysis Review	AHA Title: DIRECT PUSH SAMPLING & BOREHOLE ABANDONMENT

By signing below, I agree to the following:

- I agree to follow the work steps and implement the controls as written.
- I agree to stop work when conditions or hazards change or when I encounter unexpected conditions during the execution of work, or when work cannot be performed as written, or instructions become unclear during execution.
- I am qualified and fit to perform the work.

Worker (Signature / Date) Zachary Noble 4/12/13	Worker (Signature / Date)
Worker (Signature / Date) Rickie Shanks 4/12/13	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)
Worker (Signature / Date)	Worker (Signature / Date)

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	Environmental Chemical Corporation	VISITOR INFORMATION FORM

PROJECT NAME: RAVENNA 8-12-13

You are entering a hazardous waste/construction-site. Unprotected exposure to hazardous chemicals can cause mild to serious health effects. Heavy equipment operations and other inherently dangerous work are underway. You will remain with your designated escort at all times and follow their instructions for your safety and the safety of others. Minimum requirement for personal protective equipment is Level D protection (hard hat, ANSI-approved safety footwear, and safety glasses). Equipment issued must be returned prior to leaving the site.

VISITOR'S CERTIFICATION

I acknowledge that I have been advised of the dangers present at this hazardous waste site facility. I agree to immediately follow all directions given by my escort on-site. I also certify that I do relieve ECC, the U.S. Government, the applicable state in which the project site is located, their officers, employees, and agents of all liability of all consequences raising from and related to the potential hazards associated with entry to this site.

PRINT NAME	SIGNATURE	DATE
ERIC CHENG		8/12/13
Scott Kelly		8/12/13

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APPENDIX B.3

Field Notes

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RUAAP (1)

Mon, 12 Aug 13

Jason Scott, P.G - ECC

Weather: Overst, 78°, W SW 0-5.

Personel: ECC, Fronte

Objectives: Soil Sampling @ CC-83

1020 JS onsite. Reviews daily & tailgate H&S Briefs. Reviews other docs.

1040 Stby for Field Variance of borehole locations based on Observed sewer line location.

1143 Begin Boring @ SB-1. See boring logs for details

1200 Per JD, VOC samples @ 7' bgs or highest significant PID. Headspace Readings every 1' in Core & every 2' from covered Jars.

1500 Drillers complete coring @ CC83 & Mobe to Bldg. 1034 to begin Coring.

1540 Begin drilling @ Bldg 1034, SB-20

1650 PID hit @ 8' @ SB-20. Will Stop at 10' Mobe to 1036.

RUAAP (2)

Tue. 13 Aug 13

Jason Scott, P.G - ECC

Weather: Pt. Cldy, 68°F, NW@2-6

Personel: Fronte; ECC

Objectives: Collect Sub soil samples @ CC71

0700 All persons @ 1036, see tailgate log.

0730 Mobe to CC71, Bldg 5.

0815 Begin DP drilling @ SB-1

0820 Even depth PID Readings from headspace jars & odd PID readings from liner.

1045 Complete boring on N side of fence. Drillers mobe to S. side of fence.

1130 Begin DP @ SB9 on S. Side of fence.

1440 Finished @ CC71, mobe to Bldg. 1036 for supplies

1530 RW, JS, Fronte @ Bldg. U-10.

1533 Begin DP @ U-10, SB-3.

1700 DP drilling complete. Drillers Demobe for day.

1706 RW, JS mobe to 1036.

Jason Scott

RW

RUAAP ⑥ Wed, 14 Aug 13

Weather; Overst, 68° Jason Scott, P.G. - ACC

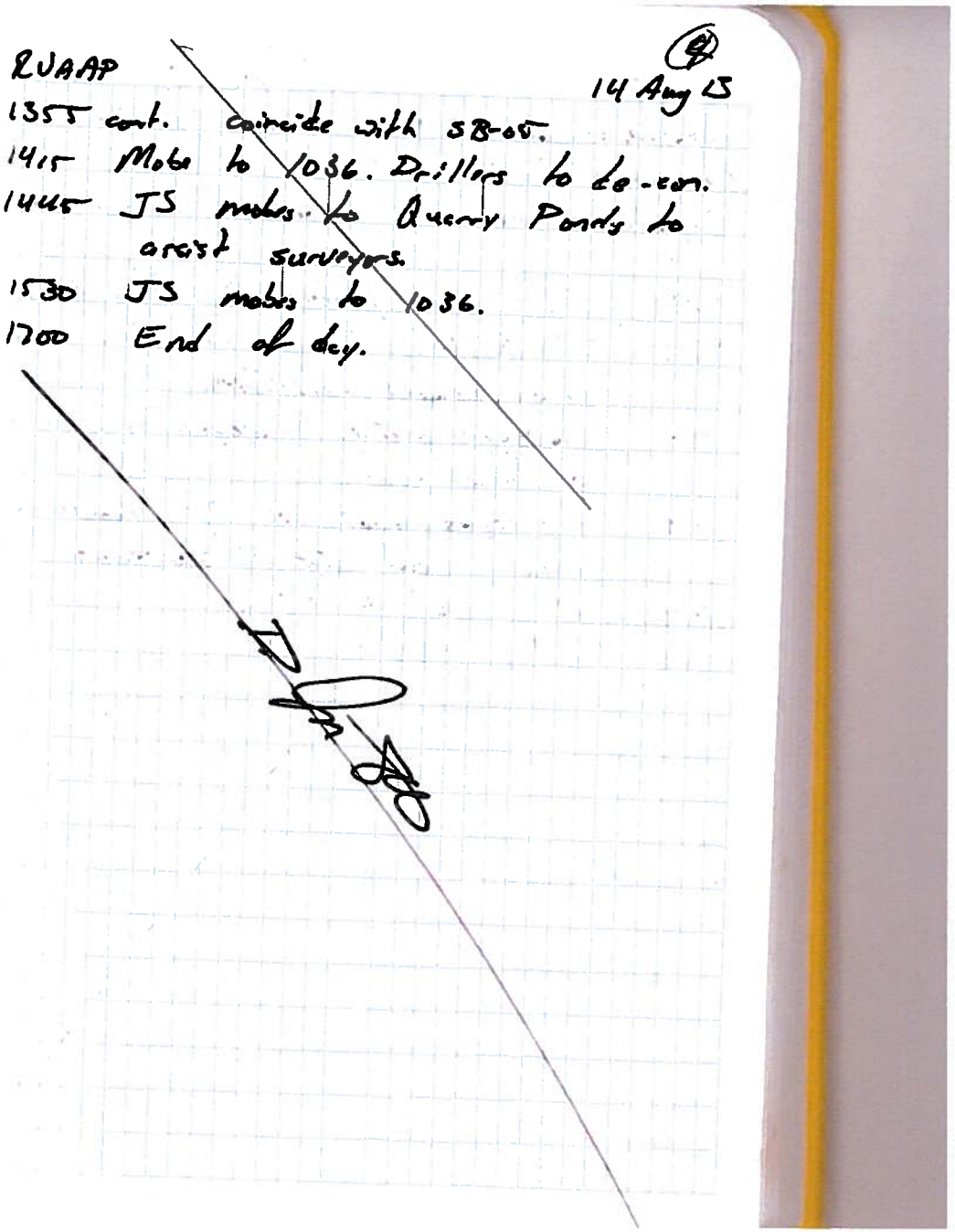
Personnel; JS, CG, RW, Frantz

Objectives: Complete CC74, CC83, CC72

0700 JS @ Bldg 1036.
0730 Make to 1034.
0740 Begin DP@ SB-21.
0805 PID Reading very slowly
0820 Calibrate backup PID. Cal'd
rCeading = 100 ppm.
0840 Make to Bldg 1039.
0854 DP@ SB-5 to collect VOC
samples. See coring log from 12 Aug.
0900 Bldg 1039 VOCs @ 3'
0905 " VOCs @ 6'
0910 " VOCs @ 8'
0915 Make to 1036. ~~for more Tomatoes~~ (JS)
0920 Make to CC75. Collect Hg samples
1036 Begin DSB @ CC72-08
1100 Make to RU88
1133 Surveyors locates SB-5 @ RU-88
1227 Begin Boring @ CC72-SB-2
1303 Begin DSB@ RV-41, SB01
1347 Begin DSB@ CC72-01, SB03
1355 Obstruction @ 3'. Move DSB to

RUAAP ⑦ 14 Aug 13

1355 cont. coincide with SB-05.
1415 Make to 1036. Drillers to de-con.
1445 JS makes to Query Ponds to
assist surveyors.
1530 JS makes to 1036.
1700 End of day.



APPENDIX B.4

Photoionization Detector
Calibration Forms

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INSTRUMENT CALIBRATION LOG

Project/Site Name Ravenna, OH **Calibrated By** David Gomeau

Instrument/Serial Number	Pre-calibration Reading	Post-calibration Reading	Calibration Gas/Concentration	Date
MiniRae ~~3000~~ 2000 PID 08796	0.0 / 100	0.0 / 98.3	Isobutylene / 100ppm	8-12-13
MiniRae ~~3000~~ 2000 PID 08796	0.0 / 100	0.0 / 95.6	Isobutylene / 100ppm	8-13-13
MiniRae ~~3000~~ 2000 PID 08796	0.0 / 100	0.0 / 98.1	Isobutylene / 100ppm	8-14-13
MiniRae ~~3000~~ 2000 PID 012669	0.0 / 100	0.0 / 97.6	Isobutylene / 100ppm	8/14/13
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	
MiniRae 3000 PID			Isobutylene / 100ppm	

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APPENDIX C

Boring Logs

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Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492792.205 Y 4557718.44
Surface Elevation: 1028.222 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville		Location RVAAP CC-83	
Drilling Method:	Direct-Push Geoprobe 6620DT		Boring No. SB01 Building 1039	
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner		Sheet 1 of 1	
			Drilling	
Water Lev. NA			Start	Finish
Time NA			12-Aug-13	12-Aug-13
Date NA				
Reference NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
							2		
	ISM			1-4 ft					
							3		Brown silty clay (10YR 4/3), stiff, dense, dry
					1.2		4		
1							5		
		60/60			0.0	NA			Grading to (10YR 5/3) very stiff
							6		
	ISM			4-7 ft					
	VOC			7 ft			7		
							8		
	ISM			7-10 ft					
							9		
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2" Screen Interval:
BOH: 10 ft bgs Riser Interval:

Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
003 VOC sample time - 1141

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492790.775 Y 4557719.083
Surface Elevation: 1028.216 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville		Location RVAAP CC-83	
Drilling Method:	Direct-Push Geoprobe 6620DT		Boring No. SB02 Building 1039	
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner		Sheet 1 of 1	
			Drilling	
Water Lev. NA			Start	Finish
Time NA			12-Aug-13	12-Aug-13
Date NA				
Reference NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
					2.2		2		
	ISM			1-4 ft					
					0.0		3		Brown silty clay (10YR 4/3), stiff, dense, dry
							4		
2							5		
		60/60			0.0	NA			Grading to (10YR 5/3), very stiff
							6		
	ISM			4-7 ft					
	VOC			7 ft			7		
					1.0		8		Light gray gravel (N 7/1)
	ISM			7-10 ft					
							9		
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 10 ft bgs

Screen Interval:
Riser Interval:

Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
VOC collected at 1215

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492790.775 Y 4557719.083
Surface Elevation: 1028.341 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville				Location RVAAP CC-83
Drilling Method:	Direct-Push Geoprobe 6620DT				Boring No. SB03 Building 1039
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner				Sheet 1 of 1
					Drilling
Water Lev.	NA				Start: 12-Aug-13
Time	NA				Finish: 12-Aug-13
Date	NA				
Reference	NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
					0.3				
					0.0		2		
	ISM			1-4 ft					
							3		Brown silty clay (10YR 4/3), stiff, dense
							4		
							5		
		60/60			0.0	NA			Grading to (10YR 5/3)
							6		
	ISM			4-7 ft					
	VOC			7 ft			7		
							8		Grading to very stiff
	ISM			7-10 ft					
							9		
									Cobble at 9.2 ft
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 10 ft bgs
Screen Interval:
Riser Interval:
Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
005, 006, 007, QA
VOC collected at 1245

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492790.775 Y 4557719.083
Surface Elevation: 1028.580 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville				Location RVAAP CC-83
Drilling Method:	Direct-Push Geoprobe 6620DT				Boring No. SB04 Building 1039
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner				Sheet 1 of 1
Water Lev.	NA				Drilling: Start 12-Aug-13 / Finish 12-Aug-13
Time	NA				
Date	NA				
Reference	NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
					0.4		2		
	ISM			1-4 ft					
					0.0		3		Brown silty clay (10YR 5/3), very stiff, dense, dry
							4		Sandstone cobble, light yellowish brown (2.5Y 6/3)
							5		
		60/60			0.0	NA			
					0.3		6		
	ISM			4-7 ft	0.0				
	VOC			7 ft			7		
							8		
	ISM			7-10 ft					
							9		
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2" Screen Interval:
BOH: 10 ft bgs Riser Interval:

Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492793.136 Y 4557722.927
Surface Elevation: 1028.721 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville	Location RVAAP CC-83	
Drilling Method:	Direct-Push Geoprobe 6620DT	Boring No. SB05 Building 1039	
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner	Sheet 1 of 1	
		Drilling	
Water Lev. NA		Start	Finish
Time NA		12-Aug-13	12-Aug-13
Date NA			
Reference NA			

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
	ISM	60/60		1-4 ft	0.0	NA	0	CL	Grass
									Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
							2		
							3		Brown silty clay (10YR 5/3), stiff, dense, dry
							4		
							5		
		60/60			0.0	NA			
	ISM			4-7 ft			6		
	VOC			7 ft			7		
	ISM			7-10 ft			8		
							9		
3	ISM			4-10 ft			10		
		36/36			0.0	NA			
							11		
							12		
	Disc			7-13 ft					
	VOC			13 ft			13		End of boring 13 ft bgs
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 13 ft bgs
Screen Interval:
Riser Interval:
Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 13 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
Disc. = Discrete
ISM = Incremental Sampling Method
VOC @ 7 ft, sample time - 1415
VOC @ 13 ft

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492795.19 Y 4557723.414
Surface Elevation: 1028.846 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville				Location RVAAP CC-83
Drilling Method:	Direct-Push Geoprobe 6620DT				Boring No. SB06 Building 1039
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner				Sheet 1 of 1
					Drilling
Water Lev.	NA				Start: 12-Aug-13
Time	NA				Finish: 12-Aug-13
Date	NA				
Reference	NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
							2		Color change to 10YR 4/3
	ISM			1-4 ft			3		Grading to stiff, dry
							4		
							5		Grading to very stiff
		60/60			0.0	NA	6		
	ISM			4-7 ft					
	VOC			7 ft			7		
							8		
	ISM			7-10 ft					
							9		
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 10 ft bgs
Screen Interval:
Riser Interval:
Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
VOC @ 7 ft collected at 1440

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X 492794.6 Y 4557725.23
Surface Elevation: 1029.089 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville		Location RVAAP CC-83	
Drilling Method:	Direct-Push Geoprobe 6620DT		Boring No. SB07 Building 1039	
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner		Sheet 1 of 1	
			Drilling	
Water Lev. NA			Start	Finish
Time NA			12-Aug-13	12-Aug-13
Date NA				
Reference NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
							2		
	ISM			1-4 ft					
							3		Brown silty clay (10YR 4/3), stiff, dense, dry
							4		
							5		Grading to very stiff
		60/60			0.0	NA			
							6		
	ISM			4-7 ft					
	VOC			7 ft			7		
							8		
	ISM			7-10 ft					
							9		
	ISM			4-10 ft			10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 10 ft bgs
Screen Interval:
Riser Interval:
Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
VOC @ 7 ft collected at 1455
Piece of tile pipe in sampler @ 3 ft

Environmental Chemical Corporation

LOG OF SOIL BORING

Coordinates: X492796.754 Y 4557725.514
Surface Elevation: 1028.892 ft msl
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No. 5461.004	Client ACOE-Louisville		Location RVAAP CC-83	
Drilling Method:	Direct-Push Geoprobe 6620DT		Boring No. SB08 Building 1039	
Sampling Method:	2" diameter-5 ft SS sampler MacroCore liner		Sheet 1 of 1	
			Drilling	
Water Lev. NA			Start	Finish
Time NA			12-Aug-13	12-Aug-13
Date NA				
Reference NA				

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Sample Depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions: Grass
		60/60			0.0	NA	0		Grass
								CL	Dark grayish brown silty clay (10YR 4/2), soft, dense
							1		
					0.2		2		
	ISM			1-4 ft	0.0				
							3	CL	Brown silty clay (10YR 4/3), stiff, dense, dry
					0.3		4		
					0.0				
							5		Grading to very stiff
		60/60			0.0	NA			
					0.8		6		
	ISM			4-7 ft	0.0				
	VOC			7 ft			7		
					0.1		8		
	ISM			7-10 ft	0.0				
							9		
	ISM			4-10 ft	0.7		10		End of boring 10 ft bgs
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		

Logged by: J. Scott P.G. - ECC
Drilling Contractor: Frontz Drilling
WELL SPECIFICATIONS: Well not installed
Diam. of casing: 2"
BOH: 10 ft bgs
Screen Interval:
Riser Interval:
Date: 13-Aug-13
Driller: Rickie Skanks
Sandpack:
Bentonite: 0- 10 ft bgs

Notes:
NA = Not Applicable
See Sample Summary Sheets for sampling information
ISM = Incremental Sampling Method
Sample time 1510
Clay tile pipe fragments @ 3.5 ft

HTW DRILLING LOG

HOLE NO. CC83-5B01

1. COMPANY NAME ECC
2. DRILLING SUBCONTRACTOR Frontz
SHEET 1 OF 1 SHEETS
3. PROJECT Ravenna Army Ammunition Plant
4. LOCATION CC 83 - Bldg 1039
5. NAME OF DRILLER ~~Joe Teter~~ Rickie Shanks
6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE
8. HOLE LOCATION D41 - 5801
9. SURFACE ELEVATION NA
10. DATE STARTED 8/12 : 1133
11. DATE COMPLETED 8/12 : 1143
12. OVERBURDEN THICKNESS NA
15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 10'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA
18. GEOTECHNICAL SAMPLES NA — DISTURBED — UNDISTURBED
19. TOTAL NUMBER OF CORE BOXES NA
20. SAMPLES FOR CHEMICAL ANALYSIS: SEE SAMPLE SUMMARY SHEET — VOC — METALS — OTHER (SPECIFY) — OTHER (SPECIFY) — OTHER (SPECIFY)
21. TOTAL CORE RECOVERY 100 %
22. DISPOSITION OF HOLE — BACKFILLED: BENTONITE — MONITORING WELL: — — OTHER (SPECIFY): —
23. SIGNATURE OF INSPECTOR

~~ELEV.~~ a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay; dark grayish brown (10YR 4/2), soft, dense					PID
	~~5~~ 2						0
							0
	~~10~~ 3	Silty Clay; brown (10YR 4/3); stiff, dense, dry					~~2.2~~ (J5)
							0
	~~15~~ 4						PID: ~~4.6~~ 4.7 (J5)
	~~20~~ 5	Grading to (10YR 5/3) very stiff					0
	~~25~~ 6						0
	~~30~~ 7				003 USCO ~~1145~~ (J5) 1141		0
	~~35~~ 8						0
	~~40~~ 9						0
	~~45~~ 10						0

HTW DRILLING LOG

HOLE NO. CC83-5802

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz
SHEET 1 OF 1 SHEETS	
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC 83 Bldg. 1039
5. NAME OF DRILLER ~~Joe Teter~~ Rickie Shanks	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION CC83, DU1, 5802
	9. SURFACE ELEVATION NA
	10. DATE STARTED 8/12 : 1150 / 11. DATE COMPLETED 8/12 : 1158
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 10	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	102 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h PID
CL	1	Silty Clay; dark Grayish brown, (10YR 4/2); soft, dense					0.0
	2						2.2
	3	Silty Clay; brown (10YR 4/3); stiff, dense, dry.					0.0
	4						0.0
	5						0.0
	6	Grading to 10YR 5/6 very stiff					0.0
	7					0G4 UOC@ 1215	0.0
	8						1.0
	9	Gravel, light gray (N 7/)					0.0
	10						
	11						

0.0

PROJECT RVAAP

HOLE NO. CC83-5802

MRK FORM JUN 89 55

HTW DRILLING LOG

HOLE NO. CC83 SB3

1. COMPANY NAME ECC
2. DRILLING SUBCONTRACTOR Frontz
SHEET 1 OF 1 SHEETS
3. PROJECT Ravenna Army Ammunition Plant
4. LOCATION CC 83, Bldg 1039
5. NAME OF DRILLER Joe Teter R. Shanks
6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE
8. HOLE LOCATION CC83, DU1, SB03
9. SURFACE ELEVATION NA
10. DATE STARTED 8/12 1218
11. DATE COMPLETED 8/12 1225
12. OVERBURDEN THICKNESS NA
15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 10'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA
18. GEOTECHNICAL SAMPLES NA — DISTURBED — UNDISTURBED
19. TOTAL NUMBER OF CORE BOXES NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay, dark grayish brown; (10YR 4/2), dense soft	0.0				
	2		(JS) 0.3				
	3	Silty Clay, brown (10YR 4/3); dense, stiff	0.0				
	4		0.0				
	5		6.0				
	6	Grading to (10YR 5/3)	0.0				
	7		0.0		005, 006, 007 + QA UOCE 1245		
	8	Grading to very stiff	0.0				
	9		0.0				
	10		0.0				Cobble @ 9'2"

MPK FORM JAN 88 55

PROJECT RVAAP

HOLE NO. CC83-SB3

HTW DRILLING LOG

HOLE NO. CC83-SB04

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC 83 Bldg 1039
5. NAME OF DRILLER ~~Joe Teter~~ R. S.	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION CC83 D401 SB04
	9. SURFACE ELEVATION NA
	10. DATE STARTED 8/12 · 1249 / 11. DATE COMPLETED 8/12 : 1256
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 10	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES NA	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES —

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
SEE SAMPLE SUMMARY SHEET						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay; dark grayish brown (10YR 4/2); dense, soft	0.0				
	~~5~~ 2		0.4				
	~~10~~ 3	Silty Clay; brown (10 YR 5/3); dense, very stiff, dry	0.0				
	~~15~~ 4		0.0				
	~~20~~ 5	Sandstone cobble, light yellowish brown (2.5Y 6/3)	0.0				
	25 6		0.3				
	~~30~~ 7		0.0				
	~~35~~ 8		0.0				
	~~40~~ 9		0.0				
	45 10		0.0				
	11						

HTW DRILLING LOG

HOLE NO. CC83 SB5

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC83 Bldg. 1039
5. NAME OF DRILLER ~~Joe Teter~~ R. S.	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION DU1 - SB05
	9. SURFACE ELEVATION NA
	10. DATE STARTED 8/12 : 1348 — 11. DATE COMPLETED 8/12
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 13'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	

~~ELEV.~~ a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay, dark grayish brown, (10YR 4/2), dense soft.	0.0				
	5 2		0.0				
	10 3	Silty Clay, brown (10YR 5/3), dense, stiff, dry	0.0				
	15 4		0.0				
	20 5		0.0				
	25 6 3		0.0				Sample time 1415
	30 9 10		0.0 0.0 0.0		VOCs @ 7'		
	35 8 11		0.0				
	40 7 12		0.0				
	45 10 13		0.0		VOCs @ 13'		

PROJECT RVAAP

NO SB5

MRK FORM JUN 88 55

HTW DRILLING LOG

HOLE NO. CC83 SB6

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC83, Bldg. 1039
5. NAME OF DRILLER ~~Joe Tater~~ RS	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION OU1 - SBC
	9. SURFACE ELEVATION NA
	10. DATE STARTED 8/12/13 : 1420 — 11. DATE COMPLETED 8/12
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE ~~13'(15)~~ 10'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	D Lynch

~~ELEV.~~ a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay; dk grayish brown; (10YR 4/2) dense, soft	0.0				
	~~5~~ 2	Color change to 10YR 4/3	0.0				
	~~10~~ 3	Grading to stiff, dry	0.0				
	~~15~~ 4		0.0				
	~~20~~ 5	Grading to very stiff	0.0				
	~~25~~ 6		0.0				
	~~30~~ 7		0.0	Vapor 7'			Sample @ 1440
	~~35~~ 8		0.0				
	~~40~~ 9		0.0				
	~~45~~ 10		0.0				

HTW DRILLING LOG

HOLE NO. SB7

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC 83, Bldg ~~1305~~ 1035
5. NAME OF DRILLER ~~Joe Teter~~ R.S.	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION DU1, SB7
	9. SURFACE ELEVATION NA
	10. DATE STARTED 8/12/1432 — 11. DATE COMPLETED 8/12/1442
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA
14. TOTAL DEPTH OF HOLE 40	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	D. Martin

~~SAMPLE~~ a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	0–2 (1)	Silty Clay; dark grayish brown, (10YR 4/2), dense soft	0.0				
	2–4 (2)	~~Color~~ Silty Clay; brown (10YR 4/3), dense, stiff, dry	0.0				
	4–6 (3)		0.0				Piece of clay tile pipe in sampler @ 3'
	6–8 (4)		0.0				
	8–10 (5)	Grading to very stiff	0.0				
	10–12 (6)		0.0				
	12–14 (7)		0.0		VOC's @ 7'		Sample time 1455
	14–16 (8)		0.0				
	16–18 (9)		0.0				
	18–20 (10)		0.0				

HTW DRILLING LOG

HOLE NO. CC83 SB8

1. COMPANY NAME ECC	2. DRILLING SUBCONTRACTOR Frontz	SHEET 1 OF 1 SHEETS
3. PROJECT Ravenna Army Ammunition Plant	4. LOCATION CC83, Bldg 1039	
5. NAME OF DRILLER ~~Joe Teter~~ R.S.	6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 6620DT	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5 FT SS SAMPLER; MACROCORE	8. HOLE LOCATION 241, 588	
	9. SURFACE ELEVATION NA	
	10. DATE STARTED 8/12. 1443	11. DATE COMPLETED 8/12. 1455
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 10'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NA			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
SEE SAMPLE SUMMARY SHEET	—	—	—	—	—	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	BENTONITE	—	—	D. Gm Goo

~~ELEV.~~ a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
CL	1	Silty Clay, dark grayish brown (10 YR 4/2), dense, soft	0.0				
CL	~~5~~ 2		0.2				
	~~10~~ 3	Silty Clay, brown, (10 YR 4/3), dense, stiff, dry	0.0				clay tile pipe frags @ 3.5'
	~~15~~ 4		0.3				
	~~20~~ 5	Grading to very stiff	0.0				
	~~25~~ 6		0.8				
	~~30~~ 7		0.0				Sample time 1510
	~~35~~ 8		0.1				
	~~40~~ 9		0.0				
	~~45~~ 10		0.7				

APPENDIX D

Data Verification Report

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

LIST OF WORKSHEETS

LIST OF ATTACHMENTS

68 **ACRONYMS AND ABBREVIATIONS**

69

°C	Degrees Celsius
% REC	Percent Recovery
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
BGS	Below Ground Surface
BHC	Hexachlorocyclohexane
Bldg	Building
CC	Army Environmental Compliance-Related Cleanup Program
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
COC	Chain of Custody
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DI	Deionized
DL	Detection Limit
DoD	Department of Defense
DRO	Diesel Range Organics
DSB	Deep Soil Boring
DU	Decision Unit
DVR	Data Verification Report
DVRW	Data Verification Report Worksheets
ECC	Environmental Chemical Corporation
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ER	Equipment Rinsate
FD	Field Duplicate
FWSAP	Facility-Wide Sampling and Analysis Plan
FWQAPP	Facility-Wide Quality Assurance Project Plan
GRO	Gasoline Range Organic
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
ID	Identification
ISM	Incremental Sampling Methodology
J	Estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Method Blank
MeOH	Methanol
mg/kg	Milligrams per kilogram
MRL	Method Reporting Limit
MS	Matrix Spike

ACRONYMS AND ABBREVIATIONS (CONTINUED)

No.	Number
PCB	Polychlorinated Biphenyls
PDS	Post Digestion Spike
PETN	Pentaerythritol Tetranitrate
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
R	Rejected
RPD	Relative Percent Difference
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SB	Soil Boring
SDG	Sample Delivery Group
SI	Site Inspection
SIM	Selected Ion Monitoring
SOP	Standard Operating Procedure
SorW	Source Water
SW	Solid Waste
SVOC	Semi-volatile Organic Compound
TB	Trip Blank
TPH	Total Petroleum Hydrocarbon
U	Undetected
UJ	Not detected, with estimated reporting limit
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound

1.0 INTRODUCTION

This Data Verification Report (DVR) presents the results of an analytical data review and verification conducted by Environmental Chemical Corporation (ECC) in support of the site investigation at CC (Army Environmental Compliance-Related Cleanup Program) RVAAP (Ravenna Army Ammunition Plant)-83 Former Buildings 1031 and 1039. Project data verification followed the direction provided in the Facility-Wide Quality Assurance Project Plan (FWQAPP), which is part of the Facility-Wide Sampling and Analysis Plan (FWSAP) (SAIC 2011). Protocol for analytical data verification and validation has been updated to the following references:

- Departmental of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, 2010 Version 4.2 (DoD QSM 2010)
- U.S. Army Corps of Engineers (USACE), Louisville District QSM Supplement (USACE 2007)
- United States Environmental Protection Agency (USEPA) National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540/R-08-01, June 2008 (USEPA 2008)
- USEPA National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-10-011, January 2010 (USEPA 2010)
- Quality Assurance Project Plan (QAPP) for Site Inspections and Remedial Investigations at Compliance Restoration Sites, July 2012 (ECC 2012)

All data were verified by ECC in accordance with the FWQAPP using ECC's automated electronic verification software and manual methods.

All incremental sampling methodology (ISM) samples were prepared for analysis, and all soil analyses were performed, by CT Laboratory of Baraboo, Wisconsin. The sample delivery group (SDG) associated with CC RVAAP-83 field sample data is 99211. Source water and equipment rinsate analyses were performed respectively by Test America Laboratories and CT Laboratory. Both laboratories are DoD Environmental Laboratory Accreditation Program (ELAP) certified. See Table 1-1 for a sample summary and Table 1-2 for a summary of sampling activities.

The sampling activities conducted in support of this project are presented in Section 1.0 Introduction. The data verification findings are presented in Section 2.0 Data Quality Verification Results, and the supporting Data Verification Report Worksheets (DVRW) are provided in Appendix D Worksheets 1 through 5. Section 3.0 Overall Assessment provides the field, analytical, and project completeness, and Section 4.0 References presents the data verification guidance used for this project. All analytical results with final qualifiers are presented in Appendix E.

1.1 Sampling Activities

The total number of field and quality control (QC) samples collected by media is presented in Table 1-1.

Table 1-1: Sample Summary

Matrix	Number of Field Samples	Number of Field Duplicates	Number of MS/MSD	Number of Associated Trip Blanks	Total Number of Samples
Subsurface Soil	14	1	1	3	19

Notes:
MS/MSD = Matrix Spike/Matrix Spike Duplicate

A complete list of the sample locations, the corresponding sample identification (ID) numbers, and the requested analyses for the decision units (DU) are presented in Table 1-1. In addition, locations for the collection of the field duplicate (FD) sample, the matrix spike (MS)/matrix spike duplicate (MSD) sample pair, and quality assurance (QA) split sample are presented.

1.2 Laboratory Activities

A list of extraction and analytical methods are presented in Table 1-3.

Table 1-2: Sampling Activities Summary

Site No.	Depth (ft bgs)	SDG	Sample ID	Decision Unit	Location	Date	COC No.	FD	MS/ MSD	FULL SUITE	VOC	SVOC	TPH GRO	TPH DRO	TAL Metals	PCB	Pesticides	Hexavalent Chromium	Herbicides	Explosives	Propellants
Subsurface Soil																					
CC RVAAP-83	1-4 ft	99211	083SB-0001M-0001-SO	DU01	Bldg 1039 Lab	12-Aug-13	CT0002					X			X					X	X
CC RVAAP-83	1-4 ft	99211	083SB-0001M-0001-SO	DU01	Bldg 1039 Lab	14-Aug-13	CT0002				X										
CC RVAAP-83	4-7 ft	99211	083SB-0002M-0001-SO	DU01	Bldg 1039 Lab	12-Aug-13	CT 0001					X			X					X	X
CC RVAAP-83	4-7 ft	99211	083SB-0002M-0001-SO	DU01	Bldg 1039 Lab	14-Aug-13	CT 0001				X										
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0003M-0001-SO	DU01 SB01	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0004M-0001-SO	DU01 SB02	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0004M-0002-SO	MS/MSD of DU01 SB02	Bldg 1039 Lab	12-Aug-13	CT 0001		X		X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0005M-0001-SO	DU01 SB03	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0006M-0001-SO	FD of DU01 SB03	Bldg 1039 Lab	12-Aug-13	CT 0001	X			X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	QA lab assigned	083SB-0007M-0001-SO	QA at DU01 SB03	Bldg 1039 Lab	12-Aug-13	A 37486 /A				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0008M-0001-SO	DU01 SB04	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0009M-0001-SO	DU01 SB05	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	QA lab assigned	083SB-0010M-0001-SO	QA at DU01 SB05	Bldg 1039 Lab	12-Aug-13	A 37486 /A					X			X					X	
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0011M-0001-SO	DU01 SB06	Bldg 1039 Lab	12-Aug-13	CT 0001				X	X			X					X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0012M-0001-SO	DU01 SB07 Full Suite	Bldg 1039 Lab	12-Aug-13	CT 0001			X	X	X			X	X	X			X	X
CC RVAAP-83	4-10 ft vertical ISM	99211	083SB-0013M-0001-SO	DU01 SB08	Bldg 1039 Lab	12-Aug-13	CT0002				X	X			X					X	X
CC RVAAP-83	DSB 7-13 ft	99211	083SB-0014-0001-SO	DU01 SB05	Bldg 1039 Lab	12-Aug-13	CT0002				X	X			X					X	X
CC RVAAP-83	7-10 ft	99211	083SB-0015M-0001-SO	DU01	Bldg 1039 Lab	12-Aug-13	CT0002					X			X					X	X
CC RVAAP-83	7-10 ft	99211	083SB-0015M-0001-SO	DU01	Bldg 1039 Lab	14-Aug-13	CT0002				X										

Table 1-2: Sampling Activities Summary (Continued)

Site No.	Depth (ft bgs)	SDG	Sample ID	Decision Unit	Location	Date	COC No.	FD	MS/ MSD	FULL SUITE	VOC	SVOC	TPH GRO	TPH DRO	TAL Metals	PCB	Pesticides	Hexavalent Chromium	Herbicides	Explosives	Propellants
Field Quality Control – Trip Blanks																					
CC RVAAP-83	NA	99211	083SB-0016-0001-TB	TB-1	NA	12-Aug-13	CT 0002				X										
CC RVAAP-83	NA	99211	083SB-0018-0001-TB	TB-2	NA	12-Aug-13	CT 0002				X										
CC RVAAP-83	NA	99211	083SB-0020-0001-TB	TB-3	NA	14-Aug-13	CT 0005				X										
CC RVAAP-83	NA	QA lab assigned	083SB-0017-0001-TB	QA TB-1	NA	12-Aug-12	A 37486 /A				X										
2012-2013 SI Sampling Event	NA	240-18735-1/-2	070-0060-0001-TB	QC TB-1	NA	12-Dec-12	50743				X										
2012-2013 SI Sampling Event	NA	240-18735-1/-2	070SB-0055-0001-TB	QC TB-2	NA	12-Dec-12	50743						X								
2013 Subsurface Sampling Event	NA	240-21987-1	079-0008-0001-TB	QC TB-5	NA	14-Mar-13	48788				X										
2013 Subsurface Sampling Event	NA	240-21987-1	079-0009-0001-TB	QC TB-6	NA	14-Mar-13	48788						X								
2013 SI Sampling Event	NA	99335	083SB-0004-0001-TB	QC TB-11	NA	15-Aug-13	CT 0006				X										
Field Quality Control – Source Water																					
All 2012-2013 Sampling Events	non-dedicated hand sampling tools	240-18735-1/-2	070-0057-0001-Source Water	Source Water (ECC bottled decontamination water)	SorW-1	12-Dec-12	50743				X	X	X	X	X	X	X		X	X	X
2013 Subsurface Sampling Event	Direct Push Tools	240-21987-1	079-0007-0001-Source Water	Source Water (Driller decontamination water)	SorW-3	14-Mar-13	48788				X	X	X	X	X	X	X	X	X	X	X

Table 1-2: Sampling Activities Summary (Continued)

Site No.	Depth (ft bgs)	SDG	Sample ID	Decision Unit	Location	Date	COC No.	FD	MS/ MSD	FULL SUITE	VOC	SVOC	TPH GRO	TPH DRO	TAL Metals	PCB	Pesticides	Hexavalent Chromium	Herbicides	Explosives	Propellants
Field Quality Control -Equipment Rinsate																					
2013 Sampling Event	non-dedicated hand sampling tools during sampling event	99335	083SB-0023-0001-ER	Equipment Rinsate Blank	ER-4	15-Aug-13	CT 0006				X	X	X		X	X	X			X	X

Notes:
ID = Identification
SB = Soil Boring
DSB = Deep Soil Boring
ISM = Incremental Sampling Methodology
Bldg = Building
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
COC = Chain of Custody
TAL = Target Analyte List
No. = Number
PCB = Polychlorinated Biphenyls
FD = Field Duplicate
DU = Decision Unit
TPH = Total Petroleum Hydrocarbon
VOC = Volatile Organic Compound
SVOC = Semi-volatile Organic Compound
SDG = Sample Delivery Group
ft bgs = feet below ground surface
MS/MSD = Matrix Spike/Matrix Spike Duplicate
Propellants include nitroguanidine, nitrocellulose, and nitroglycerin.
QA = Quality Assurance
ER = Equipment Rinsate
SorW= Source Water
QC = Quality Control
TB = Trip Blank
NA = Not Applicable

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183 **Table 1-3: Sample Preparation and Analytical Methods**

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Soil/Dry Sediment			
Analytical Group	**Analytical Method**	**Sample Preparation Method**	**Holding Time to Extraction/Holding Time to Analysis**
VOC[1]	SW8260C[3]	SW5035	DI Water 48 hours to analysis or freezing MeOH or freezing/14 days
SVOC[2]	SW8270D/SW8270D SIM[3]	SW3550	14 days/40 days
TAL Metals	Metals SW6010C[3]	SW3015	180 days
	Mercury SW7471B[3]	SW7471B	28 days
PCB	SW8082A[3]	SW3540C	14 days/40 days
Pesticides	SW8081B[3]	SW3546	14 days/40 days
Explosives	SW8330B[3]	SW8330B	14 days/40 days
Propellants[4]	Nitrocellulose EPA 9056 Modified[3]	EPA 9056 Modified	28 days
	Nitroguanidine EPA SW8330B[3]	SW8330	14 days/40 days
Aqueous			
Analytical Group	**Analytical Method**	**Sample Preparation Method**	**Holding Time to Extraction/Holding Time to Analysis**
VOC[1]	SW8260B	SW5030B	14 days
	SW826C[3]	SW5030B	14 days
SVOC[2]	SW8270C / DoD	SW3520C	7 days/40 days
	SW8270D[3]	SW3510C	7 days/40 days
TPH-GRO	SW8015B-GRO / DoD	SW5030B	14 days
	SW8015C-GRO[3]	SW5030B	14 days
TPH-DRO	SW8015B-DRO / DoD	SW3520C	7 days/40 days
TAL Metals	SW6020 / DoD	SW3005A	180 days
	SW6010C[3]	SW3010A	180 days
	SW7470A / DoD	SW7470A	28 days
	SW7470A[3]	SW7470A	28 days
PCB	SW8082 / DoD	SW3520C	7 days/40 days
	SW8082A[3]	SW3520C	7 days/40 days
Pesticides	SW8081 /DoD	SW3520C	7 days/40 days
	SW8081B[3]	SW3520C	7 days/40 days
Herbicides	SW8151A	SW3510	7 days/40 days
Explosives	SW8330B	SW8330	7 days/40 days
Propellants[4]	Nitroguanidine SW8330 Modified	SW8330	7 days/40 days
	Nitroguanidine SW8330B[3]	SW8330	7 days/40 days
	Nitrocellulose-TestAmerica West Sacramento Facility SOP-WC-0050	EPA 353.2	28 days
	Nitrocellulose – SW9056M[3]	EPA 353.2	28 days
Hexavalent Chromium	SW7196A	SW7196A	48 hours

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Table 1-3: Sample Preparation and Analytical Methods (Continued)

Notes:

All soil and dry sediment samples, except for VOCs, undergo incremental sample preparation by air drying, then passed through a rotary hammer mill, and sieve.

(1)Includes benzene, ethylbenzene, toluene, total xylenes, and methyl tertiary-butyl ether (MTBE)

(2)Includes polycyclic aromatic hydrocarbons

(3) = Analytical method performed only by CT Laboratory; other methods are for Test America Laboratory or CT Laboratory analysis of equipment rinsate blank.

(4)Propellant nitroglycerin reported by explosives method (SW8330B)

EPA = Environmental Protection Agency
VOC = Volatile Organic Compound
SVOC = Semi-volatile Organic Compound
TAL = Target Analyte List
TPH = Total Petroleum Hydrocarbon
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
PCB = Polychlorinated Biphenyls
SW = Solid Waste
DoD = Department of Defense
SIM – Selected Ion Monitoring
DI = Deionized
MeOH = Methanol

2.0 DATA QUALITY VERIFICATION RESULTS

Data verification is a systematic automated and manual review of all project data for compliance with the FWQAPP Section 10.2.1. This section provides highlights of significant data verification findings (i.e. rejected results, matrix issues), which are discussed in the applicable section below and presented in the referenced tables. The reference tables are a summary of all reported data. The DVRWs provide specific details such as acceptance ranges, and spike values for automated parameters. The following parameters are evaluated during data verification:

- Holding time
- Blanks (method blank [MB], initial calibration blank [ICB], and/or continuing calibration blank [CCB])
- Serial Dilution
- Post Digestion Spike
- Internal Standards
- Laboratory control samples (LCS)
- Method Reporting Limit (MRL) check
- Calibration (initial calibration, continuing calibration verification [CCV], and initial calibration verification [ICV])
- Surrogates
- Matrix spike (MS)/matrix spike duplicates (MSD)
- Field duplicate results
- Laboratory case narrative
- Dual column relative percent difference (RPD)
- Sample re-analysis and secondary dilutions
- Trip Blanks (TB)
- Equipment Rinsate (ER) Blanks
- Source Water (SorW)

2.1 Data Verification Qualifier Definitions

The data verification qualifier flags and their definitions are presented below:

- U Undetected: The analyte was analyzed for, but not detected. Reported at the limit of detection (LOD).
- UJ The analyte was not detected with estimated reporting limit: The analyte was not detected; however, the reporting limit is estimated due to discrepancies in meeting certain analyte-specific QC criteria.
- J Estimated: The analyte was positively identified; the quantitation is an estimation due to discrepancies in meeting certain analyte-specific QC criteria. J is also used

to report detections between the detection limit (DL) and the limit of quantitation (LOQ).

- R Rejected: The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.

The DoD QSM data reporting convention used will be used. Non-detect data will be reported at the LOD in Appendix D and Appendix E. Within the analytical data package, the laboratory reporting forms also use the DoD QSM convention of reporting non-detect data at the LOD. The laboratory reporting forms also present the LOQ for the sample result.

2.2 Sample Receipt at the Laboratory

All sample custodial possession and transfer requirements were met for samples received at CT Laboratories. No data required qualification based on sample condition. The sample coolers were received within the recommended temperature range of 4 ± 2 degrees Celsius (°C) or just below 2 °C, but not frozen.

2.3 Holding Times

All extractions and analyses were performed within QAPP method-specific holding times.

2.4 Tuning and Calibration

All methods using a mass selective detector must be tuned in accordance with the standard operating procedures (SOP), and method calibrations must meet the DoD QSM criteria. All applicable method tunes and initial calibrations met method criteria. The semi-volatile organic compound (SVOC) 3,5-dintroaniline was out of CCV limits for 13 soil samples. Volatile organic compounds (VOC) bromomethane, methylene chloride, and tetrachloroethene were out of CCV limits for 13 soil samples. See Table 2-1 for qualified data.

As the methylene chloride results were qualified as non-detect (U) due to method blank contamination (see Section 2-5), and qualifications based upon method blank contamination take precedence over estimates based on other review factors, these results are not further qualified by the CCV issue and are therefore not included in Table 2-1.

291 **Table 2-1: Calibration - Initial and Continuing Calibration Verification**
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Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Explosives (mg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	337811	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0002M-0001-SO	8/12/2013	99211	337812	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0003M-0001-SO	8/12/2013	99211	337813	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0005M-0001-SO	8/12/2013	99211	337818	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0006M-0001-SO	8/12/2013	99211	337820	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0008M-0001-SO	8/12/2013	99211	337822	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0009M-0001-SO	8/12/2013	99211	337824	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0011M-0001-SO	8/12/2013	99211	337826	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0013M-0001-SO	8/12/2013	99211	337830	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0014-0001-SO	8/12/2013	99211	337832	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
083SB-0015M-0001-SO	8/12/2013	99211	337834	3,5-Dinitroaniline	0.20	UJ	CCV	0.20 UJ
VOC (µg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	338807	Bromomethane	0.83	UJ	CCV	0.83 UJ
083SB-0001M-0001-SO	8/12/2013	99211	338807	Tetrachloroethene	0.83	UJ	CCV	0.83 UJ
083SB-0002M-0001-SO	8/12/2013	99211	338808	Bromomethane	0.95	UJ	CCV	0.95 UJ
083SB-0002M-0001-SO	8/12/2013	99211	338808	Tetrachloroethene	0.95	UJ	CCV	0.95 UJ
083SB-0003M-0001-SO	8/12/2013	99211	337814	Bromomethane	1.0	UJ	CCV	1.0 UJ
083SB-0003M-0001-SO	8/12/2013	99211	337814	Tetrachloroethene	1.0	UJ	CCV	1.0 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337816	Bromomethane	1.0	UJ	CCV	1.0 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337816	Tetrachloroethene	1.0	UJ	CCV	1.0 UJ
083SB-0005M-0001-SO	8/12/2013	99211	337819	Bromomethane	0.90	UJ	CCV	0.90 UJ
083SB-0005M-0001-SO	8/12/2013	99211	337819	Tetrachloroethene	0.90	UJ	CCV	0.90 UJ
083SB-0006M-0001-SO	8/12/2013	99211	337821	Bromomethane	0.91	UJ	CCV	0.91 UJ
083SB-0006M-0001-SO	8/12/2013	99211	337821	Tetrachloroethene	0.91	UJ	CCV	0.91 UJ
083SB-0008M-0001-SO	8/12/2013	99211	337823	Bromomethane	0.94	UJ	CCV	0.94 UJ
083SB-0008M-0001-SO	8/12/2013	99211	337823	Tetrachloroethene	0.94	UJ	CCV	0.94 UJ

Table 2-1: Calibration - Initial and Continuing Calibration Verification (Continued)

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
VOC (µg/kg)								
083SB-0009M-0001-SO	8/12/2013	99211	337825	Bromomethane	0.97	UJ	CCV	0.97 UJ
083SB-0009M-0001-SO	8/12/2013	99211	337825	Tetrachloroethene	0.97	UJ	CCV	0.97 UJ
083SB-0011M-0001-SO	8/12/2013	99211	337827	Bromomethane	0.93	UJ	CCV	0.93 UJ
083SB-0011M-0001-SO	8/12/2013	99211	337827	Tetrachloroethene	0.93	UJ	CCV	0.93 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337829	Bromomethane	1.0	UJ	CCV	1.0 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337829	Tetrachloroethene	1.0	UJ	CCV	1.0 UJ
083SB-0013M-0001-SO	8/12/2013	99211	337831	Bromomethane	0.90	UJ	CCV	0.90 UJ
083SB-0013M-0001-SO	8/12/2013	99211	337831	Tetrachloroethene	0.90	UJ	CCV	0.90 UJ
083SB-0014-0001-SO	8/12/2013	99211	337833	Bromomethane	1.0	UJ	CCV	1.0 UJ
083SB-0014-0001-SO	8/12/2013	99211	337833	Tetrachloroethene	1.0	UJ	CCV	1.0 UJ
083SB-0015M-0001-SO	8/12/2013	99211	338810	Bromomethane	0.95	UJ	CCV	0.95 UJ
083SB-0015M-0001-SO	8/12/2013	99211	338810	Tetrachloroethene	0.95	UJ	CCV	0.95 UJ

Notes:

SDG = Sample Delivery Group
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
VOC = Volatile Organic Compound
UJ = Not Detected, with estimated reporting limit
CCV = Continuing Calibration Verification

2.5 Laboratory Method Blanks, Initial Calibration Blanks, Continuing Calibration Blanks

A laboratory MB is an analyte-free matrix that is carried through the entire sample preparation and analysis sequence for the purpose of identifying potential contamination introduced during sample preparation and analysis. Method blanks were analyzed for each sample batch for all analyses. ICB and CCB are analyzed for metals and nitrocellulose analyses to assess the potential for carry over in the analytical method. If a contaminant is detected below the LOQ and has a result less than 5 times the associated blank level, then the sample value will be U (undetected) flagged at the LOD. If a contaminant is detected above the LOQ and has a result less than five times the associated blank level, then the sample value will be U flagged and the LOQ will be changed to that of the contaminant concentration in the sample.

All applicable laboratory blank detections resulting in qualified sample results are presented in Table 2-2. Methylene chloride was qualified as non-detect in 13 field soil samples and 3 associated trip blanks. Vanadium was qualified as non-detect in sample 083SB-0015M-0001-SO due to associated CCB contamination, and thallium was qualified as non-detect in 3 soils samples, 083SB-0003M-0001-SO, 083SB-0004M-0001-SO, and 083SB-0005-0001-SO, due to associated method blank contamination.

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Table 2-2: Laboratory Method Blanks

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Metals (mg/kg)								
083SB-0003M-0001-SO	12-Aug-13	99211	337813	Thallium	0.49	U	MB	1.3 U
083SB-0004M-0001-SO	12-Aug-13	99211	337815	Thallium	0.64	U	MB	1.2 U
083SB-0005M-0001-SO	12-Aug-13	99211	337818	Thallium	0.79	U	MB	1.2 U
083SB-0015M-0001-SO	12-Aug-13	99211	337834	Vanadium	3.2	U	CCB	3.2 U
VOC (µg/kg)								
083SB-0001M-0001-SO	12-Aug-13	99211	338807	Methylene Chloride	6.0	U	MB	1.7 U
083SB-0002M-0001-SO	12-Aug-13	99211	338808	Methylene Chloride	5.5	U	MB	1.9 U
083SB-0003M-0001-SO	12-Aug-13	99211	337814	Methylene Chloride	7.0	U	MB	2.0 U
083SB-0004M-0001-SO	12-Aug-13	99211	337816	Methylene Chloride	6.5	U	MB	2.0 U
083SB-0005M-0001-SO	12-Aug-13	99211	337819	Methylene Chloride	6.0	U	MB	1.8 U
083SB-0006M-0001-SO	12-Aug-13	99211	337821	Methylene Chloride	7.0	U	MB	1.8 U
083SB-0008M-0001-SO	12-Aug-13	99211	337823	Methylene Chloride	6.7	U	MB	1.9 U
083SB-0009M-0001-SO	12-Aug-13	99211	337825	Methylene Chloride	6.9	U	MB	1.9 U
083SB-0011M-0001-SO	12-Aug-13	99211	337827	Methylene Chloride	6.5	U	MB	1.9 U
083SB-0012M-0001-SO	12-Aug-13	99211	337829	Methylene Chloride	7.3	U	MB	2.0 U
083SB-0013M-0001-SO	12-Aug-13	99211	337831	Methylene Chloride	6.5	U	MB	1.8 U
083SB-0014-0001-SO	12-Aug-13	99211	337833	Methylene Chloride	7.8	U	MB	2.1 U
083SB-0015M-0001-SO	12-Aug-13	99211	338810	Methylene Chloride	5.8	U	MB	1.9 U
VOC (µg/L)								
083SB-0016-0001-TB	12-Aug-13	99211	337835	Methylene Chloride	7.9	U	MB	2.0 U
083SB-0018-0001-TB	12-Aug-13	99211	337836	Methylene Chloride	9.3	U	MB	2.0 U
083SB-0020-0001-TB	14-Aug-13	99211	338809	Methylene Chloride	11	U	MB	11.0 U

Notes:
SDG = Sample Delivery Group
U = Undetected
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
µg/L = Micrograms per liter
VOC = Volatile Organic Compound
MB = Method Blank
CCB = Continuing Calibration Blank

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2.6 Field Blank Quality Control – Trip Blanks, Equipment Rinsate Blanks, and Source Water

A trip blank is an analyte-free matrix that accompanies samples through the sample collection and transportation process to identify potential VOC cross-contamination during storage and shipment. A total of 3 trip blanks were sent with site primary samples and analyzed as part of the QC program. Methylene chloride was detected in all three trip blanks, but changed to non-detect (U) based upon method blank contamination (see Section 2.5). Acetone was detected in one trip blank, resulting in the qualification of acetone in sample 083SB-0001M-0001-SO as non-detect (U). All applicable trip blank detections resulting in qualified sample results are presented in Table 2-3. See Attachment A for trip blank data and equipment rinsate blank data.

Source water sample data are used to determine the pre-existing levels of chemicals in decontamination fluids. For the sampling at this site, two source water samples were collected, see Table 1-2. Source water sample SorW-1 was collected from water used to decontaminate hand held tools. Source water sample SorW-3 was collected from drillers water used to decontaminate direct push sampling tools used in 2013. See Attachment B for source water data.

Source water is used as the final rinsate during equipment decontamination, and a sample of this water was submitted as the equipment rinsate sample. The equipment rinsate results are evaluated to determine the effectiveness of equipment decontamination. As the source water was tested, the pre-existing levels of chemicals in the equipment rinsate are known, and these are not further evaluated when assessing the equipment rinsate results. Equipment rinsate sample ER-4 is associated with the source water samples listed above.

SorW-1 has detections of several metals, barium, calcium, copper, magnesium, and sodium. SorW-1 also has several VOC detections including 2-butanone, acetone, toluene, bromodichloromethane, chloroform, and dibromochloromethane, and a TPH-GRO detection. SorW-3 has detection of several metals; arsenic, chromium, cobalt, and thallium, copper, calcium, barium, iron, magnesium, manganese, potassium, sodium, and zinc. SorW-3 also had a trace level TPH-GRO detection. Source water sample, SorW-3, had organic detections for bis(2-ethylhexyl)phthalate, dalapon, and nitroguanidine, which were qualified as non-detect during data verification.

Quality control TBs were collected along with the source water and equipment rinsate blank samples. The trip blank, QC TB-1, associated with source water sample SorW-1, had a trace-level chloroform detection, and QC TB-2 had a TPH-GRO detection. The trip blank, QC TB-6, associated with source water samples SorW-3 had a TPH-GRO detection.

Comparison of the source water SorW-1 results to the equipment rinsate results for ER-4 shows similar chemicals, TPH-GRO and chloroform, detected in both samples. The only metal detected in sample ER-4, silver, was not detected in SorW-1. The only organic detected in ER-4 was chloroform at a trace level; however, chloroform was not detected in any of the site soil samples. ER-4 had a detection for TPH-GRO at 26 micrograms per liter (µg/L), while the source water sample SorW-1 had a similar detection at 39 µg/L. However TPH-GRO soil samples were not collected at CC RVAAP-83. The equipment rinsate results show that sampling tools were properly decontaminated and that there was no apparent cross-contamination between soil samples.

Table 2-3: Trip Blanks

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
VOC (µg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	338807	Acetone	11	U	Trip Blank	11 U

Notes:
SDG = Sample Delivery Group
U = Undetected
µg/kg = Micrograms per kilogram
VOC = Volatile Organic Compound

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2.7 Surrogates

Surrogates are compounds not normally found in the environment that are added (spiked) into samples prior to extraction (for extractable methods) or prior to analysis (for non-extractable methods). The percent recovery (% REC) of each surrogate is used to assess the success of the sample preparation process for an individual sample. Pesticide results for sample 083SB-0012M-0001-SO, all non-detects, were qualified as UJ (non-detect with an estimated reporting limit) due to low surrogate recovery. All other applicable surrogate recoveries were within QAPP limits or were greater than the upper control limits. Sample results associated with high surrogate recoveries were all non-detects; hence, no data qualifications were required. See Table 2-4 for qualified data.

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452 **Table 2-4: Surrogate Recoveries**
453

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Pesticides (µg/kg)								
083SB-0012M-0001-SO	8/12/2013	99211	337828	Aldrin	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	alpha-BHC (alpha-Hexachlorocyclohexane)	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	alpha-Chlordane	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	alpha-Endosulfan	1.2	UJ	Surrogate recovery - low	1.1 J
083SB-0012M-0001-SO	8/12/2013	99211	337828	beta-BHC (beta-Hexachlorocyclohexane)	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	beta-Endosulfan	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Dieldrin	1.1	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Endosulfan Sulfate	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Endrin	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Endrin Aldehyde	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Endrin Ketone	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	gamma-BHC (Lindane)	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	gamma-Chlordane	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Heptachlor	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Heptachlor Epoxide	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	delta-BHC (delta-Hexachlorocyclohexane)	1.2	J	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Methoxychlor	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	p,p'-DDD	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	p,p'-DDE	1.2	UJ	Surrogate recovery - low	1.2 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	p,p'-DDT	1.2	UJ	Surrogate recovery - low	1.2 UJ

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Table 2-4: Surrogate Recoveries (Continued)

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Pesticides (µg/kg)								
083SB-0012M-0001-SO	8/12/2013	99211	337828	Toxaphene	12	UJ	Surrogate recovery - low	1.2 UJ

Notes:
SDG = Sample Deliver Group
µg/kg = Micrograms per kilogram
UJ = Not Detected, with estimated reporting limit
J = Estimated
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDT = Dichlorodiphenyltrichloroethane
DDE = Dichlorodiphenyldichloroethylene

2.8 Laboratory Control Samples and/or Laboratory Control Sample Duplicates

A LCS consists of a matrix, similar to that of the field sample, which is spiked with known concentrations of analytes. The LCS % REC is a measure of the accuracy of the preparation and analytical methods. The laboratory control sample duplicate (LCSD), if analyzed, is a duplicate preparation and analysis of the LCS. The differences between the LCS and LCSD recoveries are used to calculate the RPD, which is a measure of the precision of the preparation and analytical methods. LCS samples were analyzed for each sample batch for all analyses. All applicable LCS recoveries were within QAPP limits with the exceptions of explosive 4-amino-2,6-dinitrotoluene, SVOC hexachlorocyclopentadiene, and VOC methylene chloride with low recoveries. See Table 2-5 for summary of LCS qualifications. As the methylene chloride associated result was qualified as non-detect based upon the method blank, this result does not require qualification and is not included in Table 2-5.

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493 **Table 2-5: Laboratory Control Sample/Laboratory Control Sample Duplicate Recoveries**
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Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Explosives (mg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	337811	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0002M-0001-SO	8/12/2013	99211	337812	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0003M-0001-SO	8/12/2013	99211	337813	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0005M-0001-SO	8/12/2013	99211	337818	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0006M-0001-SO	8/12/2013	99211	337820	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0008M-0001-SO	8/12/2013	99211	337822	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0009M-0001-SO	8/12/2013	99211	337824	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0011M-0001-SO	8/12/2013	99211	337826	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0013M-0001-SO	8/12/2013	99211	337830	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0014-0001-SO	8/12/2013	99211	337832	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
083SB-0015M-0001-SO	8/12/2013	99211	337834	4-Amino-2,6-Dinitrotoluene	0.20	UJ	LCS Recovery - low	0.20 UJ
SVOC (µg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	337811	Hexachlorocyclopentadiene	61	UJ	LCS Recovery - low	61 UJ
083SB-0002M-0001-SO	8/12/2013	99211	337812	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0003M-0001-SO	8/12/2013	99211	337813	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	Hexachlorocyclopentadiene	63	UJ	LCS Recovery - low	63 UJ
083SB-0005M-0001-SO	8/12/2013	99211	337818	Hexachlorocyclopentadiene	64	UJ	LCS Recovery - low	64 UJ
083SB-0006M-0001-SO	8/12/2013	99211	337820	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ

Table 2-5: Laboratory Control Sample/Laboratory Control Sample Duplicate Recoveries (Continued)

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
SVOC (µg/kg)								
083SB-0008M-0001-SO	8/12/2013	99211	337822	Hexachlorocyclopentadiene	63	UJ	LCS Recovery - low	63 UJ
083SB-0009M-0001-SO	8/12/2013	99211	337824	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0011M-0001-SO	8/12/2013	99211	337826	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0012M-0001-SO	8/12/2013	99211	337828	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0013M-0001-SO	8/12/2013	99211	337830	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ
083SB-0014-0001-SO	8/12/2013	99211	337832	Hexachlorocyclopentadiene	63	UJ	LCS Recovery - low	63 UJ
083SB-0015M-0001-SO	8/12/2013	99211	337834	Hexachlorocyclopentadiene	62	UJ	LCS Recovery - low	62 UJ

Notes:
SDG = Sample Delivery Group
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
SVOC = Semi-volatile Organic Compound
UJ = Not Detected, with estimated reporting limit
LCS = Laboratory Control Sample

2.9 Matrix Spikes and Matrix Spike Duplicates

MS/MSD analyses measure method accuracy and precision for a project-specific matrix. A field sample is split into three portions (original, MS, and MSD) and known amounts of analytes are added (spiked) into the MS and MSD portions of the sample. The analytical results of these two portions are compared to each other for reproducibility using the RPD. These results are also compared against the unspiked portion of the sample for the percent of the spiked analytes. MS/MSD samples were analyzed for each SDG for all analyses. Low MS recovery exceedances for non-detects are qualified as UJ (non-detect with an estimate reporting limit) and detects qualified as J (estimated). High MS recovery exceedances are qualified as J (estimated) for detections.

MS/MSD results were provided for all analyses. All MS and MSD recoveries were within QAPP limits with the exception of those listed in Table 2-6. Explosives 3-nitrotoluene and 4-nitrotoluene, propellant nitrocellulose, SVOCs benzyl alcohol, chrysene, and fluoranthene, and metals antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, magnesium, mercury, nickel, selenium, vanadium, and zinc in sample 083SB-0004M-0001-SO were qualified due to MS recovery exceedances.

All MS results except mercury recovered below QAPP limits. Mercury MS recovery was above QAPP limits. Based upon validation protocol and professional judgment, the mercury qualification based upon the MS recovery exceedance was applied to the entire analytical batch, resulting in the qualification of 12 additional soil samples results. The MS recovery for benzyl alcohol was below 10% recovery, and this chemical was qualified as rejected (R). Although the MS recoveries for methylene chloride and thallium were outside QAPP limits, these results were qualified as non-detect (U) due to method blank and were therefore not qualified due to MS recovery or included in Table 2-6.

All MS/MSD RPDs were within QAPP limits with the exception of those listed in Table 2-6. Explosives 3-nitrotoluene and pentaerythritol tetranitrate (PETN) in sample 083SB-0004M-0001-SO were qualified due to MS/MSD RPDs exceedances.

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547 **Table 2-6: Matrix Spike/Matrix Spike Duplicate Recoveries and Relative Percent Differences**
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Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Explosives (mg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	3-Nitrotoluene	0.30	UJ	MS Recovery - low, MS RPD	0.30 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	4-Nitrotoluene	0.20	UJ	MS Recovery - low	0.20 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	PETN	1.2	UJ	MS RPD	1.2 UJ
Metals (mg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	Antimony	1.0	J	MS Recovery - low	1.0 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Arsenic	13.3	J	MS Recovery - low	13.3 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Barium	76.5	J	MS Recovery - low	76.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Beryllium	0.56	J	MS Recovery - low	0.56 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Cadmium	0.10	UJ	MS Recovery - low	0.10 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	Chromium	15.4	J	MS Recovery - low	15.4 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Cobalt	11.1	J	MS Recovery - low	11.1 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Copper	14.2	J	MS Recovery - low	14.4 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Lead	8.5	J	MS Recovery - low	8.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Magnesium	6720	J	MS Recovery - low	6720 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Nickel	24.5	J	MS Recovery - low	24.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Selenium	0.20	UJ	MS Recovery - low	0.20 UJ
083SB-0004M-0001-SO	8/12/2013	99211	337815	Vanadium	15.5	J	MS Recovery - low	15.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Zinc	46.1	J	MS Recovery - low	46.1 J
Propellants (mg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	Nitrocellulose	100	UJ	MS Recovery - low	100 UJ

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Table 2-6: Matrix Spike/Matrix Spike Duplicate Recoveries and Relative Percent Differences (Continued)

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
SVOC (µg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	Benzyl alcohol	130	R	MS Recovery - < 10%	130 R
083SB-0004M-0001-SO	8/12/2013	99211	337815	Chrysene	14	J	MS Recovery - low	14 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Fluoranthene	24	J	MS Recovery - low	24 J
Mercury (mg/kg)								
083SB-0001M-0001-SO	8/12/2013	99211	337811	Mercury	0.034	J	MS Recovery - high	0.034 J
083SB-0002M-0001-SO	8/12/2013	99211	337812	Mercury	0.010	J	MS Recovery - high	0.010 J
083SB-0003M-0001-SO	8/12/2013	99211	337813	Mercury	0.0090	J	MS Recovery - high	0.0090 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Mercury	0.0072	J	MS Recovery - high	0.0072 J
083SB-0005M-0001-SO	8/12/2013	99211	337818	Mercury	0.013	J	MS Recovery - high	0.013 J
083SB-0006M-0001-SO	8/12/2013	99211	337820	Mercury	0.012	J	MS Recovery - high	0.012 J
083SB-0008M-0001-SO	8/12/2013	99211	337822	Mercury	0.0097	J	MS Recovery - high	0.0097 J
083SB-0009M-0001-SO	8/12/2013	99211	337824	Mercury	0.0097	J	MS Recovery - high	0.0097 J
083SB-0011M-0001-SO	8/12/2013	99211	337826	Mercury	0.0073	J	MS Recovery - high	0.0073 J
083SB-0012M-0001-SO	8/12/2013	99211	337828	Mercury	0.0065	J	MS Recovery - high	0.0065 J
083SB-0013M-0001-SO	8/12/2013	99211	337830	Mercury	0.0063	J	MS Recovery - high	0.0063 J
083SB-0014-0001-SO	8/12/2013	99211	337832	Mercury	0.0075	J	MS Recovery - high	0.0075 J
083SB-0015M-0001-SO	8/12/2013	99211	337834	Mercury	0.0076	J	MS Recovery - high	0.0076 J

Notes:
SDG = Sample Delivery Group
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
J = Estimated
UJ = Not Detected, with estimated reporting limit
R = Rejected
SVOC = Semi-volatile Organic Compound
MS = Matrix Spike
RPD = Relative Percent Difference
PETN = Pentaerythritol Tetranitrate

2.10 Field Duplicates

Field duplicate analytical results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, preparing, and analyzing field samples. All of the field duplicate RPDs were within the QAPP limits, as shown in the DVRW for field duplicate results.

2.11 Dilutions and Re-Analyses

Secondary dilutions are made as required to stay within the calibration range of the analytical method or to overcome matrix issues. Re-analyses are performed as necessary to confirm QC exceedances in accordance with the method SOP and DoD QSM. Dilutions were required to ensure results were reported within the calibration range (antimony, arsenic, beryllium, chromium, cobalt, copper, lead, and zinc) or due to overcome matrix issues (cadmium and thallium). Other chemicals had MRLs greater than the FWSAP MRLs, and these are listed in the DVWR in the Reporting Anomalies section. A review of these chemicals identified two non-detect results for thallium for which LODs were above screening criteria (083SB-0001M-0001-SO and 083SB-0002M-0002-SO). However, the respective DL's for these data were below screening criteria, indicating that all data not previously qualified R (see Section 2.8) were usable for screening purposes.

2.12 Internal Standards

All methods using internal calibration must have internal standards spiked into them in accordance with the method SOP and DoD QSM. All applicable internal standards were within method criteria. No qualifications were required.

2.13 Serial Dilution

Serial dilution for metals analysis may be performed if MS recovery is out of limits and analyte results are greater than 50 times the MRL. Serial dilution percent differences were within limits for serial dilution analysis performed on sample 083SB-0004M-0001-SO with the exception of barium and magnesium. See Table 2-7 for qualified data.

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Table 2-7: Serial Dilution Percent Differences

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Metals (mg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	Barium	77	J	Serial dilution %D	77 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Magnesium	6700	J	Serial dilution %D	6700 J

Notes:
SDG = Sample Delivery Group
mg/kg = Milligrams per kilogram
J = Estimated
%D = Percent Difference

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2.14 Post Digestion Spikes

Post digestion spikes for metals analysis may be performed if MS recovery is out of limits and analyte results are not greater than 50 times the MRL. Post digestion spikes recoveries were within limits for post digestion spike analysis performed on sample 083SB-0004M-0001-SO, except for with the exception of arsenic, beryllium, cobalt, lead, nickel, vanadium, and zinc. See Table 2-8 for qualified data.

2.15 Dual Column Relative Percent Difference

All detected results from dual column methods were confirmed on a second column. Dual column comparisons between the detected explosive, pesticides and PCBs results were made using the identification summary forms. All applicable dual column results were within QC limits with the exception of alpha-BHC (alpha-Hexachlorocyclohexane) in pesticides sample 083SB-0012M-0001-SO, as presented in Table 2-9.

2.16 Method Reporting Limit Checks

The ability of the laboratory to quantitatively meet the MRL is verified by analyzing pre-analysis and post-analysis MRL check samples. The MRL check criterion is 70-130%. If the MRL % REC is less than 70 %, then non-detects are qualified as UJ and detects are qualified as J. If the MRL % REC is greater than 130%, then detects are qualified as J. If MRL % REC is less than 10%, then non-detects are qualified as R and detects are qualified as J.

The MRL check is in limits for all methods, except for one VOC, acetone. The MRL for acetone exceeded the upper limit; however, acetone in this sample was qualified as non-detect (U) due to trip blank contamination. Therefore, no further qualification is necessary.

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Table 2-8: Post Digestion Spike Recoveries

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Metals (mg/kg)								
083SB-0004M-0001-SO	8/12/2013	99211	337815	Arsenic	13	J	PDS Recovery - low	13 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Beryllium	0.56	J	PDS Recovery - low	0.56 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Cobalt	11.1	J	PDS Recovery - low	11.1 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Lead	8.5	J	PDS Recovery - low	8.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Nickel	24.5	J	PDS Recovery - low	24.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Vanadium	15.5	J	PDS Recovery - low	15.5 J
083SB-0004M-0001-SO	8/12/2013	99211	337815	Zinc	46.1	J	PDS Recovery - low	46.1 J

Notes:
SDG = Sample Delivery Group
mg/kg = Milligrams per kilogram
PDS = Post Digestion Spike

Table 2-9: Dual Column Relative Percent Difference

Sample Identification	Date Sampled	SDG	Lab Number	Parameter	Lab Result	Data Review Qualifier	Comments	Final Result
Pesticides (µg/kg)								
083SB-0012M-0001-SO	8/12/2013	99211	337828	delta-BHC (delta-Hexachlorocyclohexane)	1.1	J	Column RPD	1.1 J

Notes:
SDG = Sample Delivery Group
µg/kg = Micrograms per kilogram
J = Estimated
BHC = Hexachlorocyclohexane
RPD = Relative Percent Difference

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3.0 OVERALL ASSESSMENT

The following subsections present the field completeness, analytical completeness, and project completeness determinations for this project.

3.1 Field Completeness

Field completeness for sample collection was assessed by comparing the number of sample points sampled to the number of sample points planned for collection in accordance with FWQAPP Section 13.1. All planned samples were collected. Field completeness was 100%, and additional parameters were added to the required sampling and analysis plan. See Table 3-1 for a summary of field completeness.

3.2 Analytical Completeness

Analytical completeness was assessed by comparing the number of valid (analytes that have not been rejected) laboratory analyte measurements performed to the number of laboratory analyte measurements planned. Analytical completeness was 100% for all analytical methods except for SVOCs, which had a low MSD recovery (<10%) for benzyl alcohol. Benzyl alcohol was qualified as R in one sample. SVOC analytical completeness is 99.87 %. Full analytical completeness including SVOC analysis is 99.94%.

3.3 Project Completeness

Project completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples/measurements that are determined to be usable to the total number of samples/ measurements planned. Project completeness is calculated using the field completeness and analytical completeness (quality data completeness) percentages. Project completeness for characterization site constituents of concern is 100%, except for SVOCs. SVOC project completeness is 99.87%. Full project completeness including SVOCs is 99.94%. The overall project completeness exceeds the project completeness goal of 90%. See Table 3-3 for the project completeness results.

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744 **Table 3-1: Field Completeness Summary[1]**
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	VOC[2]	SVOC	TAL Metals	PCB	Pesticides	Explosives	Propellants
Collected Field Samples	12	12	12	1	1	12	12
Planned Field Samples	11	11	11	1	1	11	11
% Complete	109	109	109	100	100	109	109

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Table 3-2: Analytical Completeness Summary

	VOC	SVOC	TAL Metals	PCB	Pesticides	Explosives[3]	Propellants
Valid Analytes	459	779	276	9	21	204	24
Collected Analytes	459	780	276	9	21	204	24
% Complete	100	99.9	100	100	100	100	100

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Table 3-3: Project Completeness Summary

	VOC	SVOC	TAL Metals	PCB	Pesticides	Explosives[3]	Propellants
Valid Analytes	459	779	276	9	21	204	24
Planned and Field Modification Analytes	459	780	276	9	21	204	24
% Complete	100	99.9	100	100	100	100	100

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749 Notes for Table 3-1, 3-2, and 3-3:
750 1) Only field samples are included in completeness tally
751 2) For field completeness, VOC and VOC with methyl tert butyl ethylene (MTBE) both counted as VOC analysis
752 3) Nitroglycerin counted for completeness as an explosive
753 VOC = Volatile Organic Compound
754 SVOC = Semi-volatile Organic Compound
755 TAL = Target Analyte List
756 PCB = Polychlorinated Biphenyls
757 Propellants include nitroguanidine, nitrocellulose, and nitroglycerin
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3.4 Data Usability

The overall quality of the CC RVAAP-83 Former Buildings 1031 and 1039 Site Inspection (SI) information meets or exceeds the established project objectives. Through proper implementation of the project data verification and assessment process, 99.94% of the project information has been determined to be acceptable for use.

Data are usable as qualified J, U, or UJ. One SVOC analyte, benzyl alcohol, in one sample was qualified R due to a low MS recovery (< 10%). Data that have been estimated provide indications of either accuracy, precision, or sensitivity being less than desired but adequate for interpretation. All undetected analytes were reported at detection levels that were adequate for use during data interpretation and statistical applications. All results with final qualifiers are presented in Appendix E.

Data produced for this project demonstrate they can withstand scientific scrutiny; are appropriate for its intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. A third-party QA data validation report was completed, which is in general concurrence with the data verification findings, and that report is provided in Appendix F. Select analytes had reporting limits greater than FWQAPP requirements, as documented in the DVRWs, but data with elevated limits was still usable. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

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4.0 REFERENCES

ECC, 2012. *Final Quality Assurance Project Plan for Site Inspections and Remedial Investigations at Compliance Restoration Sites Revision 0 Ravenna Army Ammunition Plant Ravenna, Ohio,* Revision 0. July

Science Applications International Corporation (SAIC), 2010. *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant Ravenna, Ohio, Revision 0*. March.

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United States Department of Defense (DoD), 2010. *Final Quality Systems Manual for Environmental Laboratories*. Environmental Data Quality Workgroup, Final Version 4.2. October.

United States Army Corp of Engineers (USACE), 2007. *Final Louisville DoD Supplement, Version 1*. Final, March.

United States Environmental Protection Agency (USEPA), 2008. *Final Contract Laboratory Program National Functional Guidelines for Superfund Organic Data Review*, EPA-540/R-08-01. June.

USEPA, 2010. *Final Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review*, EPA-540-R-10-011. January.

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WORKSHEETS AND ATTACHMENTS
(Note – To be provided on disc only)

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WORKSHEET 1

Automated Data Review Summary for 99211

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Data Review Summary for 99211_83_0813

Facility:	Ravenna Army Ammunition Plant
Event:	Summer 2013 RI/SI Sampling Event
Guidance Document:	Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Contract Laboratory:	CT LABS., BARABOO, WI
Field Contractor:	Environmental Chemical Corporation, Abingdon, MD
Data Review Contractor:	ECC
SDG:	99211_83_0813, Certified - 9/10/2013 by frederickroche
QC Level:	ADR
Project Manager:	Al Easterday
Data Reviewer:	Kathryn Priess
Data Reviewer Title:	Staff Chemist
Date of Review Report:	September 19, 2013
Second Reviewer:	
Completion Date of Second Reviewer:	

Analytical Method/ Leach Method	Normal Soil Samples	Normal Water Samples	Field QC Soil Samples	Field QC Water Samples
BNASIM/NONE	12		1	
E160.3/NONE	12		1	
E353.2/NONE	12		1	
SW6010C/NONE	12		1	
SW7471B/NONE	12		1	
SW8081B/NONE	1			
SW8082/NONE	1			
SW8260C/NONE	12	3	1	
SW8270D/NONE	12		1	
SW8330/NONE	12		1	
SW8330B/NONE	12		1	

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Environmental Chemical Corporation, Abingdon, MD; analyses were performed by CT LABS., BARABOO, WI and were reported under sample delivery group (SDG) 99211_83_0813. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

Blank
Blank - Negative
Field Duplicate RPD
LCS Recovery
MS Recovery
MS RPD
Prep Hold Time
Surrogate
Test Hold Time

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

Ambient Blank
Calibration Blank
Calibration Blank - Negative
Continuing Calibration Verification
Equipment Blank
Field Blank
Initial Calibration Verification
Lab Replicate RPD
LCS RPD
Material Blank
Trip Blank

The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 141 results (6.84%) out of the 2062 results (sample and field QC samples) reported are qualified based on review and 1 results (0.05%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Comment
E353.2	
SW6010C	Post Digestive spike performed on sample 083SB-0004M-0001-SO.
SW8082	
SW8270D	
SW8330B	
BNASIM	
E160.3	
SW7471B	
SW8081B	
SW8260C	
SW8330	

September 19, 2013

Reviewed by Kathryn Priess, Staff Chemist

Qualified Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	Acenaphthene	1.50	1.30	1.30 J		ug/kg	TR
083SB-0001M-0001-SO	N	Acenaphthylene	1.50	0.460	0.460 J		ug/kg	TR
083SB-0001M-0001-SO	N	Anthracene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0001M-0001-SO	N	Dibenz(a,h)anthracene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0002M-0001-SO	N	Acenaphthene	1.50	1.20	1.20 J		ug/kg	TR
083SB-0002M-0001-SO	N	Benzo(k)fluoranthene	1.50	1.30	1.30 J		ug/kg	TR
083SB-0002M-0001-SO	N	Dibenz(a,h)anthracene	1.50	0.820	0.820 J		ug/kg	TR
083SB-0002M-0001-SO	N	Fluorene	1.50	1.20	1.20 J		ug/kg	TR
083SB-0003M-0001-SO	N	2-Methylnaphthalene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0003M-0001-SO	N	Anthracene	1.60	1.00	1.00 J		ug/kg	TR
083SB-0003M-0001-SO	N	Benzo(a)anthracene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0003M-0001-SO	N	Benzo(a)pyrene	1.60	0.780	0.780 J		ug/kg	TR
083SB-0003M-0001-SO	N	Benzo(k)fluoranthene	1.60	0.700	0.700 J		ug/kg	TR
083SB-0003M-0001-SO	N	Dibenz(a,h)anthracene	1.60	0.620	0.620 J		ug/kg	TR
083SB-0003M-0001-SO	N	Fluorene	1.60	0.560	0.560 J		ug/kg	TR
083SB-0003M-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0003M-0001-SO	N	Naphthalene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0004M-0001-SO	N	Chrysene	1.60	14.0	14.0 J	-	ug/kg	M
083SB-0004M-0001-SO	N	Fluoranthene	1.60	24.0	24.0 J	-	ug/kg	M
083SB-0004M-0001-SO	N	Fluorene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0005M-0001-SO	N	Acenaphthene	1.60	0.780	0.780 J		ug/kg	TR
083SB-0005M-0001-SO	N	Dibenz(a,h)anthracene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0005M-0001-SO	N	Fluorene	1.60	0.930	0.930 J		ug/kg	TR
083SB-0006M-0001-SO	FD	Acenaphthene	1.50	0.710	0.710 J		ug/kg	TR
083SB-0006M-0001-SO	FD	Benzo(a)pyrene	1.50	1.40	1.40 J		ug/kg	TR
083SB-0006M-0001-SO	FD	Benzo(k)fluoranthene	1.50	0.980	0.980 J		ug/kg	TR
083SB-0006M-0001-SO	FD	Dibenz(a,h)anthracene	1.50	0.750	0.750 J		ug/kg	TR
083SB-0006M-0001-SO	FD	Fluorene	1.50	0.740	0.740 J		ug/kg	TR
083SB-0008M-0001-SO	N	Benzo(a)pyrene	1.60	0.450	0.450 J		ug/kg	TR
083SB-0008M-0001-SO	N	Dibenz(a,h)anthracene	1.60	0.570	0.570 J		ug/kg	TR
083SB-0008M-0001-SO	N	Fluoranthene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0008M-0001-SO	N	Fluorene	1.60	0.620	0.620 J		ug/kg	TR
083SB-0008M-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.10	1.10 J		ug/kg	TR
083SB-0008M-0001-SO	N	Pyrene	1.60	1.40	1.40 J		ug/kg	TR
083SB-0009M-0001-SO	N	Acenaphthene	1.60	0.540	0.540 J		ug/kg	TR
083SB-0009M-0001-SO	N	Benzo(a)pyrene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0009M-0001-SO	N	Benzo(k)fluoranthene	1.60	0.570	0.570 J		ug/kg	TR
083SB-0009M-0001-SO	N	Dibenz(a,h)anthracene	1.60	0.910	0.910 J		ug/kg	TR
083SB-0009M-0001-SO	N	Fluorene	1.60	0.540	0.540 J		ug/kg	TR
083SB-0011M-0001-SO	N	Acenaphthene	1.60	0.540	0.540 J		ug/kg	TR

Qualified Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0011M-0001-SO	N	Benzo(a)pyrene	1.60	0.750	0.750 J		ug/kg	TR
083SB-0011M-0001-SO	N	Dibenz(a,h)anthracene	1.60	0.600	0.600 J		ug/kg	TR
083SB-0011M-0001-SO	N	Fluoranthene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0011M-0001-SO	N	Fluorene	1.60	0.490	0.490 J		ug/kg	TR
083SB-0011M-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0012M-0001-SO	N	Acenaphthene	1.50	0.570	0.570 J		ug/kg	TR
083SB-0012M-0001-SO	N	Benzo(a)pyrene	1.50	1.40	1.40 J		ug/kg	TR
083SB-0012M-0001-SO	N	Benzo(k)fluoranthene	1.50	0.950	0.950 J		ug/kg	TR
083SB-0012M-0001-SO	N	Dibenz(a,h)anthracene	1.50	0.660	0.660 J		ug/kg	TR
083SB-0012M-0001-SO	N	Fluorene	1.50	0.660	0.660 J		ug/kg	TR
083SB-0013M-0001-SO	N	Dibenz(a,h)anthracene	1.50	0.650	0.650 J		ug/kg	TR
083SB-0013M-0001-SO	N	Fluoranthene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0013M-0001-SO	N	Fluorene	1.50	0.500	0.500 J		ug/kg	TR
083SB-0013M-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.50	0.580	0.580 J		ug/kg	TR
083SB-0013M-0001-SO	N	Pyrene	1.50	0.720	0.720 J		ug/kg	TR
083SB-0014-0001-SO	N	Benzo(a)pyrene	1.60	0.680	0.680 J		ug/kg	TR
083SB-0014-0001-SO	N	Dibenz(a,h)anthracene	1.60	0.890	0.890 J		ug/kg	TR
083SB-0014-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.40	1.40 J		ug/kg	TR
083SB-0015M-0001-SO	N	Acenaphthene	1.50	0.520	0.520 J		ug/kg	TR
083SB-0015M-0001-SO	N	Benzo(a)pyrene	1.50	0.590	0.590 J		ug/kg	TR
083SB-0015M-0001-SO	N	Dibenz(a,h)anthracene	1.50	0.680	0.680 J		ug/kg	TR
083SB-0015M-0001-SO	N	Fluorene	1.50	0.670	0.670 J		ug/kg	TR
083SB-0015M-0001-SO	N	Indeno(1,2,3-c,d)pyrene	1.50	1.10	1.10 J		ug/kg	TR

Test Method: E353.2	Extraction Method: METHOD		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0004M-0001-SO	N	Nitrocellulose	200	100	100 UJ	-	mg/kg	M

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0003M-0001-SO	N	Thallium	2.50	0.490	1.30 U	+	mg/kg	L
083SB-0004M-0001-SO	N	Antimony	0.810	1.00	1.00 J		mg/kg	M
083SB-0004M-0001-SO	N	Arsenic	4.10	13.3	13.3 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Barium	0.250	76.5	76.5 J		mg/kg	M/A
083SB-0004M-0001-SO	N	Beryllium	0.200	0.560	0.560 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Cadmium	0.200	0.100	0.100 UJ	-	mg/kg	M
083SB-0004M-0001-SO	N	Chromium	0.710	15.4	15.4 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Cobalt	1.20	11.1	11.1 J	-	mg/kg	M

Qualified Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0004M-0001-SO	N	Copper	2.00	14.2	14.2 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Lead	1.30	8.50	8.50 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Magnesium	4.10	6720	6720 J	-	mg/kg	M/A
083SB-0004M-0001-SO	N	Nickel	0.610	24.5	24.5 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Selenium	0.410	0.200	0.200 UJ	-	mg/kg	M
083SB-0004M-0001-SO	N	Thallium	2.40	0.640	1.20 U		mg/kg	L/M
083SB-0004M-0001-SO	N	Vanadium	0.410	15.5	15.5 J	-	mg/kg	M
083SB-0004M-0001-SO	N	Zinc	1.50	46.1	46.1 J	-	mg/kg	M
083SB-0005M-0001-SO	N	Antimony	4.10	1.20	1.20 J		mg/kg	TR
083SB-0005M-0001-SO	N	Thallium	2.50	0.790	1.20 U	+	mg/kg	L
083SB-0006M-0001-SO	FD	Antimony	4.00	1.00	1.00 J		mg/kg	TR
083SB-0006M-0001-SO	FD	Cadmium	0.200	0.0460	0.0460 J		mg/kg	TR
083SB-0008M-0001-SO	N	Antimony	4.10	0.920	0.920 J		mg/kg	TR
083SB-0009M-0001-SO	N	Antimony	4.20	0.920	0.920 J		mg/kg	TR
083SB-0011M-0001-SO	N	Antimony	4.00	1.00	1.00 J		mg/kg	TR
083SB-0012M-0001-SO	N	Antimony	4.10	1.10	1.10 J		mg/kg	TR
083SB-0013M-0001-SO	N	Antimony	4.00	1.30	1.30 J		mg/kg	TR
083SB-0014-0001-SO	N	Antimony	4.20	0.840	0.840 J		mg/kg	TR
083SB-0015M-0001-SO	N	Antimony	4.10	0.860	0.860 J		mg/kg	TR
083SB-0015M-0001-SO	N	Vanadium	0.0820	3.20	3.20 U		mg/kg	B2

Test Method: SW7471B	Extraction Method: TOTAL		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	Mercury	0.00900	0.0340	0.0340 J	+	mg/kg	M
083SB-0002M-0001-SO	N	Mercury	0.00910	0.0100	0.0100 J	+	mg/kg	M
083SB-0003M-0001-SO	N	Mercury	0.00890	0.00900	0.00900 J	+	mg/kg	M
083SB-0004M-0001-SO	N	Mercury	0.00900	0.00720	0.00720 J	+	mg/kg	TR/M
083SB-0005M-0001-SO	N	Mercury	0.00910	0.0130	0.0130 J	+	mg/kg	M
083SB-0006M-0001-SO	FD	Mercury	0.00870	0.0120	0.0120 J	+	mg/kg	M
083SB-0008M-0001-SO	N	Mercury	0.00870	0.00970	0.00970 J	+	mg/kg	M
083SB-0009M-0001-SO	N	Mercury	0.00880	0.00970	0.00970 J	+	mg/kg	M
083SB-0011M-0001-SO	N	Mercury	0.00910	0.00730	0.00730 J	+	mg/kg	TR/M
083SB-0012M-0001-SO	N	Mercury	0.00920	0.00650	0.00650 J	+	mg/kg	TR/M
083SB-0013M-0001-SO	N	Mercury	0.00900	0.00630	0.00630 J	+	mg/kg	TR/M
083SB-0014-0001-SO	N	Mercury	0.00930	0.00750	0.00750 J	+	mg/kg	TR/M
083SB-0015M-0001-SO	N	Mercury	0.00890	0.00760	0.00760 J	+	mg/kg	TR/M

Qualified Results

Test Method: SW8081B	Extraction Method: SW3546		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0012M-0001-SO	N	Aldrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	alpha-BHC (alpha-Hexachlorocyclohexane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	alpha-Chlordane	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	alpha-Endosulfan	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	beta-BHC (beta-Hexachlorocyclohexane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	beta-Endosulfan	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	delta-BHC (delta-Hexachlorocyclohexane)	2.50	1.10	1.10 J		ug/kg	TR/I/P1
083SB-0012M-0001-SO	N	Dieldrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Endosulfan Sulfate	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Endrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Endrin Aldehyde	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Endrin Ketone	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	gamma-BHC (Lindane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	gamma-Chlordane	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Heptachlor	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Heptachlor Epoxide	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Methoxychlor	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	p,p'-DDD	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	p,p'-DDE	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	p,p'-DDT	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	N	Toxaphene	62.0	12.0	12.0 UJ		ug/kg	I

Test Method: SW8260C	Extraction Method: SW5030B		Leach Method: NONE		Matrix: WG			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0016-0001-TB	N	Methylene Chloride	10.0	7.90	2.00 U	+	ug/L	L/C
083SB-0018-0001-TB	N	Methylene Chloride	10.0	9.30	2.00 U	+	ug/L	L/C
083SB-0020-0001-TB	N	Acetone	20.0	15.0	15.0 J		ug/L	TR
083SB-0020-0001-TB	N	Methylene Chloride	11.0	11.0	2.00 U	+	ug/L	L/C

Test Method: SW8260C	Extraction Method: SW5035		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	Acetone	17.0	11.0	8.30 U		ug/kg	T
083SB-0001M-0001-SO	N	Bromomethane	1.70	0.830	0.830 UJ		ug/kg	V2
083SB-0001M-0001-SO	N	Methylene Chloride	8.30	6.00	1.70 U	+	ug/kg	L/C/V2
083SB-0001M-0001-SO	N	Tetrachloroethene (PCE)	1.70	0.830	0.830 UJ		ug/kg	V2
083SB-0002M-0001-SO	N	Bromomethane	1.90	0.950	0.950 UJ		ug/kg	V2

Qualified Results

Test Method: SW8260C	Extraction Method: SW5035		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0002M-0001-SO	N	Methylene Chloride	9.50	5.50	1.90 U	+	ug/kg	L/C/V2
083SB-0002M-0001-SO	N	Tetrachloroethene (PCE)	1.90	0.950	0.950 UJ		ug/kg	V2
083SB-0003M-0001-SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0003M-0001-SO	N	Methylene Chloride	10.0	7.00	2.00 U	+	ug/kg	L/C/V2/J
083SB-0003M-0001-SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0004M-0001-SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0004M-0001-SO	N	Methylene Chloride	10.0	6.50	2.00 U		ug/kg	L/C/M/V2/J
083SB-0004M-0001-SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0005M-0001-SO	N	Bromomethane	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0005M-0001-SO	N	Methylene Chloride	9.00	6.00	1.80 U	+	ug/kg	L/C/V2/J
083SB-0005M-0001-SO	N	Tetrachloroethene (PCE)	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0006M-0001-SO	FD	Bromomethane	1.80	0.910	0.910 UJ		ug/kg	V2
083SB-0006M-0001-SO	FD	Methylene Chloride	9.10	7.00	1.80 U	+	ug/kg	L/C/V2
083SB-0006M-0001-SO	FD	Tetrachloroethene (PCE)	1.80	0.910	0.910 UJ		ug/kg	V2
083SB-0008M-0001-SO	N	Bromomethane	1.90	0.940	0.940 UJ		ug/kg	V2
083SB-0008M-0001-SO	N	Methylene Chloride	9.40	6.70	1.90 U	+	ug/kg	L/C/V2
083SB-0008M-0001-SO	N	Tetrachloroethene (PCE)	1.90	0.940	0.940 UJ		ug/kg	V2
083SB-0009M-0001-SO	N	Bromomethane	1.90	0.970	0.970 UJ		ug/kg	V2
083SB-0009M-0001-SO	N	Methylene Chloride	9.70	6.90	1.90 U	+	ug/kg	L/C/V2
083SB-0009M-0001-SO	N	Tetrachloroethene (PCE)	1.90	0.970	0.970 UJ		ug/kg	V2
083SB-0011M-0001-SO	N	Bromomethane	1.90	0.930	0.930 UJ		ug/kg	V2
083SB-0011M-0001-SO	N	Methylene Chloride	9.30	6.50	1.90 U	+	ug/kg	L/C/V2
083SB-0011M-0001-SO	N	Tetrachloroethene (PCE)	1.90	0.930	0.930 UJ		ug/kg	V2
083SB-0012M-0001-SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0012M-0001-SO	N	Methylene Chloride	10.0	7.30	2.00 U	+	ug/kg	L/C/V2
083SB-0012M-0001-SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0013M-0001-SO	N	Bromomethane	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0013M-0001-SO	N	Methylene Chloride	9.00	6.50	1.80 U	+	ug/kg	L/C/V2
083SB-0013M-0001-SO	N	Tetrachloroethene (PCE)	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0014-0001-SO	N	Bromomethane	2.10	1.00	1.00 UJ		ug/kg	V2
083SB-0014-0001-SO	N	Methylene Chloride	10.0	7.80	2.10 U	+	ug/kg	L/C/V2
083SB-0014-0001-SO	N	Tetrachloroethene (PCE)	2.10	1.00	1.00 UJ		ug/kg	V2
083SB-0015M-0001-SO	N	Bromomethane	1.90	0.950	0.950 UJ		ug/kg	V2
083SB-0015M-0001-SO	N	Methylene Chloride	9.50	5.80	1.90 U	+	ug/kg	L/C/V2
083SB-0015M-0001-SO	N	Tetrachloroethene (PCE)	1.90	0.950	0.950 UJ		ug/kg	V2

Test Method: SW8270D	Extraction Method: SW3550		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	Di-n-Butyl Phthalate	410	140	140 J		ug/kg	TR

Qualified Results

Test Method: SW8270D	Extraction Method: SW3550		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	Hexachlorocyclopentadiene	200	61.0	61.0 UJ	-	ug/kg	C
083SB-0002M-0001-SO	N	Di-n-Butyl Phthalate	410	90.0	90.0 J		ug/kg	TR
083SB-0002M-0001-SO	N	Di-n-Octylphthalate	210	91.0	91.0 J		ug/kg	TR
083SB-0002M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0003M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0004M-0001-SO	N	Benzyl Alcohol	420	130	0.00 R	-	ug/kg	M
083SB-0004M-0001-SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0005M-0001-SO	N	Hexachlorocyclopentadiene	210	64.0	64.0 UJ	-	ug/kg	C
083SB-0006M-0001-SO	FD	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0008M-0001-SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0009M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0011M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0012M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0013M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0014-0001-SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0015M-0001-SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C

Test Method: SW8330B	Extraction Method: METHOD		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0001M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0002M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0002M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0003M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0003M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0004M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0004M-0001-SO	N	3-Nitrotoluene	0.500	0.300	0.300 UJ		mg/kg	D/M
083SB-0004M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0004M-0001-SO	N	4-Nitrotoluene	0.500	0.200	0.200 UJ		mg/kg	M
083SB-0004M-0001-SO	N	Pentaerythritol Tetranitrate	2.00	1.20	1.20 UJ		mg/kg	D
083SB-0005M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0005M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0006M-0001-SO	FD	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0006M-0001-SO	FD	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0008M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0008M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0009M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0009M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0011M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2

Qualified Results

Test Method: SW8330B	Extraction Method: METHOD		Leach Method: NONE		Matrix: SO			
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0011M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0012M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0012M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0013M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0013M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0014-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0014-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0015M-0001-SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0015M-0001-SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Reason Code Definitions

Code	Definition
A	Serial dilution
B2	CCB
C	LCS Recovery
D	MS RPD
I	Surrogate recovery outside project limits.
J	CRA/CRI Recovery
L	Lab Blank
M	MS Recovery
P1	Column RPD
T	Trip Blank
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Batch Report

Test Method: BNASIM Analysis Batch: 96978

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 07:15	8/22/2013 14:27	45490/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 07:15	8/22/2013 14:27	45490/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 07:15	8/22/2013 14:47	45490/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 07:15	8/22/2013 14:47	45490/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 07:15	8/22/2013 15:07	45490/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 07:15	8/22/2013 15:07	45490/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 15:27	45490/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 15:27	45490/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 15:46	45490/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 15:46	45490/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 16:06	45490/	FD
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 16:06	45490/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 07:15	8/22/2013 16:26	45490/	N
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 07:15	8/22/2013 16:26	45490/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 16:46	45490/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 16:46	45490/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 07:15	8/22/2013 17:07	45490/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 07:15	8/22/2013 17:07	45490/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/22/2013 17:27	45490/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/22/2013 17:27	45490/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 07:15	8/22/2013 17:46	45490/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 07:15	8/22/2013 17:46	45490/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 18:06	45490/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 18:06	45490/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 07:15	8/22/2013 18:26	45490/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 07:15	8/22/2013 18:26	45490/	N

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Batch Report

Test Method: BNASIM Analysis Batch: 96978

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338957		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 18:46	45490/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338957		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 18:46	45490/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338958		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 19:06	45490/	SD
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338958		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 19:06	45490/	SD

Test Method: E160.3 Analysis Batch: 96720

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12		8/20/2013 13:00	96720/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16		8/20/2013 13:00	96720/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14		8/20/2013 13:00	96720/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41		8/20/2013 13:00	96720/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15		8/20/2013 13:00	96720/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45		8/20/2013 13:00	96720/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45		8/20/2013 13:00	96720/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15		8/20/2013 13:00	96720/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15		8/20/2013 13:00	96720/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15		8/20/2013 13:00	96720/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40		8/20/2013 13:00	96720/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55		8/20/2013 13:00	96720/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10		8/20/2013 13:00	96720/	N

Batch Report

Test Method: E353.2 Analysis Batch: 97018

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	342371		1/1	8/21/2013 09:00	8/21/2013 09:00	8/25/2013 11:47	45577/	BS
LABQC	SQ	LABQC	342370		1/1	8/21/2013 09:00	8/21/2013 09:00	8/25/2013 12:04	45577/	LB
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/21/2013 09:00	8/25/2013 12:40	45577/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/21/2013 09:00	8/25/2013 12:58	45577/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/21/2013 09:00	8/25/2013 13:16	45577/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/21/2013 09:00	8/25/2013 13:33	45577/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	342372		1/1	8/12/2013 12:15	8/21/2013 09:00	8/25/2013 13:51	45577/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	342373		1/1	8/12/2013 12:15	8/21/2013 09:00	8/25/2013 14:09	45577/	SD
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/21/2013 09:00	8/25/2013 14:27	45577/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/21/2013 09:00	8/25/2013 14:44	45577/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/21/2013 09:00	8/25/2013 15:02	45577/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/21/2013 09:00	8/25/2013 15:20	45577/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/21/2013 09:00	8/25/2013 16:13	45577/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/21/2013 09:00	8/25/2013 16:31	45577/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/21/2013 09:00	8/25/2013 16:49	45577/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/21/2013 09:00	8/25/2013 17:07	45577/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/21/2013 09:00	8/25/2013 17:25	45577/	N

Test Method: SW6010C Analysis Batch: 96872

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	339760		1/1	8/19/2013 11:30	8/19/2013 11:30	8/20/2013 10:33	45510/	BS
LABQC	SQ	LABQC	339759		1/1	8/19/2013 11:30	8/19/2013 11:30	8/20/2013 10:37	45510/	LB
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 11:30	8/20/2013 10:41	45510/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 11:30	8/20/2013 10:45	45510/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 11:30	8/20/2013 10:49	45510/	N

Batch Report

Test Method: SW6010C Analysis Batch: 96872

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 10:53	45510/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339762		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 11:04	45510/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	342228		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 11:19	45510/	SD
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 11:27	45510/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 11:30	45510/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 11:30	8/20/2013 11:34	45510/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 11:38	45510/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 11:30	8/20/2013 11:42	45510/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 11:30	8/20/2013 11:46	45510/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 11:30	8/20/2013 11:50	45510/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 11:54	45510/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 11:30	8/20/2013 12:08	45510/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/5	8/12/2013 15:12	8/19/2013 11:30	8/20/2013 18:34	45510/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/5	8/12/2013 15:16	8/19/2013 11:30	8/20/2013 18:38	45510/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/5	8/12/2013 11:41	8/19/2013 11:30	8/20/2013 18:42	45510/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/5	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 18:45	45510/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339762		1/5	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 19:08	45510/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	342228		1/5	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 19:11	45510/	SD
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/5	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 19:19	45510/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/5	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 19:23	45510/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/5	8/12/2013 13:15	8/19/2013 11:30	8/20/2013 19:26	45510/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/5	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 19:30	45510/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/5	8/12/2013 14:40	8/19/2013 11:30	8/20/2013 19:34	45510/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/5	8/12/2013 14:55	8/19/2013 11:30	8/20/2013 19:38	45510/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/5	8/12/2013 15:10	8/19/2013 11:30	8/20/2013 19:52	45510/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/5	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 19:56	45510/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 11:30	8/20/2013 20:00	45510/	N

Batch Report

Test Method: SW6010C Analysis Batch: 96872

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/5	8/12/2013 15:14	8/19/2013 11:30	8/20/2013 20:00	45510/	N

Test Method: SW6010C Analysis Batch: 96873

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	339760		1/1	8/19/2013 11:30	8/19/2013 11:30	8/20/2013 10:59	45510/	BS
LABQC	SQ	LABQC	339759		1/1	8/19/2013 11:30	8/19/2013 11:30	8/20/2013 11:00	45510/	LB
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 11:30	8/20/2013 11:01	45510/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 11:30	8/20/2013 11:02	45510/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 11:30	8/20/2013 11:03	45510/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 11:04	45510/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339762		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 11:09	45510/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339763		1/1	8/12/2013 12:15	8/19/2013 11:30	8/20/2013 11:10	45510/	SD
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 11:12	45510/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 11:30	8/20/2013 11:13	45510/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 11:30	8/20/2013 11:14	45510/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 11:15	45510/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 11:30	8/20/2013 11:16	45510/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 11:30	8/20/2013 11:19	45510/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 11:30	8/20/2013 11:20	45510/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 11:30	8/20/2013 11:21	45510/	N

Batch Report

Test Method: SW6010C Analysis Batch: 96873

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 11:30	8/20/2013 11:22	45510/	N

Test Method: SW7471B Analysis Batch: 96929

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	337843		1/1	8/20/2013 12:30	8/20/2013 12:30	8/22/2013 08:53	45457/	BS
LABQC	SQ	LABQC	337842		1/1	8/20/2013 12:30	8/20/2013 12:30	8/22/2013 08:55	45457/	LB
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/20/2013 12:30	8/22/2013 08:57	45457/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/20/2013 12:30	8/22/2013 08:59	45457/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/20/2013 12:30	8/22/2013 09:01	45457/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/20/2013 12:30	8/22/2013 09:02	45457/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	337853		1/1	8/12/2013 12:15	8/20/2013 12:30	8/22/2013 09:08	45457/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	337854		1/1	8/12/2013 12:15	8/20/2013 12:30	8/22/2013 09:10	45457/	SD
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/20/2013 12:30	8/22/2013 09:18	45457/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/20/2013 12:30	8/22/2013 09:19	45457/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/20/2013 12:30	8/22/2013 09:21	45457/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/20/2013 12:30	8/22/2013 09:23	45457/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/20/2013 12:30	8/22/2013 09:25	45457/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/20/2013 12:30	8/22/2013 09:27	45457/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/20/2013 12:30	8/22/2013 09:29	45457/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/20/2013 12:30	8/22/2013 09:30	45457/	N

Batch Report

Test Method: SW7471B Analysis Batch: 96929

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/20/2013 12:30	8/22/2013 09:32	45457/	N

Test Method: SW8081B Analysis Batch: 96923

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338945		1/1	8/19/2013 07:15	8/19/2013 07:15	8/23/2013 16:31	45488/	LB
LABQC	SQ	LABQC	338946		1/1	8/19/2013 07:15	8/19/2013 07:15	8/23/2013 16:46	45488/	BS
LABQC	SQ	LABQC	338946		1/1	8/19/2013 07:15	8/19/2013 07:15	8/23/2013 17:01	45488/	BS
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:17	45488/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:17	45488/	N
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338947		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:32	45488/	MS
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338947		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:32	45488/	MS
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338948		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:48	45488/	SD
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338948		1/1	8/12/2013 14:55	8/19/2013 07:15	8/23/2013 17:48	45488/	SD

Test Method: SW8082 Analysis Batch: 96922

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338940		1/1	8/19/2013 07:15	8/19/2013 07:15	8/21/2013 12:08	45487/	LB
LABQC	SQ	LABQC	338941		1/1	8/19/2013 07:15	8/19/2013 07:15	8/21/2013 12:28	45487/	BS
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 12:47	45487/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 12:47	45487/	N

Batch Report

Test Method: SW8082 Analysis Batch: 96922

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338943		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 13:07	45487/	MS
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338943		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 13:07	45487/	MS
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338944		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 13:27	45487/	SD
83-1039-DU1-SB7	SO	083SB-0012M-0002-SO	338944		1/1	8/12/2013 14:55	8/19/2013 07:15	8/21/2013 13:27	45487/	SD

Test Method: SW8260C Analysis Batch: 96824

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	339694		1/1	8/20/2013 07:45	8/20/2013 07:45	8/20/2013 09:34	45499/	BS
LABQC	SQ	LABQC	339693		1/1	8/20/2013 07:45	8/20/2013 07:45	8/20/2013 11:00	45499/	LB
83-1039-DU1-SB7	WG	083SB-0016-0001-TB	337835		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 11:58	45499/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337814		1/1	8/12/2013 11:41	8/20/2013 08:15	8/20/2013 12:26	45499/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337814		1/1	8/12/2013 11:41	8/20/2013 08:15	8/20/2013 12:26	45499/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337816		1/1	8/12/2013 12:15	8/20/2013 08:15	8/20/2013 12:55	45499/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337816		1/1	8/12/2013 12:15	8/20/2013 08:15	8/20/2013 12:55	45499/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337819		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:24	45499/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337819		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:24	45499/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337821		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:53	45499/	FD
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337821		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:53	45499/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337823		1/1	8/12/2013 13:15	8/20/2013 08:15	8/20/2013 14:22	45499/	N
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337823		1/1	8/12/2013 13:15	8/20/2013 08:15	8/20/2013 14:22	45499/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337825		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 14:51	45499/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337825		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 14:51	45499/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337827		1/1	8/12/2013 14:40	8/20/2013 08:15	8/20/2013 15:21	45499/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337827		1/1	8/12/2013 14:40	8/20/2013 08:15	8/20/2013 15:21	45499/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337829		1/1	8/12/2013 14:55	8/20/2013 08:15	8/20/2013 15:50	45499/	N

Batch Report

Test Method: SW8260C Analysis Batch: 96824

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337829		1/1	8/12/2013 14:55	8/20/2013 08:15	8/20/2013 15:50	45499/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337831		1/1	8/12/2013 15:10	8/20/2013 08:15	8/20/2013 16:19	45499/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337831		1/1	8/12/2013 15:10	8/20/2013 08:15	8/20/2013 16:19	45499/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337833		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 16:48	45499/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337833		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 16:48	45499/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	338807		1/1	8/12/2013 15:12	8/20/2013 08:15	8/20/2013 17:17	45499/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	338807		1/1	8/12/2013 15:12	8/20/2013 08:15	8/20/2013 17:17	45499/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	338808		1/1	8/12/2013 15:16	8/20/2013 08:15	8/20/2013 17:46	45499/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	338808		1/1	8/12/2013 15:16	8/20/2013 08:15	8/20/2013 17:46	45499/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	338810		1/1	8/12/2013 15:14	8/20/2013 08:15	8/20/2013 18:15	45499/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	338810		1/1	8/12/2013 15:14	8/20/2013 08:15	8/20/2013 18:15	45499/	N
83-1039-DU1-SB8	WG	083SB-0018-0001-TB	337836		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 23:54	45499/	N
83-1039-DU1-SB6	WG	083SB-0020-0001-TB	338809		1/1	8/14/2013 08:00	8/20/2013 08:15	8/21/2013 00:23	45499/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339695		1/1	8/12/2013 12:15	8/20/2013 08:15	8/21/2013 00:52	45499/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339695		1/1	8/12/2013 12:15	8/20/2013 08:15	8/21/2013 00:52	45499/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339696		1/1	8/12/2013 12:15	8/20/2013 08:15	8/21/2013 01:21	45499/	SD
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	339696		1/1	8/12/2013 12:15	8/20/2013 08:15	8/21/2013 01:21	45499/	SD

Test Method: SW8260C Analysis Batch: 96825

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB7	WG	083SB-0016-0001-TB	337835		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 11:58	45499/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337814		1/1	8/12/2013 11:41	8/20/2013 08:15	8/20/2013 12:26	45499/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337816		1/1	8/12/2013 12:15	8/20/2013 08:15	8/20/2013 12:55	45499/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337819		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:24	45499/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337821		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:53	45499/	FD

Batch Report

Test Method: SW8260C Analysis Batch: 96825

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337823		1/1	8/12/2013 13:15	8/20/2013 08:15	8/20/2013 14:22	45499/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337825		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 14:51	45499/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337827		1/1	8/12/2013 14:40	8/20/2013 08:15	8/20/2013 15:21	45499/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337829		1/1	8/12/2013 14:55	8/20/2013 08:15	8/20/2013 15:50	45499/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337831		1/1	8/12/2013 15:10	8/20/2013 08:15	8/20/2013 16:19	45499/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337833		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 16:48	45499/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	338807		1/1	8/12/2013 15:12	8/20/2013 08:15	8/20/2013 17:17	45499/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	338808		1/1	8/12/2013 15:16	8/20/2013 08:15	8/20/2013 17:46	45499/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	338810		1/1	8/12/2013 15:14	8/20/2013 08:15	8/20/2013 18:15	45499/	N
83-1039-DU1-SB8	WG	083SB-0018-0001-TB	337836		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 23:54	45499/	N
83-1039-DU1-SB6	WG	083SB-0020-0001-TB	338809		1/1	8/14/2013 08:00	8/20/2013 08:15	8/21/2013 00:23	45499/	N

Test Method: SW8260C Analysis Batch: 96826

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB7	WG	083SB-0016-0001-TB	337835		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 11:58	45499/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337814		1/1	8/12/2013 11:41	8/20/2013 08:15	8/20/2013 12:26	45499/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337816		1/1	8/12/2013 12:15	8/20/2013 08:15	8/20/2013 12:55	45499/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337819		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:24	45499/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337821		1/1	8/12/2013 12:45	8/20/2013 08:15	8/20/2013 13:53	45499/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337823		1/1	8/12/2013 13:15	8/20/2013 08:15	8/20/2013 14:22	45499/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337825		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 14:51	45499/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337827		1/1	8/12/2013 14:40	8/20/2013 08:15	8/20/2013 15:21	45499/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337829		1/1	8/12/2013 14:55	8/20/2013 08:15	8/20/2013 15:50	45499/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337831		1/1	8/12/2013 15:10	8/20/2013 08:15	8/20/2013 16:19	45499/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337833		1/1	8/12/2013 14:15	8/20/2013 08:15	8/20/2013 16:48	45499/	N

Batch Report

Test Method: SW8260C Analysis Batch: 96826

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	338807		1/1	8/12/2013 15:12	8/20/2013 08:15	8/20/2013 17:17	45499/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	338808		1/1	8/12/2013 15:16	8/20/2013 08:15	8/20/2013 17:46	45499/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	338810		1/1	8/12/2013 15:14	8/20/2013 08:15	8/20/2013 18:15	45499/	N
83-1039-DU1-SB8	WG	083SB-0018-0001-TB	337836		1/1	8/12/2013 08:00	8/20/2013 08:15	8/20/2013 23:54	45499/	N
83-1039-DU1-SB6	WG	083SB-0020-0001-TB	338809		1/1	8/14/2013 08:00	8/20/2013 08:15	8/21/2013 00:23	45499/	N

Test Method: SW8270D Analysis Batch: 96978

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338954		1/1	8/19/2013 07:15	8/19/2013 07:15	8/22/2013 13:48	45490/	LB
LABQC	SQ	LABQC	338955		1/1	8/19/2013 07:15	8/19/2013 07:15	8/22/2013 14:07	45490/	BS

Test Method: SW8270D Analysis Batch: 97038

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338949		1/1	8/19/2013 07:15	8/19/2013 07:15	8/22/2013 16:39	45489/	LB
LABQC	SQ	LABQC	338950		1/1	8/19/2013 07:15	8/19/2013 07:15	8/22/2013 16:57	45489/	BS
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 07:15	8/22/2013 17:15	45489/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/19/2013 07:15	8/22/2013 17:15	45489/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 07:15	8/22/2013 17:34	45489/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/19/2013 07:15	8/22/2013 17:34	45489/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 07:15	8/22/2013 17:52	45489/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/19/2013 07:15	8/22/2013 17:52	45489/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 18:10	45489/	N

Batch Report

Test Method: SW8270D Analysis Batch: 97038

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 18:10	45489/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 18:29	45489/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 18:29	45489/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 18:47	45489/	FD
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/19/2013 07:15	8/22/2013 18:47	45489/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 07:15	8/22/2013 19:05	45489/	N
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/19/2013 07:15	8/22/2013 19:05	45489/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 19:24	45489/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 19:24	45489/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 07:15	8/22/2013 19:42	45489/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/19/2013 07:15	8/22/2013 19:42	45489/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/22/2013 20:00	45489/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/19/2013 07:15	8/22/2013 20:00	45489/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 07:15	8/22/2013 20:19	45489/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/19/2013 07:15	8/22/2013 20:19	45489/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 20:37	45489/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/19/2013 07:15	8/22/2013 20:37	45489/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 07:15	8/22/2013 20:55	45489/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/19/2013 07:15	8/22/2013 20:55	45489/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338952		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 21:14	45489/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338952		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 21:14	45489/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338953		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 21:32	45489/	SD
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338953		1/1	8/12/2013 12:15	8/19/2013 07:15	8/22/2013 21:32	45489/	SD

Batch Report

Test Method: SW8330 Analysis Batch: 97058

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/22/2013 13:30	8/27/2013 11:40	45484/	N

Test Method: SW8330 Analysis Batch: 97061

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338935		1/1	8/22/2013 12:30	8/22/2013 12:30	8/28/2013 10:19	45486/	LB
LABQC	SQ	LABQC	338935		1/1	8/22/2013 12:30	8/22/2013 12:30	8/28/2013 10:19	45486/	LB
LABQC	SQ	LABQC	338936		1/1	8/22/2013 12:30	8/22/2013 12:30	8/28/2013 10:27	45486/	BS
LABQC	SQ	LABQC	338936		1/1	8/22/2013 12:30	8/22/2013 12:30	8/28/2013 10:27	45486/	BS
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/22/2013 12:30	8/28/2013 10:36	45486/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/22/2013 12:30	8/28/2013 10:36	45486/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/22/2013 12:30	8/28/2013 10:44	45486/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/22/2013 12:30	8/28/2013 10:44	45486/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/22/2013 12:30	8/28/2013 10:52	45486/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/22/2013 12:30	8/28/2013 10:52	45486/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 11:00	45486/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 11:00	45486/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/22/2013 12:30	8/28/2013 11:25	45486/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/22/2013 12:30	8/28/2013 11:25	45486/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/22/2013 12:30	8/28/2013 11:33	45486/	FD
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/22/2013 12:30	8/28/2013 11:33	45486/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/22/2013 12:30	8/28/2013 11:49	45486/	N
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/22/2013 12:30	8/28/2013 11:49	45486/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/22/2013 12:30	8/28/2013 11:58	45486/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/22/2013 12:30	8/28/2013 11:58	45486/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/22/2013 12:30	8/28/2013 12:06	45486/	N

Batch Report

Test Method: SW8330 Analysis Batch: 97061

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/22/2013 12:30	8/28/2013 12:06	45486/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/22/2013 12:30	8/28/2013 12:14	45486/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/22/2013 12:30	8/28/2013 12:14	45486/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/22/2013 12:30	8/28/2013 12:22	45486/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/22/2013 12:30	8/28/2013 12:22	45486/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/22/2013 12:30	8/28/2013 12:30	45486/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/22/2013 12:30	8/28/2013 12:30	45486/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/22/2013 12:30	8/28/2013 12:39	45486/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/22/2013 12:30	8/28/2013 12:39	45486/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338938		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 12:47	45486/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338938		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 12:47	45486/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338939		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 12:55	45486/	SD
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338939		1/1	8/12/2013 12:15	8/22/2013 12:30	8/28/2013 12:55	45486/	SD

Test Method: SW8330B Analysis Batch: 97058

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	338927		1/1	8/22/2013 13:30	8/22/2013 13:30	8/27/2013 10:45	45484/	LB
LABQC	SQ	LABQC	338927		1/1	8/22/2013 13:30	8/22/2013 13:30	8/27/2013 10:45	45484/	LB
LABQC	SQ	LABQC	338928		1/1	8/22/2013 13:30	8/22/2013 13:30	8/27/2013 11:04	45484/	BS
LABQC	SQ	LABQC	338928		1/1	8/22/2013 13:30	8/22/2013 13:30	8/27/2013 11:04	45484/	BS
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/22/2013 13:30	8/27/2013 11:22	45484/	N
83-1039-DU1-SB	SO	083SB-0001M-0001-SO	337811		1/1	8/12/2013 15:12	8/22/2013 13:30	8/27/2013 11:22	45484/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/22/2013 13:30	8/27/2013 11:40	45484/	N
83-1039-DU1-SB	SO	083SB-0002M-0001-SO	337812		1/1	8/12/2013 15:16	8/22/2013 13:30	8/27/2013 11:40	45484/	N
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/22/2013 13:30	8/27/2013 11:59	45484/	N

Batch Report

Test Method: SW8330B Analysis Batch: 97058

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB1	SO	083SB-0003M-0001-SO	337813		1/1	8/12/2013 11:41	8/22/2013 13:30	8/27/2013 11:59	45484/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 12:17	45484/	N
83-1039-DU1-SB2	SO	083SB-0004M-0001-SO	337815		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 12:17	45484/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/22/2013 13:30	8/27/2013 13:12	45484/	N
83-1039-DU1-SB3	SO	083SB-0005M-0001-SO	337818		1/1	8/12/2013 12:45	8/22/2013 13:30	8/27/2013 13:12	45484/	N
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/22/2013 13:30	8/27/2013 13:30	45484/	FD
83-1039-DU1-SB3	SO	083SB-0006M-0001-SO	337820		1/1	8/12/2013 12:45	8/22/2013 13:30	8/27/2013 13:30	45484/	FD
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/22/2013 13:30	8/27/2013 14:07	45484/	N
83-1039-DU1-SB4	SO	083SB-0008M-0001-SO	337822		1/1	8/12/2013 13:15	8/22/2013 13:30	8/27/2013 14:07	45484/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/22/2013 13:30	8/27/2013 14:25	45484/	N
83-1039-DU1-SB5	SO	083SB-0009M-0001-SO	337824		1/1	8/12/2013 14:15	8/22/2013 13:30	8/27/2013 14:25	45484/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/22/2013 13:30	8/27/2013 14:43	45484/	N
83-1039-DU1-SB6	SO	083SB-0011M-0001-SO	337826		1/1	8/12/2013 14:40	8/22/2013 13:30	8/27/2013 14:43	45484/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/22/2013 13:30	8/27/2013 15:01	45484/	N
83-1039-DU1-SB7	SO	083SB-0012M-0001-SO	337828		1/1	8/12/2013 14:55	8/22/2013 13:30	8/27/2013 15:01	45484/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/22/2013 13:30	8/27/2013 15:20	45484/	N
83-1039-DU1-SB8	SO	083SB-0013M-0001-SO	337830		1/1	8/12/2013 15:10	8/22/2013 13:30	8/27/2013 15:20	45484/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/22/2013 13:30	8/27/2013 15:38	45484/	N
83-1039-DU1-SB5	SO	083SB-0014-0001-SO	337832		1/1	8/12/2013 14:15	8/22/2013 13:30	8/27/2013 15:38	45484/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/22/2013 13:30	8/27/2013 15:56	45484/	N
83-1039-DU1-SB	SO	083SB-0015M-0001-SO	337834		1/1	8/12/2013 15:14	8/22/2013 13:30	8/27/2013 15:56	45484/	N
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338929		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 16:15	45484/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338929		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 16:15	45484/	MS
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338930		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 16:33	45484/	SD

Batch Report

Test Method: SW8330B Analysis Batch: 97058

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
83-1039-DU1-SB2	SO	083SB-0004M-0002-SO	338930		1/1	8/12/2013 12:15	8/22/2013 13:30	8/27/2013 16:33	45484/	SD

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Field Batch Report

--No Records Found--

QC Outlier Report

Test Method: BNASIM Extraction Method: SW3550 Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS Recovery	083SB-0004M-0002-SO (SD) / 338958	1 / 1.00	Chrysene	45.7 (PERCENT)	J/UJ	55 - 110	55 - 110	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 338958	1 / 1.00	Fluoranthene	46.8 (PERCENT)	J/UJ	55 - 115	55 - 115	M			

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Blank	339759 (LB) / 339759	1 / 1.00	Nickel	0.0240 (mg/kg)	U/None	< 0.021	< 0.12	L		10	0.240
Blank	339759 (LB) / 339759	1 / 1.00	Barium	0.0530 (mg/kg)	U/None	< 0.009	< 0.05	L		10	0.530
Blank	339759 (LB) / 339759	1 / 1.00	Manganese	0.180 (mg/kg)	U/None	< 0.025	< 0.15	L		10	1.80
Blank	339759 (LB) / 339759	1 / 1.00	Aluminum	0.180 (mg/kg)	U/None	< 0.04	< 0.24	L		10	1.80
Blank	339759 (LB) / 339759	1 / 1.00	Thallium	0.300 (mg/kg)	U/None	< 0.08	< 0.48	L		10	3.00
Blank	339759 (LB) / 339759	1 / 1.00	Magnesium	0.540 (mg/kg)	U/None	< 0.14	< 0.8	L		10	5.40
Blank	339759 (LB) / 339759	1 / 1.00	Calcium	3.00 (mg/kg)	U/None	< 0.24	< 1.4	L		10	30.0
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Iron	-5690 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Aluminum	-882 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Calcium	27.5 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 1.00	Antimony	27.5 (PERCENT)	J/R	80 - 120	30 - 125	M			

QC Outlier Report

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Manganese	39.2 (PERCENT)	J/UJ	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Lead	61.2 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Chromium	63.7 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Vanadium	66.3 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Cobalt	67.8 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Thallium	67.8 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Nickel	71.0 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Arsenic	72.3 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Zinc	73.3 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Barium	74.0 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Beryllium	74.6 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Copper	76.6 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (MS) / 339762	1 / 5.00	Magnesium	78.0 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Iron	-10100 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Aluminum	-1920 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Manganese	-217 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	

QC Outlier Report

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Calcium	-46.8 (PERCENT)	J/R	80 - 120	30 - 125	M	Spike amount Insignificant	4.00	
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Chromium	46.7 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 1.00	Antimony	5.24 (PERCENT)	J/R	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Thallium	53.2 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Magnesium	54.3 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Lead	55.1 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Barium	55.6 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Zinc	56.2 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Vanadium	56.9 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Nickel	57.3 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Cobalt	58.8 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Beryllium	64.4 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Copper	64.7 (PERCENT)	J/UJ	80 - 120	30 - 125	M			
MS Recovery	083SB-0004M-0002-SO (SD) / 342228	1 / 5.00	Arsenic	65.4 (PERCENT)	J/UJ	80 - 120	30 - 125	M			

QC Outlier Report

Test Method: SW7471B Extraction Method: TOTAL Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	337843 (BS) / 337843	1 / 1.00	Mercury	120 (PERCENT)	J/U	80 - 120	30 - 125	C			
MS Recovery	083SB-0004M-0002-SO (MS) / 337853	1 / 1.00	Mercury	123 (PERCENT)	J/None	80 - 120	30 - 125	M			

Test Method: SW8260C Extraction Method: SW5035 Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Blank	339693 (LB) / 339693	1 / 1.00	Methylene Chloride	5.70 (ug/kg)	U/None	< 1.7	< 10	L		2	11.4
LCS Recovery	339694 (BS) / 339694	1 / 1.00	Methylene Chloride	166 (PERCENT)	J/U	55 - 140	20 - 140	C			
MS Recovery	083SB-0004M-0002-SO (MS) / 339695	1 / 1.00	Methylene Chloride	53.5 (PERCENT)	J/UJ	55 - 140	20 - 140	M			

Test Method: SW8270D Extraction Method: SW3550 Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	338950 (BS) / 338950	1 / 1.00	Hexachlorocyclopentadiene	45.6 (PERCENT)	J/UJ	70 - 130	70 - 130	C			

Test Method: SW8330 Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	338936 (BS) / 338936	1 / 1.00	NITROGUANIDINE	71.1 (PERCENT)	J/UJ	80 - 120	20 - 120	C			
Surrogate	083SB-0001M-0001-SO (N) / 337811	1 / 1.00	1,2-Dinitrobenzene	71.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			

QC Outlier Report

Test Method: SW8330 Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Surrogate	083SB-0002M-0001-SO (N) / 337812	1 / 1.00	1,2-Dinitrobenzene	71.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0003M-0001-SO (N) / 337813	1 / 1.00	1,2-Dinitrobenzene	72.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0004M-0001-SO (N) / 337815	1 / 1.00	1,2-Dinitrobenzene	61.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0005M-0001-SO (N) / 337818	1 / 1.00	1,2-Dinitrobenzene	64.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0006M-0001-SO (FD) / 337820	1 / 1.00	1,2-Dinitrobenzene	70.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0008M-0001-SO (N) / 337822	1 / 1.00	1,2-Dinitrobenzene	70.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0009M-0001-SO (N) / 337824	1 / 1.00	1,2-Dinitrobenzene	62.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0011M-0001-SO (N) / 337826	1 / 1.00	1,2-Dinitrobenzene	56.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0012M-0001-SO (N) / 337828	1 / 1.00	1,2-Dinitrobenzene	73.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0013M-0001-SO (N) / 337830	1 / 1.00	1,2-Dinitrobenzene	65.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0014-0001-SO (N) / 337832	1 / 1.00	1,2-Dinitrobenzene	53.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			
Surrogate	083SB-0015M-0001-SO (N) / 337834	1 / 1.00	1,2-Dinitrobenzene	64.0 (PERCENT)	J/UJ	78 - 118	10 - 118	I			

Test Method: SW8330B Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	338928 (BS) / 338928	1 / 1.00	4-Amino-2,6-Dinitrotoluene	69.5 (PERCENT)	J/UJ	80 - 125	20 - 125	C			
LCS Recovery	338928 (BS) / 338928	1 / 1.00	4-Amino-2,6-Dinitrotoluene	69.5 (PERCENT)	J/R	80 - 125	80 - 125	C			

QC Outlier Report

Test Method: SW8330B Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Surrogate	083SB-0001M-0001-SO (N) / 337811	1 / 1.00	3,4-Dinitrotoluene	132 (PERCENT)	J/None	78 - 118	10 - 118	I			
Surrogate	083SB-0003M-0001-SO (N) / 337813	1 / 1.00	3,4-Dinitrotoluene	128 (PERCENT)	J/None	78 - 118	10 - 118	I			
Surrogate	083SB-0004M-0001-SO (N) / 337815	1 / 1.00	3,4-Dinitrotoluene	122 (PERCENT)	J/None	78 - 118	10 - 118	I			
Surrogate	083SB-0011M-0001-SO (N) / 337826	1 / 1.00	3,4-Dinitrotoluene	125 (PERCENT)	J/None	78 - 118	10 - 118	I			
Surrogate	083SB-0014-0001-SO (N) / 337832	1 / 1.00	3,4-Dinitrotoluene	119 (PERCENT)	J/None	78 - 118	10 - 118	I			
Surrogate	083SB-0015M-0001-SO (N) / 337834	1 / 1.00	3,4-Dinitrotoluene	141 (PERCENT)	J/None	78 - 118	10 - 118	I			

Rule is the multiplier used when blank contamination occurs to determine action level.

Qualified Results

Test Method: BNASIM	Extraction Method: SW3550	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	Acenaphthene	1.50	1.30	1.30 J		ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	Acenaphthylene	1.50	0.460	0.460 J		ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	Anthracene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	Dibenz(a,h)anthracene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Acenaphthene	1.50	1.20	1.20 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Benzo(k)fluoranthene	1.50	1.30	1.30 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Dibenz(a,h)anthracene	1.50	0.820	0.820 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Fluorene	1.50	1.20	1.20 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	2-Methylnaphthalene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Anthracene	1.60	1.00	1.00 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Benzo(a)anthracene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Benzo(a)pyrene	1.60	0.780	0.780 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Benzo(k)fluoranthene	1.60	0.700	0.700 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Dibenz(a,h)anthracene	1.60	0.620	0.620 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Fluorene	1.60	0.560	0.560 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	Naphthalene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0004M-0001-SO	337815	SO	N	Chrysene	1.60	14.0	14.0 J	-	ug/kg	M
083SB-0004M-0001-SO	337815	SO	N	Fluoranthene	1.60	24.0	24.0 J	-	ug/kg	M
083SB-0004M-0001-SO	337815	SO	N	Fluorene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	Acenaphthene	1.60	0.780	0.780 J		ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	Dibenz(a,h)anthracene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	Fluorene	1.60	0.930	0.930 J		ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	Acenaphthene	1.50	0.710	0.710 J		ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	Benzo(a)pyrene	1.50	1.40	1.40 J		ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	Benzo(k)fluoranthene	1.50	0.980	0.980 J		ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	Dibenz(a,h)anthracene	1.50	0.750	0.750 J		ug/kg	TR

Qualified Results

Test Method: BNASIM	Extraction Method: SW3550	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0006M-0001-SO	337820	SO	FD	Fluorene	1.50	0.740	0.740 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Benzo(a)pyrene	1.60	0.450	0.450 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Dibenz(a,h)anthracene	1.60	0.570	0.570 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Fluoranthene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Fluorene	1.60	0.620	0.620 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.10	1.10 J		ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Pyrene	1.60	1.40	1.40 J		ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Acenaphthene	1.60	0.540	0.540 J		ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Benzo(a)pyrene	1.60	1.20	1.20 J		ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Benzo(k)fluoranthene	1.60	0.570	0.570 J		ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Dibenz(a,h)anthracene	1.60	0.910	0.910 J		ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Fluorene	1.60	0.540	0.540 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Acenaphthene	1.60	0.540	0.540 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Benzo(a)pyrene	1.60	0.750	0.750 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Dibenz(a,h)anthracene	1.60	0.600	0.600 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Fluoranthene	1.60	1.50	1.50 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Fluorene	1.60	0.490	0.490 J		ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J		ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Acenaphthene	1.50	0.570	0.570 J		ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Benzo(a)pyrene	1.50	1.40	1.40 J		ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Benzo(k)fluoranthene	1.50	0.950	0.950 J		ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Dibenz(a,h)anthracene	1.50	0.660	0.660 J		ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Fluorene	1.50	0.660	0.660 J		ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Dibenz(a,h)anthracene	1.50	0.650	0.650 J		ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Fluoranthene	1.50	1.10	1.10 J		ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Fluorene	1.50	0.500	0.500 J		ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Indeno(1,2,3-c,d)pyrene	1.50	0.580	0.580 J		ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Pyrene	1.50	0.720	0.720 J		ug/kg	TR

Qualified Results

Test Method: BNASIM	Extraction Method: SW3550	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0014-0001-SO	337832	SO	N	Benzo(a)pyrene	1.60	0.680	0.680 J		ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	Dibenz(a,h)anthracene	1.60	0.890	0.890 J		ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	Indeno(1,2,3-c,d)pyrene	1.60	1.40	1.40 J		ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Acenaphthene	1.50	0.520	0.520 J		ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Benzo(a)pyrene	1.50	0.590	0.590 J		ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Dibenz(a,h)anthracene	1.50	0.680	0.680 J		ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Fluorene	1.50	0.670	0.670 J		ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Indeno(1,2,3-c,d)pyrene	1.50	1.10	1.10 J		ug/kg	TR

Test Method: E353.2	Extraction Method: METHOD	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	Nitrocellulose	200	100	100 UJ	-	mg/kg	M

Test Method: SW6010C	Extraction Method: TOTAL	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0003M-0001-SO	337813	SO	N	Thallium	2.50	0.490	1.30 U	+	mg/kg	L
083SB-0004M-0001-SO	337815	SO	N	Antimony	0.810	1.00	1.00 J		mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Arsenic	4.10	13.3	13.3 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Barium	0.250	76.5	76.5 J		mg/kg	M/A
083SB-0004M-0001-SO	337815	SO	N	Beryllium	0.200	0.560	0.560 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Cadmium	0.200	0.100	0.100 UJ	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Chromium	0.710	15.4	15.4 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Cobalt	1.20	11.1	11.1 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Copper	2.00	14.2	14.2 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Lead	1.30	8.50	8.50 J	-	mg/kg	M

Qualified Results

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	Magnesium	4.10	6720	6720 J	-	mg/kg	M/A
083SB-0004M-0001-SO	337815	SO	N	Nickel	0.610	24.5	24.5 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Selenium	0.410	0.200	0.200 UJ	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Thallium	2.40	0.640	1.20 U		mg/kg	L/M
083SB-0004M-0001-SO	337815	SO	N	Vanadium	0.410	15.5	15.5 J	-	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Zinc	1.50	46.1	46.1 J	-	mg/kg	M
083SB-0005M-0001-SO	337818	SO	N	Antimony	4.10	1.20	1.20 J		mg/kg	TR
083SB-0005M-0001-SO	337818	SO	N	Thallium	2.50	0.790	1.20 U	+	mg/kg	L
083SB-0006M-0001-SO	337820	SO	FD	Antimony	4.00	1.00	1.00 J		mg/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	Cadmium	0.200	0.0460	0.0460 J		mg/kg	TR
083SB-0008M-0001-SO	337822	SO	N	Antimony	4.10	0.920	0.920 J		mg/kg	TR
083SB-0009M-0001-SO	337824	SO	N	Antimony	4.20	0.920	0.920 J		mg/kg	TR
083SB-0011M-0001-SO	337826	SO	N	Antimony	4.00	1.00	1.00 J		mg/kg	TR
083SB-0012M-0001-SO	337828	SO	N	Antimony	4.10	1.10	1.10 J		mg/kg	TR
083SB-0013M-0001-SO	337830	SO	N	Antimony	4.00	1.30	1.30 J		mg/kg	TR
083SB-0014-0001-SO	337832	SO	N	Antimony	4.20	0.840	0.840 J		mg/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Antimony	4.10	0.860	0.860 J		mg/kg	TR
083SB-0015M-0001-SO	337834	SO	N	Vanadium	0.0820	3.20	3.20 U		mg/kg	B2

Test Method: SW7471B Extraction Method: TOTAL Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	Mercury	0.00900	0.0340	0.0340 J	+	mg/kg	M
083SB-0002M-0001-SO	337812	SO	N	Mercury	0.00910	0.0100	0.0100 J	+	mg/kg	M
083SB-0003M-0001-SO	337813	SO	N	Mercury	0.00890	0.00900	0.00900 J	+	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Mercury	0.00900	0.00720	0.00720 J	+	mg/kg	TR/M
083SB-0005M-0001-SO	337818	SO	N	Mercury	0.00910	0.0130	0.0130 J	+	mg/kg	M

Qualified Results

Test Method: SW7471B	Extraction Method: TOTAL	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0006M-0001-SO	337820	SO	FD	Mercury	0.00870	0.0120	0.0120 J	+	mg/kg	M
083SB-0008M-0001-SO	337822	SO	N	Mercury	0.00870	0.00970	0.00970 J	+	mg/kg	M
083SB-0009M-0001-SO	337824	SO	N	Mercury	0.00880	0.00970	0.00970 J	+	mg/kg	M
083SB-0011M-0001-SO	337826	SO	N	Mercury	0.00910	0.00730	0.00730 J	+	mg/kg	TR/M
083SB-0012M-0001-SO	337828	SO	N	Mercury	0.00920	0.00650	0.00650 J	+	mg/kg	TR/M
083SB-0013M-0001-SO	337830	SO	N	Mercury	0.00900	0.00630	0.00630 J	+	mg/kg	TR/M
083SB-0014-0001-SO	337832	SO	N	Mercury	0.00930	0.00750	0.00750 J	+	mg/kg	TR/M
083SB-0015M-0001-SO	337834	SO	N	Mercury	0.00890	0.00760	0.00760 J	+	mg/kg	TR/M

Test Method: SW8081B	Extraction Method: SW3546	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0012M-0001-SO	337828	SO	N	Aldrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	alpha-BHC (alpha-Hexachlorocyclohexane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	alpha-Chlordane	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	alpha-Endosulfan	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	beta-BHC (beta-Hexachlorocyclohexane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	beta-Endosulfan	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	delta-BHC (delta-Hexachlorocyclohexane)	2.50	1.10	1.10 J		ug/kg	TR/I/P1
083SB-0012M-0001-SO	337828	SO	N	Dieldrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Endosulfan Sulfate	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Endrin	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Endrin Aldehyde	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Endrin Ketone	4.10	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	gamma-BHC (Lindane)	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	gamma-Chlordane	2.50	1.20	1.20 UJ		ug/kg	I

Qualified Results

Test Method: SW8081B Extraction Method: SW3546 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0012M-0001-SO	337828	SO	N	Heptachlor	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Heptachlor Epoxide	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Methoxychlor	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	p,p'-DDD	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	p,p'-DDE	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	p,p'-DDT	2.50	1.20	1.20 UJ		ug/kg	I
083SB-0012M-0001-SO	337828	SO	N	Toxaphene	62.0	12.0	12.0 UJ		ug/kg	I

Test Method: SW8260C Extraction Method: SW5030B Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0016-0001-TB	337835	WG	N	Methylene Chloride	10.0	7.90	2.00 U	+	ug/L	L/C
083SB-0018-0001-TB	337836	WG	N	Methylene Chloride	10.0	9.30	2.00 U	+	ug/L	L/C
083SB-0020-0001-TB	338809	WG	N	Acetone	20.0	15.0	15.0 J		ug/L	TR
083SB-0020-0001-TB	338809	WG	N	Methylene Chloride	11.0	11.0	2.00 U	+	ug/L	L/C

Test Method: SW8260C Extraction Method: SW5035 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	338807	SO	N	Acetone	17.0	11.0	8.30 U		ug/kg	T
083SB-0001M-0001-SO	338807	SO	N	Bromomethane	1.70	0.830	0.830 UJ		ug/kg	V2
083SB-0001M-0001-SO	338807	SO	N	Methylene Chloride	8.30	6.00	1.70 U	+	ug/kg	L/C/V2
083SB-0001M-0001-SO	338807	SO	N	Tetrachloroethene (PCE)	1.70	0.830	0.830 UJ		ug/kg	V2
083SB-0002M-0001-SO	338808	SO	N	Bromomethane	1.90	0.950	0.950 UJ		ug/kg	V2
083SB-0002M-0001-SO	338808	SO	N	Methylene Chloride	9.50	5.50	1.90 U	+	ug/kg	L/C/V2
083SB-0002M-0001-SO	338808	SO	N	Tetrachloroethene (PCE)	1.90	0.950	0.950 UJ		ug/kg	V2
083SB-0003M-0001-SO	337814	SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2

Qualified Results

Test Method: SW8260C	Extraction Method: SW5035	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0003M-0001-SO	337814	SO	N	Methylene Chloride	10.0	7.00	2.00 U	+	ug/kg	L/C/V2/J
083SB-0003M-0001-SO	337814	SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0004M-0001-SO	337816	SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0004M-0001-SO	337816	SO	N	Methylene Chloride	10.0	6.50	2.00 U		ug/kg	L/C/M/V2/J
083SB-0004M-0001-SO	337816	SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0005M-0001-SO	337819	SO	N	Bromomethane	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0005M-0001-SO	337819	SO	N	Methylene Chloride	9.00	6.00	1.80 U	+	ug/kg	L/C/V2/J
083SB-0005M-0001-SO	337819	SO	N	Tetrachloroethene (PCE)	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0006M-0001-SO	337821	SO	FD	Bromomethane	1.80	0.910	0.910 UJ		ug/kg	V2
083SB-0006M-0001-SO	337821	SO	FD	Methylene Chloride	9.10	7.00	1.80 U	+	ug/kg	L/C/V2
083SB-0006M-0001-SO	337821	SO	FD	Tetrachloroethene (PCE)	1.80	0.910	0.910 UJ		ug/kg	V2
083SB-0008M-0001-SO	337823	SO	N	Bromomethane	1.90	0.940	0.940 UJ		ug/kg	V2
083SB-0008M-0001-SO	337823	SO	N	Methylene Chloride	9.40	6.70	1.90 U	+	ug/kg	L/C/V2
083SB-0008M-0001-SO	337823	SO	N	Tetrachloroethene (PCE)	1.90	0.940	0.940 UJ		ug/kg	V2
083SB-0009M-0001-SO	337825	SO	N	Bromomethane	1.90	0.970	0.970 UJ		ug/kg	V2
083SB-0009M-0001-SO	337825	SO	N	Methylene Chloride	9.70	6.90	1.90 U	+	ug/kg	L/C/V2
083SB-0009M-0001-SO	337825	SO	N	Tetrachloroethene (PCE)	1.90	0.970	0.970 UJ		ug/kg	V2
083SB-0011M-0001-SO	337827	SO	N	Bromomethane	1.90	0.930	0.930 UJ		ug/kg	V2
083SB-0011M-0001-SO	337827	SO	N	Methylene Chloride	9.30	6.50	1.90 U	+	ug/kg	L/C/V2
083SB-0011M-0001-SO	337827	SO	N	Tetrachloroethene (PCE)	1.90	0.930	0.930 UJ		ug/kg	V2
083SB-0012M-0001-SO	337829	SO	N	Bromomethane	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0012M-0001-SO	337829	SO	N	Methylene Chloride	10.0	7.30	2.00 U	+	ug/kg	L/C/V2
083SB-0012M-0001-SO	337829	SO	N	Tetrachloroethene (PCE)	2.00	1.00	1.00 UJ		ug/kg	V2
083SB-0013M-0001-SO	337831	SO	N	Bromomethane	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0013M-0001-SO	337831	SO	N	Methylene Chloride	9.00	6.50	1.80 U	+	ug/kg	L/C/V2
083SB-0013M-0001-SO	337831	SO	N	Tetrachloroethene (PCE)	1.80	0.900	0.900 UJ		ug/kg	V2
083SB-0014-0001-SO	337833	SO	N	Bromomethane	2.10	1.00	1.00 UJ		ug/kg	V2
083SB-0014-0001-SO	337833	SO	N	Methylene Chloride	10.0	7.80	2.10 U	+	ug/kg	L/C/V2

Qualified Results

Test Method: SW8260C	Extraction Method: SW5035	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0014-0001-SO	337833	SO	N	Tetrachloroethene (PCE)	2.10	1.00	1.00 UJ		ug/kg	V2
083SB-0015M-0001-SO	338810	SO	N	Bromomethane	1.90	0.950	0.950 UJ		ug/kg	V2
083SB-0015M-0001-SO	338810	SO	N	Methylene Chloride	9.50	5.80	1.90 U	+	ug/kg	L/C/V2
083SB-0015M-0001-SO	338810	SO	N	Tetrachloroethene (PCE)	1.90	0.950	0.950 UJ		ug/kg	V2

Test Method: SW8270D	Extraction Method: SW3550	Leach Method: NONE								
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	Di-n-Butyl Phthalate	410	140	140 J		ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	Hexachlorocyclopentadiene	200	61.0	61.0 UJ	-	ug/kg	C
083SB-0002M-0001-SO	337812	SO	N	Di-n-Butyl Phthalate	410	90.0	90.0 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Di-n-Octylphthalate	210	91.0	91.0 J		ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0003M-0001-SO	337813	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0004M-0001-SO	337815	SO	N	Benzyl Alcohol	420	130	0.00 R	-	ug/kg	M
083SB-0004M-0001-SO	337815	SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0005M-0001-SO	337818	SO	N	Hexachlorocyclopentadiene	210	64.0	64.0 UJ	-	ug/kg	C
083SB-0006M-0001-SO	337820	SO	FD	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0008M-0001-SO	337822	SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0009M-0001-SO	337824	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0011M-0001-SO	337826	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0012M-0001-SO	337828	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0013M-0001-SO	337830	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C
083SB-0014-0001-SO	337832	SO	N	Hexachlorocyclopentadiene	210	63.0	63.0 UJ	-	ug/kg	C
083SB-0015M-0001-SO	337834	SO	N	Hexachlorocyclopentadiene	210	62.0	62.0 UJ	-	ug/kg	C

Qualified Results

Test Method: SW8330B Extraction Method: METHOD Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0001M-0001-SO	337811	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0002M-0001-SO	337812	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0002M-0001-SO	337812	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0003M-0001-SO	337813	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0003M-0001-SO	337813	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0004M-0001-SO	337815	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0004M-0001-SO	337815	SO	N	3-Nitrotoluene	0.500	0.300	0.300 UJ		mg/kg	D/M
083SB-0004M-0001-SO	337815	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0004M-0001-SO	337815	SO	N	4-Nitrotoluene	0.500	0.200	0.200 UJ		mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	Pentaerythritol Tetranitrate	2.00	1.20	1.20 UJ		mg/kg	D
083SB-0005M-0001-SO	337818	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0005M-0001-SO	337818	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0006M-0001-SO	337820	SO	FD	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0006M-0001-SO	337820	SO	FD	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0008M-0001-SO	337822	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0008M-0001-SO	337822	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0009M-0001-SO	337824	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0009M-0001-SO	337824	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0011M-0001-SO	337826	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0011M-0001-SO	337826	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0012M-0001-SO	337828	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0012M-0001-SO	337828	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0013M-0001-SO	337830	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0013M-0001-SO	337830	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C
083SB-0014-0001-SO	337832	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0014-0001-SO	337832	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Qualified Results

Test Method: SW8330B Extraction Method: METHOD Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
083SB-0015M-0001-SO	337834	SO	N	3,5-Dinitroaniline	0.300	0.200	0.200 UJ		mg/kg	V2
083SB-0015M-0001-SO	337834	SO	N	4-Amino-2,6-Dinitrotoluene	0.300	0.200	0.200 UJ		mg/kg	C

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Detected Results

Test Method: BNASIM Extraction Method: SW3550 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	1	2-Methylnaphthalene	1.50	3.10	3.10	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Acenaphthene	1.50	1.30	1.30 J	ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	1	Acenaphthylene	1.50	0.460	0.460 J	ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	1	Anthracene	1.50	1.10	1.10 J	ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	1	Benzo(a)anthracene	1.50	4.70	4.70	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Benzo(a)pyrene	1.50	2.60	2.60	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Benzo(b)fluoranthene	1.50	6.70	6.70	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Benzo(g,h,i)perylene	1.50	4.50	4.50	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Benzo(k)fluoranthene	1.50	1.80	1.80	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Chrysene	1.50	4.10	4.10	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Dibenz(a,h)anthracene	1.50	1.10	1.10 J	ug/kg	TR
083SB-0001M-0001-SO	337811	SO	N	1	Fluoranthene	1.50	7.40	7.40	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Fluorene	1.50	2.90	2.90	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.50	3.20	3.20	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Naphthalene	1.50	2.60	2.60	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Phenanthrene	1.50	9.20	9.20	ug/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Pyrene	1.50	5.90	5.90	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	2-Methylnaphthalene	1.50	1.50	1.50	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Acenaphthene	1.50	1.20	1.20 J	ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	1	Anthracene	1.50	2.40	2.40	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Benzo(a)anthracene	1.50	5.30	5.30	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Benzo(a)pyrene	1.50	2.10	2.10	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Benzo(b)fluoranthene	1.50	6.00	6.00	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Benzo(g,h,i)perylene	1.50	3.50	3.50	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Benzo(k)fluoranthene	1.50	1.30	1.30 J	ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	1	Chrysene	1.50	5.60	5.60	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Dibenz(a,h)anthracene	1.50	0.820	0.820 J	ug/kg	TR

Detected Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0002M-0001-SO	337812	SO	N	1	Fluoranthene	1.50	7.50	7.50	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Fluorene	1.50	1.20	1.20 J	ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.50	2.20	2.20	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Naphthalene	1.50	1.90	1.90	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Phenanthrene	1.50	7.30	7.30	ug/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Pyrene	1.50	5.90	5.90	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	2-Methylnaphthalene	1.60	1.20	1.20 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Anthracene	1.60	1.00	1.00 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Benzo(a)anthracene	1.60	1.50	1.50 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Benzo(a)pyrene	1.60	0.780	0.780 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Benzo(b)fluoranthene	1.60	4.50	4.50	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Benzo(g,h,i)perylene	1.60	2.60	2.60	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Benzo(k)fluoranthene	1.60	0.700	0.700 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Chrysene	1.60	7.60	7.60	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Dibenz(a,h)anthracene	1.60	0.620	0.620 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Fluoranthene	1.60	2.30	2.30	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Fluorene	1.60	0.560	0.560 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Naphthalene	1.60	1.50	1.50 J	ug/kg	TR
083SB-0003M-0001-SO	337813	SO	N	1	Phenanthrene	1.60	4.60	4.60	ug/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Pyrene	1.60	2.00	2.00	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	2-Methylnaphthalene	1.60	1.60	1.60	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Acenaphthene	1.60	2.00	2.00	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Anthracene	1.60	3.80	3.80	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Benzo(a)anthracene	1.60	16.0	16.0	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Benzo(a)pyrene	1.60	6.80	6.80	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Benzo(b)fluoranthene	1.60	16.0	16.0	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Benzo(g,h,i)perylene	1.60	8.30	8.30	ug/kg	

Detected Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	1	Benzo(k)fluoranthene	1.60	3.10	3.10	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Chrysene	1.60	14.0	14.0 J	ug/kg	M
083SB-0004M-0001-SO	337815	SO	N	1	Dibenz(a,h)anthracene	1.60	1.90	1.90	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Fluoranthene	1.60	24.0	24.0 J	ug/kg	M
083SB-0004M-0001-SO	337815	SO	N	1	Fluorene	1.60	1.30	1.30 J	ug/kg	TR
083SB-0004M-0001-SO	337815	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	5.20	5.20	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Naphthalene	1.60	1.80	1.80	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Phenanthrene	1.60	16.0	16.0	ug/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Pyrene	1.60	18.0	18.0	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	2-Methylnaphthalene	1.60	1.90	1.90	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Acenaphthene	1.60	0.780	0.780 J	ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	1	Anthracene	1.60	2.10	2.10	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Benzo(a)anthracene	1.60	7.30	7.30	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Benzo(a)pyrene	1.60	3.20	3.20	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Benzo(b)fluoranthene	1.60	8.90	8.90	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Benzo(g,h,i)perylene	1.60	6.00	6.00	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Benzo(k)fluoranthene	1.60	1.90	1.90	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Chrysene	1.60	8.30	8.30	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Dibenz(a,h)anthracene	1.60	1.20	1.20 J	ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	1	Fluoranthene	1.60	10.0	10.0	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Fluorene	1.60	0.930	0.930 J	ug/kg	TR
083SB-0005M-0001-SO	337818	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	3.60	3.60	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Naphthalene	1.60	2.00	2.00	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Phenanthrene	1.60	11.0	11.0	ug/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Pyrene	1.60	8.10	8.10	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	2-Methylnaphthalene	1.50	2.00	2.00	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Acenaphthene	1.50	0.710	0.710 J	ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	1	Anthracene	1.50	7.50	7.50	ug/kg	

Detected Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0006M-0001-SO	337820	SO	FD	1	Benzo(a)anthracene	1.50	11.0	11.0	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Benzo(a)pyrene	1.50	1.40	1.40 J	ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	1	Benzo(b)fluoranthene	1.50	5.10	5.10	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Benzo(g,h,i)perylene	1.50	3.80	3.80	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Benzo(k)fluoranthene	1.50	0.980	0.980 J	ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	1	Chrysene	1.50	8.30	8.30	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Dibenz(a,h)anthracene	1.50	0.750	0.750 J	ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	1	Fluoranthene	1.50	4.10	4.10	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Fluorene	1.50	0.740	0.740 J	ug/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	1	Indeno(1,2,3-c,d)pyrene	1.50	1.80	1.80	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Naphthalene	1.50	2.60	2.60	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Phenanthrene	1.50	7.70	7.70	ug/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Pyrene	1.50	3.60	3.60	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	2-Methylnaphthalene	1.60	1.70	1.70	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Benzo(a)pyrene	1.60	0.450	0.450 J	ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	1	Benzo(b)fluoranthene	1.60	4.50	4.50	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Benzo(g,h,i)perylene	1.60	3.00	3.00	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Chrysene	1.60	9.40	9.40	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Dibenz(a,h)anthracene	1.60	0.570	0.570 J	ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	1	Fluoranthene	1.60	1.50	1.50 J	ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	1	Fluorene	1.60	0.620	0.620 J	ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	1.10	1.10 J	ug/kg	TR
083SB-0008M-0001-SO	337822	SO	N	1	Naphthalene	1.60	1.70	1.70	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Phenanthrene	1.60	4.70	4.70	ug/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Pyrene	1.60	1.40	1.40 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	2-Methylnaphthalene	1.60	2.80	2.80	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Acenaphthene	1.60	0.540	0.540 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	Benzo(a)anthracene	1.60	2.30	2.30	ug/kg	

Detected Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0009M-0001-SO	337824	SO	N	1	Benzo(a)pyrene	1.60	1.20	1.20 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	Benzo(b)fluoranthene	1.60	5.70	5.70	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Benzo(g,h,i)perylene	1.60	5.40	5.40	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Benzo(k)fluoranthene	1.60	0.570	0.570 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	Chrysene	1.60	9.60	9.60	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Dibenz(a,h)anthracene	1.60	0.910	0.910 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	Fluoranthene	1.60	3.10	3.10	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Fluorene	1.60	0.540	0.540 J	ug/kg	TR
083SB-0009M-0001-SO	337824	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	1.90	1.90	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Naphthalene	1.60	2.90	2.90	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Phenanthrene	1.60	7.40	7.40	ug/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Pyrene	1.60	3.20	3.20	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	2-Methylnaphthalene	1.60	2.20	2.20	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Acenaphthene	1.60	0.540	0.540 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Benzo(a)pyrene	1.60	0.750	0.750 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Benzo(b)fluoranthene	1.60	3.90	3.90	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Benzo(g,h,i)perylene	1.60	4.30	4.30	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Chrysene	1.60	8.60	8.60	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Dibenz(a,h)anthracene	1.60	0.600	0.600 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Fluoranthene	1.60	1.50	1.50 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Fluorene	1.60	0.490	0.490 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	1.30	1.30 J	ug/kg	TR
083SB-0011M-0001-SO	337826	SO	N	1	Naphthalene	1.60	2.20	2.20	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Phenanthrene	1.60	6.40	6.40	ug/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Pyrene	1.60	1.80	1.80	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	2-Methylnaphthalene	1.50	2.10	2.10	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Acenaphthene	1.50	0.570	0.570 J	ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	1	Benzo(a)anthracene	1.50	2.80	2.80	ug/kg	

Detected Results

Test Method: BNASIM	Extraction Method: SW3550		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0012M-0001-SO	337828	SO	N	1	Benzo(a)pyrene	1.50	1.40	1.40 J	ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	1	Benzo(b)fluoranthene	1.50	5.60	5.60	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Benzo(g,h,i)perylene	1.50	3.60	3.60	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Benzo(k)fluoranthene	1.50	0.950	0.950 J	ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	1	Chrysene	1.50	8.30	8.30	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Dibenz(a,h)anthracene	1.50	0.660	0.660 J	ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	1	Fluoranthene	1.50	4.50	4.50	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Fluorene	1.50	0.660	0.660 J	ug/kg	TR
083SB-0012M-0001-SO	337828	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.50	1.70	1.70	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Naphthalene	1.50	2.40	2.40	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Phenanthrene	1.50	9.10	9.10	ug/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Pyrene	1.50	3.60	3.60	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	2-Methylnaphthalene	1.50	1.80	1.80	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Benzo(b)fluoranthene	1.50	3.20	3.20	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Benzo(g,h,i)perylene	1.50	1.50	1.50	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Chrysene	1.50	6.50	6.50	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Dibenz(a,h)anthracene	1.50	0.650	0.650 J	ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	1	Fluoranthene	1.50	1.10	1.10 J	ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	1	Fluorene	1.50	0.500	0.500 J	ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.50	0.580	0.580 J	ug/kg	TR
083SB-0013M-0001-SO	337830	SO	N	1	Naphthalene	1.50	2.80	2.80	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Phenanthrene	1.50	3.90	3.90	ug/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Pyrene	1.50	0.720	0.720 J	ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	1	2-Methylnaphthalene	1.60	3.70	3.70	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Benzo(a)pyrene	1.60	0.680	0.680 J	ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	1	Benzo(b)fluoranthene	1.60	5.90	5.90	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Benzo(g,h,i)perylene	1.60	6.50	6.50	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Chrysene	1.60	16.0	16.0	ug/kg	

Detected Results

Test Method: BNASIM Extraction Method: SW3550 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0014-0001-SO	337832	SO	N	1	Dibenz(a,h)anthracene	1.60	0.890	0.890 J	ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	1	Fluoranthene	1.60	2.50	2.50	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.60	1.40	1.40 J	ug/kg	TR
083SB-0014-0001-SO	337832	SO	N	1	Naphthalene	1.60	3.70	3.70	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Phenanthrene	1.60	23.0	23.0	ug/kg	
083SB-0014-0001-SO	337832	SO	N	1	Pyrene	1.60	2.60	2.60	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	2-Methylnaphthalene	1.50	2.90	2.90	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Acenaphthene	1.50	0.520	0.520 J	ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Benzo(a)pyrene	1.50	0.590	0.590 J	ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Benzo(b)fluoranthene	1.50	4.70	4.70	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Benzo(g,h,i)perylene	1.50	4.10	4.10	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Chrysene	1.50	12.0	12.0	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Dibenz(a,h)anthracene	1.50	0.680	0.680 J	ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Fluoranthene	1.50	1.80	1.80	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Fluorene	1.50	0.670	0.670 J	ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Indeno(1,2,3-c,d)pyrene	1.50	1.10	1.10 J	ug/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Naphthalene	1.50	2.60	2.60	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Phenanthrene	1.50	9.10	9.10	ug/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Pyrene	1.50	1.80	1.80	ug/kg	

Test Method: E160.3 Extraction Method: NONE Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	1	Solids	1.00	97.5	97.5	PERCENT	
083SB-0002M-0001-SO	337812	SO	N	1	Solids	1.00	97.5	97.5	PERCENT	
083SB-0003M-0001-SO	337813	SO	N	1	Solids	1.00	96.0	96.0	PERCENT	

Detected Results

Test Method: E160.3 Extraction Method: NONE Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	1	Solids	1.00	95.6	95.6	PERCENT	
083SB-0005M-0001-SO	337818	SO	N	1	Solids	1.00	94.1	94.1	PERCENT	
083SB-0006M-0001-SO	337820	SO	FD	1	Solids	1.00	97.1	97.1	PERCENT	
083SB-0008M-0001-SO	337822	SO	N	1	Solids	1.00	94.9	94.9	PERCENT	
083SB-0009M-0001-SO	337824	SO	N	1	Solids	1.00	96.1	96.1	PERCENT	
083SB-0011M-0001-SO	337826	SO	N	1	Solids	1.00	96.2	96.2	PERCENT	
083SB-0012M-0001-SO	337828	SO	N	1	Solids	1.00	96.6	96.6	PERCENT	
083SB-0013M-0001-SO	337830	SO	N	1	Solids	1.00	97.4	97.4	PERCENT	
083SB-0014-0001-SO	337832	SO	N	1	Solids	1.00	95.3	95.3	PERCENT	
083SB-0015M-0001-SO	337834	SO	N	1	Solids	1.00	96.9	96.9	PERCENT	

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	5	Aluminum	1.30	11300	11300	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Antimony	0.850	1.00	1.00	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Arsenic	4.30	13.9	13.9	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Barium	0.270	73.5	73.5	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Beryllium	0.210	0.650	0.650	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Calcium	7.40	23100	23100	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Chromium	0.740	17.0	17.0	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Cobalt	1.30	11.9	11.9	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	5	Copper	2.10	20.2	20.2	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Iron	9.60	24800	24800	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Lead	1.30	21.0	21.0	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Magnesium	4.30	6070	6070	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Manganese	0.800	432	432	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Nickel	0.640	27.8	27.8	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Potassium	70.0	1200	1200	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	1	Sodium	26.0	49.2	49.2	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Vanadium	0.430	18.3	18.3	mg/kg	
083SB-0001M-0001-SO	337811	SO	N	5	Zinc	1.60	60.3	60.3	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Aluminum	1.20	12300	12300	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Antimony	0.800	1.10	1.10	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Arsenic	4.00	16.6	16.6	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Barium	0.250	83.4	83.4	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Beryllium	0.200	0.670	0.670	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Calcium	7.00	31900	31900	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Chromium	0.700	18.7	18.7	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Cobalt	1.20	13.7	13.7	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Copper	2.00	20.7	20.7	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Iron	9.00	27800	27800	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Lead	1.20	12.2	12.2	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Magnesium	4.00	8100	8100	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Manganese	0.750	515	515	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Nickel	0.600	31.4	31.4	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Potassium	66.0	1420	1420	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	1	Sodium	24.0	68.2	68.2	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Vanadium	0.400	18.5	18.5	mg/kg	
083SB-0002M-0001-SO	337812	SO	N	5	Zinc	1.50	63.0	63.0	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0003M-0001-SO	337813	SO	N	5	Aluminum	1.30	17900	17900	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Antimony	0.840	0.960	0.960	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Arsenic	4.20	18.2	18.2	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Barium	0.260	110	110	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Beryllium	0.210	0.920	0.920	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Calcium	7.40	46700	46700	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Chromium	0.740	25.5	25.5	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Cobalt	1.30	15.8	15.8	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Copper	2.10	25.4	25.4	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Iron	9.50	39100	39100	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Lead	1.30	16.6	16.6	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Magnesium	4.20	11000	11000	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Manganese	0.790	594	594	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Nickel	0.630	37.9	37.9	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Potassium	69.0	1590	1590	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	1	Sodium	25.0	66.6	66.6	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Vanadium	0.420	25.6	25.6	mg/kg	
083SB-0003M-0001-SO	337813	SO	N	5	Zinc	1.60	85.0	85.0	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	5	Aluminum	1.20	10900	10900	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Antimony	0.810	1.00	1.00 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Arsenic	4.10	13.3	13.3 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Barium	0.250	76.5	76.5 J	mg/kg	M/A
083SB-0004M-0001-SO	337815	SO	N	5	Beryllium	0.200	0.560	0.560 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Calcium	7.10	31600	31600	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	5	Chromium	0.710	15.4	15.4 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Cobalt	1.20	11.1	11.1 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Copper	2.00	14.2	14.2 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Iron	9.10	25100	25100	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	5	Lead	1.30	8.50	8.50 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Magnesium	4.10	6720	6720 J	mg/kg	M/A
083SB-0004M-0001-SO	337815	SO	N	5	Manganese	0.760	481	481	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	5	Nickel	0.610	24.5	24.5 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	1	Potassium	67.0	1660	1660	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	1	Sodium	24.0	67.0	67.0	mg/kg	
083SB-0004M-0001-SO	337815	SO	N	5	Vanadium	0.410	15.5	15.5 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	5	Zinc	1.50	46.1	46.1 J	mg/kg	M
083SB-0005M-0001-SO	337818	SO	N	5	Aluminum	1.20	12500	12500	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Antimony	4.10	1.20	1.20 J	mg/kg	TR
083SB-0005M-0001-SO	337818	SO	N	5	Arsenic	4.10	13.9	13.9	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Barium	0.260	78.1	78.1	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Beryllium	0.210	0.680	0.680	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Calcium	7.30	28900	28900	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Chromium	0.730	18.3	18.3	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Cobalt	1.20	11.8	11.8	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Copper	2.10	21.3	21.3	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Iron	9.30	27200	27200	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Lead	1.30	11.8	11.8	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Magnesium	4.10	7530	7530	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Manganese	0.780	428	428	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Nickel	0.620	29.2	29.2	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Potassium	68.0	1300	1300	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	1	Sodium	25.0	55.2	55.2	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Vanadium	0.410	18.8	18.8	mg/kg	
083SB-0005M-0001-SO	337818	SO	N	5	Zinc	1.60	70.2	70.2	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Aluminum	1.20	10800	10800	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Antimony	4.00	1.00	1.00 J	mg/kg	TR

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0006M-0001-SO	337820	SO	FD	5	Arsenic	4.00	12.6	12.6	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Barium	0.250	70.2	70.2	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Beryllium	0.200	0.610	0.610	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Cadmium	0.200	0.0460	0.0460 J	mg/kg	TR
083SB-0006M-0001-SO	337820	SO	FD	5	Calcium	6.90	24400	24400	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Chromium	0.690	16.2	16.2	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Cobalt	1.20	11.0	11.0	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Copper	2.00	19.9	19.9	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Iron	8.90	23800	23800	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Lead	1.20	10.8	10.8	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Magnesium	4.00	6660	6660	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Manganese	0.740	380	380	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Nickel	0.590	27.0	27.0	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Potassium	65.0	1250	1250	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	1	Sodium	24.0	53.7	53.7	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Vanadium	0.400	16.7	16.7	mg/kg	
083SB-0006M-0001-SO	337820	SO	FD	5	Zinc	1.50	64.1	64.1	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Aluminum	1.20	12500	12500	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Antimony	4.10	0.920	0.920 J	mg/kg	TR
083SB-0008M-0001-SO	337822	SO	N	5	Arsenic	4.10	11.7	11.7	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Barium	0.260	80.4	80.4	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Beryllium	0.200	0.640	0.640	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Calcium	7.20	36200	36200	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Chromium	0.720	18.5	18.5	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Cobalt	1.20	12.5	12.5	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Copper	2.00	20.7	20.7	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Iron	9.20	26000	26000	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Lead	1.30	11.5	11.5	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0008M-0001-SO	337822	SO	N	5	Magnesium	4.10	8800	8800	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Manganese	0.770	441	441	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Nickel	0.610	29.9	29.9	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Potassium	68.0	1610	1610	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	1	Sodium	25.0	72.6	72.6	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Vanadium	0.410	18.8	18.8	mg/kg	
083SB-0008M-0001-SO	337822	SO	N	5	Zinc	1.50	62.2	62.2	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Aluminum	1.30	11600	11600	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Antimony	4.20	0.920	0.920 J	mg/kg	TR
083SB-0009M-0001-SO	337824	SO	N	5	Arsenic	4.20	11.6	11.6	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Barium	0.260	76.2	76.2	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Beryllium	0.210	0.590	0.590	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Calcium	7.40	30500	30500	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Chromium	0.740	17.6	17.6	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Cobalt	1.30	11.6	11.6	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Copper	2.10	19.3	19.3	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Iron	9.50	25000	25000	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Lead	1.30	10.7	10.7	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Magnesium	4.20	8030	8030	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Manganese	0.790	387	387	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Nickel	0.630	27.9	27.9	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Potassium	70.0	1570	1570	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	1	Sodium	25.0	76.1	76.1	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Vanadium	0.420	17.8	17.8	mg/kg	
083SB-0009M-0001-SO	337824	SO	N	5	Zinc	1.60	58.9	58.9	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Aluminum	1.20	11200	11200	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Antimony	4.00	1.00	1.00 J	mg/kg	TR
083SB-0011M-0001-SO	337826	SO	N	5	Arsenic	4.00	12.6	12.6	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0011M-0001-SO	337826	SO	N	5	Barium	0.250	79.8	79.8	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Beryllium	0.200	0.580	0.580	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Calcium	7.00	33900	33900	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Chromium	0.700	16.6	16.6	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Cobalt	1.20	12.9	12.9	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Copper	2.00	18.5	18.5	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Iron	9.00	24600	24600	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Lead	1.30	9.10	9.10	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Magnesium	4.00	7730	7730	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Manganese	0.750	482	482	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Nickel	0.600	28.9	28.9	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Potassium	66.0	1580	1580	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	1	Sodium	24.0	91.1	91.1	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Vanadium	0.400	16.6	16.6	mg/kg	
083SB-0011M-0001-SO	337826	SO	N	5	Zinc	1.50	54.7	54.7	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Aluminum	1.20	11300	11300	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Antimony	4.10	1.10	1.10 J	mg/kg	TR
083SB-0012M-0001-SO	337828	SO	N	5	Arsenic	4.10	11.1	11.1	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Barium	0.250	76.6	76.6	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Beryllium	0.200	0.570	0.570	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Calcium	7.10	32200	32200	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Chromium	0.710	16.2	16.2	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Cobalt	1.20	8.80	8.80	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Copper	2.00	16.7	16.7	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Iron	9.10	24200	24200	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Lead	1.30	9.20	9.20	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Magnesium	4.10	6980	6980	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Manganese	0.760	307	307	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0012M-0001-SO	337828	SO	N	5	Nickel	0.610	22.7	22.7	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Potassium	67.0	1480	1480	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	1	Sodium	24.0	85.3	85.3	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Vanadium	0.410	16.5	16.5	mg/kg	
083SB-0012M-0001-SO	337828	SO	N	5	Zinc	1.50	51.3	51.3	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Aluminum	1.20	10100	10100	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Antimony	4.00	1.30	1.30 J	mg/kg	TR
083SB-0013M-0001-SO	337830	SO	N	5	Arsenic	4.00	11.0	11.0	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Barium	0.250	58.6	58.6	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Beryllium	0.200	0.530	0.530	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Calcium	7.00	27400	27400	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Chromium	0.700	15.1	15.1	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Cobalt	1.20	9.10	9.10	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Copper	2.00	16.9	16.9	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Iron	9.00	22300	22300	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Lead	1.30	8.60	8.60	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Magnesium	4.00	6890	6890	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Manganese	0.750	314	314	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Nickel	0.600	23.0	23.0	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Potassium	66.0	1480	1480	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	1	Sodium	24.0	96.4	96.4	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Vanadium	0.400	15.5	15.5	mg/kg	
083SB-0013M-0001-SO	337830	SO	N	5	Zinc	1.50	48.7	48.7	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Aluminum	1.30	8880	8880	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Antimony	4.20	0.840	0.840 J	mg/kg	TR
083SB-0014-0001-SO	337832	SO	N	5	Arsenic	4.20	7.00	7.00	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Barium	0.260	56.3	56.3	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Beryllium	0.210	0.470	0.470	mg/kg	

Detected Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0014-0001-SO	337832	SO	N	5	Calcium	7.30	25200	25200	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Chromium	0.730	14.8	14.8	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Cobalt	1.30	6.50	6.50	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Copper	2.10	11.1	11.1	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Iron	9.40	19200	19200	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Lead	1.30	6.40	6.40	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Magnesium	4.20	4750	4750	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Manganese	0.790	275	275	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Nickel	0.630	16.5	16.5	mg/kg	
083SB-0014-0001-SO	337832	SO	N	1	Potassium	69.0	1630	1630	mg/kg	
083SB-0014-0001-SO	337832	SO	N	1	Sodium	25.0	81.6	81.6	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Vanadium	0.420	14.7	14.7	mg/kg	
083SB-0014-0001-SO	337832	SO	N	5	Zinc	1.60	33.6	33.6	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Aluminum	0.250	2020	2020	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	5	Antimony	4.10	0.860	0.860 J	mg/kg	TR
083SB-0015M-0001-SO	337834	SO	N	1	Arsenic	0.820	1.90	1.90	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Barium	0.0510	11.7	11.7	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Beryllium	0.0410	0.100	0.100	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Calcium	1.40	6030	6030	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Chromium	0.140	3.10	3.10	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Cobalt	0.250	1.80	1.80	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Copper	0.410	3.50	3.50	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Iron	1.80	4310	4310	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Lead	0.260	1.70	1.70	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Magnesium	0.820	1480	1480	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Manganese	0.150	65.2	65.2	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Nickel	0.120	4.90	4.90	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Potassium	68.0	1670	1670	mg/kg	

Detected Results

Test Method: SW6010C Extraction Method: TOTAL Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0015M-0001-SO	337834	SO	N	1	Sodium	25.0	87.5	87.5	mg/kg	
083SB-0015M-0001-SO	337834	SO	N	1	Vanadium	0.0820	3.20	3.20 U	mg/kg	B2
083SB-0015M-0001-SO	337834	SO	N	1	Zinc	0.310	10.0	10.0	mg/kg	

Test Method: SW7471B Extraction Method: TOTAL Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	1	Mercury	0.00900	0.0340	0.0340 J	mg/kg	M
083SB-0002M-0001-SO	337812	SO	N	1	Mercury	0.00910	0.0100	0.0100 J	mg/kg	M
083SB-0003M-0001-SO	337813	SO	N	1	Mercury	0.00890	0.00900	0.00900 J	mg/kg	M
083SB-0004M-0001-SO	337815	SO	N	1	Mercury	0.00900	0.00720	0.00720 J	mg/kg	TR/M
083SB-0005M-0001-SO	337818	SO	N	1	Mercury	0.00910	0.0130	0.0130 J	mg/kg	M
083SB-0006M-0001-SO	337820	SO	FD	1	Mercury	0.00870	0.0120	0.0120 J	mg/kg	M
083SB-0008M-0001-SO	337822	SO	N	1	Mercury	0.00870	0.00970	0.00970 J	mg/kg	M
083SB-0009M-0001-SO	337824	SO	N	1	Mercury	0.00880	0.00970	0.00970 J	mg/kg	M
083SB-0011M-0001-SO	337826	SO	N	1	Mercury	0.00910	0.00730	0.00730 J	mg/kg	TR/M
083SB-0012M-0001-SO	337828	SO	N	1	Mercury	0.00920	0.00650	0.00650 J	mg/kg	TR/M
083SB-0013M-0001-SO	337830	SO	N	1	Mercury	0.00900	0.00630	0.00630 J	mg/kg	TR/M
083SB-0014-0001-SO	337832	SO	N	1	Mercury	0.00930	0.00750	0.00750 J	mg/kg	TR/M
083SB-0015M-0001-SO	337834	SO	N	1	Mercury	0.00890	0.00760	0.00760 J	mg/kg	TR/M

Detected Results

Test Method: SW8081B Extraction Method: SW3546 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0012M-0001-SO	337828	SO	N	1	delta-BHC (delta-Hexachlorocyclohexane)	2.50	1.10	1.10 J	ug/kg	TR/I/P1

Test Method: SW8260C Extraction Method: SW5030B Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0020-0001-TB	338809	WG	N	1	Acetone	20.0	15.0	15.0 J	ug/L	TR

Test Method: SW8270D Extraction Method: SW3550 Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0001M-0001-SO	337811	SO	N	1	Di-n-Butyl Phthalate	410	140	140 J	ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	1	Di-n-Butyl Phthalate	410	90.0	90.0 J	ug/kg	TR
083SB-0002M-0001-SO	337812	SO	N	1	Di-n-Octylphthalate	210	91.0	91.0 J	ug/kg	TR

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Rejected Results

Test Method: SW8270D	Extraction Method: SW3550	Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
083SB-0004M-0001-SO	337815	SO	N	Benzyl Alcohol	420	130	0.00 R	ug/kg	M

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Anomalies Count

Test/Extraction Method/Leach	Field Samples Outside of Compliance	Analytes Outside of Compliance
E160.3/NONE/NONE	13	13
E353.2/METHOD/NONE	13	13
SW6010C/TOTAL/NONE	13	150
SW8081B/SW3546/NONE	1	20
SW8260C/SW5030B/NONE	3	118
SW8270D/SW3550/NONE	13	303
SW8330B/METHOD/NONE	13	143

Anomalies are cases where the reported RL exceeds that specified in the governing project document.

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Review Questions

Method: BNASIM

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified PQLs achieved?	•			
Were all QAPP-specified target analytes reported?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was the criteria met during each 12 hour shift (prior to ICAL and Cal Ver.)?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Did the Calibration Check Compounds (CCCs) have a relative standard deviation within QAPP acceptance limits?	•			
Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) within QAPP acceptance limits?	•			
Were all other target analytes within criteria? OR Was the average across all target analytes within criteria? Was a different calibration option used?	•			
If a linear regression curve was used, was the correlation coefficient within criteria?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria?	•			
Was a CCV(s) run at the proper frequency?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Did the CCCs have a %Difference within QAPP acceptance limits?				
Were the average RFs for the SPCCs within QAPP acceptance limits?	•			
Was the average %D (difference or drift) for all target analytes within QAPP acceptance limits?	•			
Were the internal standards added to every standard, blank, matrix spike, matrix spike duplicate, and sample?	•			
Were the retention times for all IS compounds within QAPP acceptance limits?	•			
Are the area counts of all IS compounds within QAPP acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			

Automated Data Review Detail Report for 99211_83_0813
Ravenna Army Ammunition Plant
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Review Questions

Method: BNASIM

Review Questions	Yes	No	NA	Comment
Were target analytes detected in the method blank above the MDL?	•			Benzo (a) anthracene was detected in method blank. No samples qualified due to sample results >5x AL.
Was a field blank (equipment or trip) collected and analyzed at the required frequency?	•			Equipment Blank collected. Sample 083SB-0023-0001-ER . All ND.
Were target analytes reported in the field blank analyses above the MDL?		•		
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			Single LCS only
Were the LCS/LCSD recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
Was the duplicate RPD within QAPP acceptance limits?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?		•		Chrysene and Fluoranthene %R were below QC limits. Associated sample qualified
Were surrogate recoveries within QAPP acceptance limits?	•			
Were reported sample concentrations within calibration range?	•			
For non-aqueous sample, did the sample have a Percent Moisture less than 70.0%?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were instrument run logs present and filled out appropriately?			•	
Were sample prepration sheets present and filled out appropriately?			•	
Were the MRL recoveries within 70-130% limits?	•			

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Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Review Questions

Method: E160.3

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?			•	
Was a method blank prepared and analyzed with each batch?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Was a duplicate sample prepared and analyzed with each batch?			•	
Was the duplicate RPD within QAPP acceptance limits?			•	
Were sample concentrations within calibration range?			•	
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?			•	
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?			•	

Review Questions

Method: E353.2

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?		•		
Was a field blank collected and analyzed?	•			Equipment Blank collected. Sample 083SB-0023-0001-ER .
Were target analytes reported in the field blank analyses above the MDL?	•			Traces found in Equipment Blank. No impact on samples.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Was a LCS prepared and analyzed with each batch?	•			
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the MRL recoveries within 70-130% limits?	•			
Was a duplicate sample prepared and analyzed with each batch?			•	
Was the duplicate RPD within QAPP acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were the MS/MSD recoveries and RPDs within QAPP acceptance limits?		•		Sample 083SB-0004M-0001-SO; Nitrocellulose %R below QC limits. Sample qualified.
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?			•	

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Review Questions

Method: E353.2

Review Questions	Yes	No	NA	Comment
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?			•	

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Review Questions

Method: SW6010C

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			Mg detected in the ICB; Ba and V detected in the CCB; V qualified U on 1 sample.
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?	•			Al, Ba, Ca, Mg, Mn, Ni and Tl detected in the MB. Tl qualified U for 3 samples. No other impact on other samples due to results >5x AL.
Was a field blank collected and analyzed?	•			Equipment Blank collected. Sample 083SB-0023-0001-ER .
Were target analytes reported in the field blank analyses above the MDL?	•			Traces of Ag found in Equipment Blank. No impact on samples.
Was an Interference Check Standard (ICS) run at the beginning and end of every run?	•			
Was the ICS recovery within QAPP acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within criteria?	•			
Was a LCS prepared and analyzed with each batch?	•			
Were the MRL recoveries within 70-130% limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were the MS/MSD within QAPP acceptance limits?		•		Sample 083SB-0004M-0001; Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mg, Ni, V, Zn %R were below QC limits. Results qualified in parent sample.
Was a serial dilution prepared and analyzed with each batch?	•			
Was the serial dilution within QAPP acceptance limits?		•		Sample 083SB-0004M-0001; Ba and Mg >10%. Results qualifed in parent sample.
Were sample concentrations within calibration range?	•			

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Review Questions

Method: SW6010C

Review Questions	Yes	No	NA	Comment
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			PSD low % R for As, Be, Co, Pb, Ni, V, Zn. Results qualified in parent sample.
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?			•	

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Review Questions

Method: SW7471B

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?		•		
Was a field blank collected and analyzed?	•			Equipment Blank collected. All ND.
Were target analytes reported in the field blank analyses above the MDL?			•	
Was the ICS recovery within QAPP acceptance limits?			•	Not analyzed with Hg.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Was a LCS prepared and analyzed with each batch?	•			
Were the LCS recoveries within QAPP acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were the MS/MSD within QAPP acceptance limits?		•		Sample 083SB-0004M-0001; %R above QC limits. Batch results qualified.
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?			•	
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?			•	

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Review Questions

Method: SW8081B

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) ?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =15%)?	•			
Was a CCV(s) run at the proper frequency?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =15%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?	•			Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?		•		
Were surrogate recoveries within QAPP acceptance limits?		•		low %R for 1 sample; results qualified.
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			Single LCS only.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	Not collected.
Were the Breakdown products within QAPP acceptance limits?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			Sample 083SB-0004M-0001; within %R within QC limits.
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?	•			Dual column RPD out for delta-BHC in 1 sample; results qualified.
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

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Review Questions

Method: SW8081B

Review Questions	Yes	No	NA	Comment
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?			•	
Were instrument run logs present and filled out appropriately?			•	

Review Questions

Method: SW8082

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =15%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =15%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?	•			Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?		•		
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			Single LCS only.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?	•			
Were the Breakdown products within QAPP acceptance limits?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			Sample 083SB-0004M-0001; within QC limits
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?	•			Samples all ND.
Are all samples associated with QC non-compliances flagged appropriately?	•			

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Review Questions

Method: SW8082

Review Questions	Yes	No	NA	Comment
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
For non-aqueous sample, did the sample have a Percent Moisture less than 70.0%?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?			•	
Were instrument run logs present and filled out appropriately?			•	

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Review Questions

Method: SW8260C

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified PQLs achieved?	•			
Were all QAPP-specified target analytes reported?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was the criteria met during each 12 hour shift (prior to ICAL and Cal Ver.)?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Did the Calibration Check Compounds (CCCs) have a relative standard deviation within QAPP acceptance limits?	•			
Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) within QAPP acceptance limits?	•			
Were all other target analytes within criteria? OR Was the average across all target analytes within criteria? Was a different calibration option used?	•			
If a linear regression curve was used, was the correlation coefficient within criteria?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria?	•			
Was a CCV(s) run at the proper frequency?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Did the CCCs have a %Difference within QAPP acceptance limits?	•			
Were the average RFs for the SPCCs within QAPP acceptance limits?	•			
Was the average %D (difference or drift) for all target analytes within QAPP acceptance limits?		•		Methylene Chloride, Bromomethane and tetrachloroethene %D >20%. M.C. results impacted by MB; not qualified. Others qualified by batch.
Were the internal standards added to every standard, blank, matrix spike, matrix spike duplicate, and sample?	•			
Were the retention times for all IS compounds within QAPP acceptance limits?	•			
Are the area counts of all IS compounds within QAPP acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?	•			Methylene Chloride detected in MB. Sample and TB results changed to ND.

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Review Questions

Method: SW8260C

Review Questions	Yes	No	NA	Comment
Was a field blank (equipment or trip) collected and analyzed at the required frequency?	•			3 Trip Blanks and Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?	•			Methylene Chloride detected in all 3 TBs (All changed to ND based on MB). Traces of Chlorofrm found in the Equipment Blank. No impact on samples due to concentrations being ND. Acetone detected in 1 TB. 1 Sample qualified U.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			Single LCS only.
Were the LCS/LCSD recoveries within QAPP acceptance limits?		•		Methylene Chloride %R outside QC limits. Results already qualified by MB.
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
Was the duplicate RPD within QAPP acceptance limits?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?		•		Sample 083SB-0004M-0001; Methylene Chloride %R ouside QC limits. Associated sample qualified.
Were surrogate recoveries within QAPP acceptance limits?	•			
Were reported sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were instrument run logs present and filled out appropriately?			•	
Were sample prepration sheets present and filled out appropriately?			•	
Were the MRL recoveries within 70-130% limits?		•		Acetone and Methylene Chloride were outside QC limits, >130%. Following blank evaluations, all assoc. acetone and MC results ND. No quals necessary.

Review Questions

Method: SW8270D

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified PQLs achieved?	•			
Were all QAPP-specified target analytes reported?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was the criteria met during each 12 hour shift (prior to ICAL and Cal Ver.)?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Did the Calibration Check Compounds (CCCs) have a relative standard deviation within QAPP acceptance limits?	•			
Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) within QAPP acceptance limits?	•			
Were all other target analytes within criteria? OR Was the average across all target analytes within criteria? Was a different calibration option used?	•			
If a linear regression curve was used, was the correlation coefficient within criteria?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Did the CCCs have a %Difference within QAPP acceptance limits?	•			
Were the average RFs for the SPCCs within QAPP acceptance limits?	•			
Was the average %D (difference or drift) for all target analytes within QAPP acceptance limits?	•			
Were the internal standards added to every standard, blank, matrix spike, matrix spike duplicate, and sample?	•			
Were the retention times for all IS compounds within QAPP acceptance limits?	•			
Are the area counts of all IS compounds within QAPP acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		

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Review Questions

Method: SW8270D

Review Questions	Yes	No	NA	Comment
Was a field blank (equipment or trip) collected and analyzed at the required frequency?	•			Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?		•		
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			Single LCS only.
Were the LCS/LCSD recoveries within QAPP acceptance limits?		•		Hexachlorocyclopentadiene %R below QC limits. Batch results qualified.
Were the LCS/LCSD RPDs within QAPP acceptance limits?			•	
Was the duplicate RPD within QAPP acceptance limits?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?		•		Sample 083SB-0004M-0001-SO; Benzyl Alcohol %R < 10% (3%). Sample qualified R.
Were surrogate recoveries within QAPP acceptance limits?	•			
Were reported sample concentrations within calibration range?	•			
For non-aqueous sample, did the sample have a Percent Moisture less than 70.0%?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were instrument run logs present and filled out appropriately?			•	
Were sample prepration sheets present and filled out appropriately?			•	
Were the MRL recoveries within 70-130% limits?				

Review Questions

Method: SW8330

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) ?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV(s) run at the proper frequency?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?	•			Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?		•		
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			Single LCS only.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			Sample 083SB-0004M-0001; Within recovery limits.
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?	•			
Did PDA spectra for reported compounds match associated standard spectra?			•	
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

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Review Questions

Method: SW8330

Review Questions	Yes	No	NA	Comment
For non-aqueous sample, did the sample have a Percent Moisture less than 70.0%?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?			•	
Were instrument run logs present and filled out appropriately?			•	

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Review Questions

Method: SW8330B

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?		•		3,5-Dinitroaniline %D >20%. Samples qualified by batch.
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?	•			Equipment Blank collected.
Were target analytes reported in the field blank analyses above the MDL?		•		
Were surrogate recoveries within QAPP acceptance limits?		•		Surrogate %R in sample 083SB-0015M-0001 was above lab QC limits. No sample detections; no impact on sample.
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			
Were the LCS recoveries within QAPP acceptance limits?		•		LCS %R below limits for 4-amino-2,6-dinitrotoluene; results qualified by batch.
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	Single LCS only.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?	•			
Is the MS/MSD parent sample the one designated by the sampling team?	•			
Were MS/MSD recoveries and RPD within QAPP acceptance limits?		•		Sample 083SB-0004M-0001; MSD %R outside QC limits for 3-Nitrotoluene and 4-Nitrotoluene. RPD out for PETN. Associated sample results qualified.
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?	•			All ND
Did PDA spectra for reported compounds match associated standard spectra?			•	

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Review Questions

Method: SW8330B

Review Questions	Yes	No	NA	Comment
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
For non-aqueous sample, did the sample have a Percent Moisture less than 70.0%?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?			•	
Were instrument run logs present and filled out appropriately?			•	

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WORKSHEET 2

Automated Data Review Summary for 240-18735-1/-2
Source Water

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AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Facility: Ravenna Army Ammunition Plant

Event: Fall 2012 SI/RI Sampling

Guidance Document: Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Contract Laboratory: TestAmerica, Inc., North Canton, OH

Field Contractor: Environmental Chemical Corporation, Abingdon, MD

Data Review Contractor:

SDG: J18735_SourceWater, Certified - 10/4/2013 by frederickroche

QC Level:

Project Manager:

Data Reviewer:

Data Reviewer Title:

Date of Review Report:

Samples Included in SDG J18735_SourceWater

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
E353.2/NONE	2	0
M8015D/NONE	2	0
M8015V/NONE	2	0
SW6020/NONE	2	0
SW7470A/NONE	2	0
SW8081/NONE	2	0
SW8082/NONE	2	0

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
SW8151A/NONE	2	0
SW8260B/NONE	2	0
SW8270C/NONE	2	0
SW8330B/NONE	2	0

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Environmental Chemical Corporation, Abingdon, MD; analyses were performed by TestAmerica, Inc., North Canton, OH and were reported under sample delivery group (SDG) J18735_SourceWater. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

Prep Hold Time

Surrogate

Test Hold Time

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

Ambient Blank

Blank

Blank - Negative

Calibration Blank

Calibration Blank - Negative

Continuing Calibration Verification

Equipment Blank

Field Blank

Field Duplicate RPD

Initial Calibration Verification

Lab Replicate RPD

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

LCS Recovery

LCS RPD

Material Blank

MS Recovery

MS RPD

Trip Blank

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

A representative sampling or ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 0 results (0.00%) out of the 370 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Comment

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reviewed by ,

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reason and Comment Code Definitions

Reasons	
Code	**Definition**
A	Serial dilution
A1	Ambient Blank
B	The analyte was found in an associated blank as well as in the sample.
B2	CCB
B3	CCB - Neg
c	LCS - low
C	LCS Recovery
d	Field Duplicate RPD
D	MS RPD
D1	Lab Replicate RPD
D2	No precision available
F	Field Blank
F1	Hydrocarbon pattern does not match standard
G1	Initial Calibration RRF
G2	Initial Calibration RSD
h	Holding time exceeded by less than 2X.
H	Holding time exceeded by more than 2X.
H1	Test Hold Time
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
J	CRA/CRI Recovery
K	An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.
L	Lab Blank
L1	Lab Blank - Neg
m	MS - low
M	MS Recovery
N	Blank - No Action

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reason and Comment Code Definitions

O	ICS
P	Sample preservation/collection requirement not met.
P1	Column RPD
P2	Improper preparation/extraction
q	Encore sample holding time exceeded by less than 2X.
Q	Encore sample holding time exceeded by more than 2X.
Q1	Material Blank
R	Exceeds LinearCalibration Range
S	Internal standard
T	Trip Blank
TI	Tentatively Identified Compound
TR	Trace Level Detect
U	Receipt Temperature
V	Equipment Blank
V1	ICV
V2	CCV
V3	CCV RRF
V4	Sample Receipt Condition
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Cooler temperature greater than 10 degreec C.
y	Cooler temperature greater than 4 degrees C, but less than 10 degreec C.
Y1	False Positive
Y2	Data rejected due to radiological anomolies
Z	LCS RPD
Z2	Analyte not confirmed on second column
Z3	High percent moisture in sample.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Flag Code and Definitions	
Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Batch Report

Test Method: E353.2; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
8009	7878	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	27-Dec-2012 6:07 AM	27-Dec-2012 1:51 PM	N
	7878	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	27-Dec-2012 6:07 AM	27-Dec-2012 1:53 PM	N

Test Method: M8015D; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
68949	68549	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	13-Dec-2012 11:26 AM	17-Dec-2012 9:35 PM	N
	68549	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	13-Dec-2012 11:26 AM	17-Dec-2012 10:05 PM	N

Test Method: M8015V; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
69738	69738	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	22-Dec-2012 4:18 PM	22-Dec-2012 4:18 PM	N
	69738	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	22-Dec-2012 4:56 PM	22-Dec-2012 4:56 PM	N

Test Method: SW6020; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
59694	59308	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	24-Dec-2012 10:24 AM	29-Dec-2012 4:07 AM	N
	59308	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	24-Dec-2012 10:24 AM	29-Dec-2012 4:11 AM	N

Test Method: SW7470A; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
70694	70255	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	27-Dec-2012 4:00 PM	29-Dec-2012 12:08 PM	N
	70255	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	27-Dec-2012 4:00 PM	29-Dec-2012 12:10 PM	N

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Batch Report

Test Method: SW8081; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
69152	68554	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	13-Dec-2012 11:40 AM	18-Dec-2012 1:14 PM	N
	68554	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	13-Dec-2012 11:40 AM	18-Dec-2012 1:42 PM	N

Test Method: SW8082; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
69119	68553	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	13-Dec-2012 11:37 AM	18-Dec-2012 9:11 AM	N
	68553	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	13-Dec-2012 11:37 AM	18-Dec-2012 9:26 AM	N

Test Method: SW8151A; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
70037	69372	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	19-Dec-2012 9:51 AM	24-Dec-2012 5:40 PM	N
	69372	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	19-Dec-2012 9:51 AM	24-Dec-2012 6:03 PM	N

Test Method: SW8260B; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
69591	69591	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	20-Dec-2012 2:04 PM	20-Dec-2012 2:04 PM	N
	69591	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	20-Dec-2012 2:26 PM	20-Dec-2012 2:26 PM	N

Test Method: SW8270C; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
68962	68547	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	13-Dec-2012 11:21 AM	17-Dec-2012 12:28 PM	N
	68547	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	13-Dec-2012 11:21 AM	17-Dec-2012 12:51 PM	N

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Batch Report

Test Method: SW8330B; Leach Method: NONE											
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
7620	7404	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		1/1	12-Dec-2012 1:00 PM	14-Dec-2012 11:07 AM	21-Dec-2012 3:22 PM	N
	7404	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		1/1	12-Dec-2012 1:15 PM	14-Dec-2012 11:07 AM	21-Dec-2012 4:02 PM	N
7855	7807	NA	BLDG-1036	WG	070-0056-0001-SOURCE WATER	240-18735-3		2/1	12-Dec-2012 1:00 PM	24-Dec-2012 12:40 PM	27-Dec-2012 4:51 AM	N
	7807	NA	BLDG-1036	WG	070-0057-0001-SOURCE WATER	240-18735-4		2/1	12-Dec-2012 1:15 PM	24-Dec-2012 12:40 PM	27-Dec-2012 5:06 AM	N

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Field Batch Report

--No Records Found--

QC Outliers Report

--No Records Found--

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
M8015V/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Petroleum Hydrocarbons C6-C12	100	39.0	39.0 J		UG/L	TR
M8015V/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Petroleum Hydrocarbons C6-C12	100	36.0	36.0 J		UG/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Aluminum	30.0	13.0	13.0 J		UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Arsenic	1.0	0.49	0.49 J		UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Cobalt	0.50	0.11	0.11 J		UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Copper	2.0	0.83	0.83 J		UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Barium	10.0	0.13	0.13 J		UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Calcium	100	59.0	59.0 J		UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Copper	2.0	0.60	0.60 J		UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Magnesium	100	29.0	29.0 J		UG/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	2-Butanone (MEK)	10.0	1.2	1.2 J		UG/L	TR

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Acetone	10.0	2.1	2.1 J		UG/L	TR
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Toluene	1.0	0.15	0.15 J		UG/L	TR

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Detected Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
M8015V/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Petroleum Hydrocarbons C6-C12	100	39.0	39.0 J	UG/L	TR
M8015V/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Petroleum Hydrocarbons C6-C12	100	36.0	36.0 J	UG/L	TR

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Aluminum	30.0	13.0	13.0 J	UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Arsenic	1.0	0.49	0.49 J	UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Barium	10.0	39.0	39.0	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Calcium	100	66000	66000	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Cobalt	0.50	0.11	0.11 J	UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Copper	2.0	0.83	0.83 J	UG/L	TR
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Iron	50.0	440	440	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Potassium	100	2500	2500	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Magnesium	100	27000	27000	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Manganese	5.0	77.0	77.0	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Sodium	100	35000	35000	UG/L	
SW6020/NONE	WG	070-0056-0001-SOURCE WATER	240-18735-3	N	Zinc	5.0	18.0	18.0	UG/L	
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Barium	10.0	0.13	0.13 J	UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Calcium	100	59.0	59.0 J	UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Copper	2.0	0.60	0.60 J	UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Magnesium	100	29.0	29.0 J	UG/L	TR
SW6020/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Sodium	100	1600	1600	UG/L	

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Acetone	10.0	2.1	2.1 J	UG/L	TR
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Bromodichloromethane	1.0	3.6	3.6	UG/L	
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Toluene	1.0	0.15	0.15 J	UG/L	TR
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Dibromochloromethane	1.0	1.3	1.3	UG/L	
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	2-Butanone (MEK)	10.0	1.2	1.2 J	UG/L	TR
SW8260B/NONE	WG	070-0057-0001-SOURCE WATER	240-18735-4	N	Chloroform	1.0	5.3	5.3	UG/L	

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Rejected Results

--No Records Found--

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Anomalies Count

SDG Name: J18735_SourceWater

Test/Extraction Method/Leach	# of Field Samples Outside of Compliance	# of Analytes Outside of Compliance
M8015D/SW3520C/NONE	2	4
SW6020/TOTAL/NONE	2	2
SW8081/SW3520C/NONE	2	10
SW8082/SW3520C/NONE	2	14
SW8151A/METHOD/NONE	2	22
SW8260B/SW5030B/NONE	2	2
SW8330B/METHOD/NONE	2	6

Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reporting Anomalies

SDG Name: J18735_SourceWater

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
M8015D/NONE	070-0056-0001-SOURCE WATER	N	1	C10-C20 Diesel Range Organics	480 U	230	480	0.5	UG/L
M8015D/NONE	070-0056-0001-SOURCE WATER	N	1	C20-C34 Motor Oil Range Organics	480 U	230	480	0.5	UG/L
M8015D/NONE	070-0057-0001-SOURCE WATER	N	1	C10-C20 Diesel Range Organics	480 U	230	480	0.5	UG/L
M8015D/NONE	070-0057-0001-SOURCE WATER	N	1	C20-C34 Motor Oil Range Organics	480 U	230	480	0.5	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW6020/NONE	070-0056-0001-SOURCE WATER	N	1	Cadmium	1 U	0.13	1	0.5	UG/L
SW6020/NONE	070-0057-0001-SOURCE WATER	N	1	Cadmium	1 U	0.13	1	0.5	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8081/NONE	070-0056-0001-SOURCE WATER	N	1	Aldrin	0.048 U	0.0078	0.048	0.03	UG/L
SW8081/NONE	070-0056-0001-SOURCE WATER	N	1	alpha-BHC (alpha-Hexachlorocyclohexane)	0.048 U	0.0067	0.048	0.03	UG/L
SW8081/NONE	070-0056-0001-SOURCE WATER	N	1	Dieldrin	0.048 U	0.0071	0.048	0.03	UG/L
SW8081/NONE	070-0056-0001-SOURCE WATER	N	1	Heptachlor	0.048 U	0.0076	0.048	0.03	UG/L
SW8081/NONE	070-0056-0001-SOURCE WATER	N	1	Heptachlor Epoxide	0.048 U	0.0068	0.048	0.03	UG/L
SW8081/NONE	070-0057-0001-SOURCE WATER	N	1	Aldrin	0.048 U	0.0078	0.048	0.03	UG/L
SW8081/NONE	070-0057-0001-SOURCE WATER	N	1	alpha-BHC (alpha-Hexachlorocyclohexane)	0.048 U	0.0067	0.048	0.03	UG/L
SW8081/NONE	070-0057-0001-SOURCE WATER	N	1	Dieldrin	0.048 U	0.0071	0.048	0.03	UG/L
SW8081/NONE	070-0057-0001-SOURCE WATER	N	1	Heptachlor	0.048 U	0.0076	0.048	0.03	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reporting Anomalies

SDG Name: J18735_SourceWater

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8081/NONE	070-0057-0001-SOURCE WATER	N	1	Heptachlor Epoxide	0.048 U	0.0068	0.048	0.03	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1016 (Arochlor 1016)	0.48 U	0.16	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1221 (Arochlor 1221)	0.48 U	0.12	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1232 (Arochlor 1232)	0.48 U	0.15	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1242 (Arochlor 1242)	0.48 U	0.21	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1248 (Arochlor 1248)	0.48 U	0.095	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1254 (Arochlor 1254)	0.48 U	0.15	0.48	0.2	UG/L
SW8082/NONE	070-0056-0001-SOURCE WATER	N	1	PCB-1260 (Arochlor 1260)	0.48 U	0.16	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1016 (Arochlor 1016)	0.48 U	0.16	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1221 (Arochlor 1221)	0.48 U	0.12	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1232 (Arochlor 1232)	0.48 U	0.15	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1242 (Arochlor 1242)	0.48 U	0.21	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1248 (Arochlor 1248)	0.48 U	0.095	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1254 (Arochlor 1254)	0.48 U	0.15	0.48	0.2	UG/L
SW8082/NONE	070-0057-0001-SOURCE WATER	N	1	PCB-1260 (Arochlor 1260)	0.48 U	0.16	0.48	0.2	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	2,4 DB	4 U	0.69	4	0	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reporting Anomalies

SDG Name: J18735_SourceWater

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	2,4,5-T (Trichlorophenoxyacetic Acid)	1 U	0.3	1	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	2,4-D (Dichlorophenoxyacetic Acid)	4 U	0.41	4	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Dalapon	2 U	0.17	2	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Dicamba	2 U	0.52	2	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Dichloroprop	4 U	0.86	4	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Dinoseb	0.6 U	0.087	0.6	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	MCPA	400 U	390	400	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	MCPP	400 U	400	400	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Pentachlorophenol	0.1 U	0.024	0.1	0	UG/L
SW8151A/NONE	070-0056-0001-SOURCE WATER	N	1	Silvex (2,4,5-TP)	1 U	0.2	1	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	2,4 DB	4 U	0.69	4	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	2,4,5-T (Trichlorophenoxyacetic Acid)	1 U	0.3	1	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	2,4-D (Dichlorophenoxyacetic Acid)	4 U	0.41	4	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Dalapon	2 U	0.17	2	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Dicamba	2 U	0.52	2	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Dichloroprop	4 U	0.86	4	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Dinoseb	0.6 U	0.087	0.6	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	MCPA	400 U	390	400	0	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Reporting Anomalies

SDG Name: J18735_SourceWater

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	MCPP	400 U	400	400	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Pentachlorophenol	0.1 U	0.024	0.1	0	UG/L
SW8151A/NONE	070-0057-0001-SOURCE WATER	N	1	Silvex (2,4,5-TP)	1 U	0.2	1	0	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8260B/NONE	070-0056-0001-SOURCE WATER	N	1	1,2-Dichloroethene	2 U	0.34	2	1	UG/L
SW8260B/NONE	070-0057-0001-SOURCE WATER	N	1	1,2-Dichloroethene	2 U	0.34	2	1	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8330B/NONE	070-0056-0001-SOURCE WATER	N	1	2-Nitrotoluene	0.5 U	0.088	0.5	0.2	UG/L
SW8330B/NONE	070-0056-0001-SOURCE WATER	N	1	3-Nitrotoluene	0.5 U	0.057	0.5	0.2	UG/L
SW8330B/NONE	070-0056-0001-SOURCE WATER	N	1	4-Nitrotoluene	0.5 U	0.088	0.5	0.2	UG/L
SW8330B/NONE	070-0057-0001-SOURCE WATER	N	1	2-Nitrotoluene	0.49 U	0.087	0.49	0.2	UG/L
SW8330B/NONE	070-0057-0001-SOURCE WATER	N	1	3-Nitrotoluene	0.49 U	0.056	0.49	0.2	UG/L
SW8330B/NONE	070-0057-0001-SOURCE WATER	N	1	4-Nitrotoluene	0.49 U	0.087	0.49	0.2	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for J18735_SourceWater

Worksheet

SDG Name: J18735_SourceWater

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WORKSHEET 3

Automated Data Review Summary for 240-21987-1
Source Water

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AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Facility: Ravenna Army Ammunition Plant

Event: Spring 2013 RI/SI Sampling Event

Guidance Document: Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Contract Laboratory: TestAmerica, Inc., North Canton, OH

Field Contractor: Environmental Chemical Corporation, Cincinnati, OH

Data Review Contractor: ECC

SDG: 240-21987-1_79_SourceWater_TB_1, Certified - 6/10/2013 by frederickroche

QC Level: ADR

Project Manager: Al Easterday

Data Reviewer: Samir A. Naguib

Data Reviewer Title: Sr. QA Chemist

Date of Review Report: June 11, 2013

Samples Included in SDG 240-21987-1_79_SourceWater_TB_1

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
E353.2/NONE	1	0
M8015D/NONE	1	0
M8015V/NONE	2	0
SW6020/NONE	1	0
SW7196A/NONE	1	0
SW7470A/NONE	1	0
SW8081/NONE	1	0

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
SW8082/NONE	1	0
SW8151/NONE	1	0
SW8260B/NONE	2	0
SW8270C/NONE	1	0
SW8330B/NONE	1	0

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Environmental Chemical Corporation, Cincinnati, OH; analyses were performed by TestAmerica, Inc., North Canton, OH and were reported under sample delivery group (SDG) 240-21987-1_79_SourceWater_TB_1. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

- Blank
- Blank - Negative
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

- Ambient Blank
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Equipment Blank

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Field Blank

Field Duplicate RPD

Initial Calibration Verification

Lab Replicate RPD

Material Blank

Trip Blank

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

A representative sampling or ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 23 results (10.31%) out of the 223 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Comment
E353.2	
M8015D	

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

M8015V	
SW6020	
SW7470A	
SW8081	
SW8260B	
SW8270C	
SW8330B	
SW7196A	
SW8082	
SW8151	

11-Jun-2013

Reviewed by Samir A. Naguib, Sr. QA Chemist

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Reason and Comment Code Definitions

Reasons	
Code	**Definition**
A	Serial dilution
A1	Ambient Blank
B	The analyte was found in an associated blank as well as in the sample.
B2	CCB
B3	CCB - Neg
c	LCS - low
C	LCS Recovery
d	Field Duplicate RPD
D	MS RPD
D1	Lab Replicate RPD
D2	No precision available
F	Field Blank
F1	Hydrocarbon pattern does not match standard
G1	Initial Calibration RRF
G2	Initial Calibration RSD
h	Holding time exceeded by less than 2X.
H	Holding time exceeded by more than 2X.
H1	Test Hold Time
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
J	CRA/CRI Recovery
K	An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.
L	Lab Blank
L1	Lab Blank - Neg
m	MS - low
M	MS Recovery
N	Blank - No Action

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Reason and Comment Code Definitions

O	ICS
P	Sample preservation/collection requirement not met.
P1	Column RPD
P2	Improper preparation/extraction
q	Encore sample holding time exceeded by less than 2X.
Q	Encore sample holding time exceeded by more than 2X.
Q1	Material Blank
R	Exceeds LinearCalibration Range
S	Internal standard
T	Trip Blank
TI	Tentatively Identified Compound
TR	Trace Level Detect
U	Receipt Temperature
V	Equipment Blank
V1	ICV
V2	CCV
V3	CCV RRF
V4	Sample Receipt Condition
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Cooler temperature greater than 10 degreec C.
y	Cooler temperature greater than 4 degrees C, but less than 10 degreec C.
Y1	False Positive
Y2	Data rejected due to radiological anomolies
Z	LCS RPD
Z2	Analyte not confirmed on second column
Z3	High percent moisture in sample.

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Flag Code and Definitions	
Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Batch Report

Test Method: E353.2; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
13190	12938	NA	LABQC	WQ	LABQC	MB 320-12877/1-B		1/1	25-Mar-2013 8:23 AM	25-Mar-2013 8:23 AM	25-Mar-2013 12:47 PM	LB
	12938	NA	LABQC	WQ	LABQC	LCS 320-12877/2-B		1/1	25-Mar-2013 8:23 AM	25-Mar-2013 8:23 AM	25-Mar-2013 12:49 PM	BS
	12938	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	25-Mar-2013 8:23 AM	25-Mar-2013 12:51 PM	N
	12938	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	25-Mar-2013 8:23 AM	25-Mar-2013 12:53 PM	MS
	12938	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	25-Mar-2013 8:23 AM	25-Mar-2013 12:55 PM	SD

Test Method: M8015D; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
78992	78624	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	18-Mar-2013 10:31 AM	21-Mar-2013 5:45 PM	N

Test Method: M8015V; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79100	79100	NA	LABQC	WQ	LABQC	MB 240-79100/38		1/1	23-Mar-2013 8:14 AM	23-Mar-2013 8:14 AM	23-Mar-2013 8:14 AM	LB
	79100	NA	LABQC	WQ	LABQC	LCS 240-79100/39		1/1	23-Mar-2013 8:51 AM	23-Mar-2013 8:51 AM	23-Mar-2013 8:51 AM	BS
	79100	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	23-Mar-2013 9:27 AM	23-Mar-2013 9:27 AM	N
	79100	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	23-Mar-2013 10:03 AM	23-Mar-2013 10:03 AM	MS
	79100	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	23-Mar-2013 10:40 AM	23-Mar-2013 10:40 AM	SD
	79100	NA	79-LL3-DU1-SB3	WG	079-0009-0001-TB TRIP BLANK	240-21987-3		1/1	14-Mar-2013 8:00 AM	23-Mar-2013 11:16 AM	23-Mar-2013 11:16 AM	N

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Batch Report

Test Method: SW6020; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
68058	66565	NA	LABQC	WQ	LABQC	MB 180-66565/1-A		1/1	18-Mar-2013 1:02 PM	18-Mar-2013 1:02 PM	01-Apr-2013 3:24 PM	LB
	66565	NA	LABQC	WQ	LABQC	LCS 180-66565/2-A		1/1	18-Mar-2013 1:02 PM	18-Mar-2013 1:02 PM	01-Apr-2013 3:29 PM	BS
	66565	NA	LABQC	WQ	LABQC	LCSD 180-66565/3-A		1/1	18-Mar-2013 1:02 PM	18-Mar-2013 1:02 PM	01-Apr-2013 3:34 PM	BD
	66565	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	18-Mar-2013 1:02 PM	01-Apr-2013 3:42 PM	N

Test Method: SW7196A; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
78405	78405	NA	LABQC	WQ	LABQC	MB 240-78405/8		1/1	14-Mar-2013 5:42 PM	14-Mar-2013 5:42 PM	14-Mar-2013 5:42 PM	LB
	78405	NA	LABQC	WQ	LABQC	LCS 240-78405/9		1/1	14-Mar-2013 5:43 PM	14-Mar-2013 5:43 PM	14-Mar-2013 5:43 PM	BS
	78405	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	14-Mar-2013 5:44 PM	14-Mar-2013 5:44 PM	N
	78405	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	14-Mar-2013 5:46 PM	14-Mar-2013 5:46 PM	MS
	78405	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	14-Mar-2013 5:47 PM	14-Mar-2013 5:47 PM	SD

Test Method: SW7470A; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
78674	78432	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	15-Mar-2013 12:45 PM	18-Mar-2013 5:49 PM	N

Test Method: SW8081; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79056	78726	NA	LABQC	WQ	LABQC	LCS 240-78726/3-A		1/1	19-Mar-2013 9:10 AM	19-Mar-2013 9:10 AM	21-Mar-2013 5:16 PM	BS
	78726	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	19-Mar-2013 9:10 AM	21-Mar-2013 5:36 PM	N

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Batch Report

Test Method: SW8081; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79056	78726	NA	LABQC	WQ	LABQC	MB 240-78726/2-A		1/1	19-Mar-2013 9:10 AM	19-Mar-2013 9:10 AM	21-Mar-2013 5:56 PM	LB

Test Method: SW8082; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79577	78721	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	19-Mar-2013 8:52 AM	27-Mar-2013 10:07 AM	N
	78721	NA	LABQC	WQ	LABQC	MB 240-78721/17-A		1/1	19-Mar-2013 8:52 AM	19-Mar-2013 8:52 AM	27-Mar-2013 12:28 PM	LB
	78721	NA	LABQC	WQ	LABQC	LCS 240-78721/18-A		1/1	19-Mar-2013 8:52 AM	19-Mar-2013 8:52 AM	27-Mar-2013 2:59 PM	BS

Test Method: SW8151; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79197	78626	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	18-Mar-2013 10:35 AM	22-Mar-2013 8:57 PM	N
	78626	NA	LABQC	WQ	LABQC	MB 240-78626/3-A		1/1	18-Mar-2013 10:35 AM	18-Mar-2013 10:35 AM	22-Mar-2013 9:21 PM	LB
	78626	NA	LABQC	WQ	LABQC	LCS 240-78626/4-A		1/1	18-Mar-2013 10:35 AM	18-Mar-2013 10:35 AM	22-Mar-2013 9:44 PM	BS

Test Method: SW8260B; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
79725	79725	NA	LABQC	WQ	LABQC	LCS 240-79725/4		1/1	28-Mar-2013 10:02 AM	28-Mar-2013 10:02 AM	28-Mar-2013 10:02 AM	BS
	79725	NA	LABQC	WQ	LABQC	MB 240-79725/6		1/1	28-Mar-2013 10:55 AM	28-Mar-2013 10:55 AM	28-Mar-2013 10:55 AM	LB
	79725	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	28-Mar-2013 11:21 AM	28-Mar-2013 11:21 AM	N
	79725	NA	79-LL3-DU1-SB2	WG	079-0008-0001-TB TRIP BLANK	240-21987-2		1/1	14-Mar-2013 8:00 AM	28-Mar-2013 11:47 AM	28-Mar-2013 11:47 AM	N
	79725	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	28-Mar-2013 1:33 PM	28-Mar-2013 1:33 PM	MS

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Batch Report

Test Method: SW8260B; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
79725	79725	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	28-Mar-2013 1:59 PM	28-Mar-2013 1:59 PM	SD

Test Method: SW8270C; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
79745	78456	NA	LABQC	WQ	LABQC	MB 240-78456/17-A		1/1	15-Mar-2013 8:45 AM	15-Mar-2013 8:45 AM	28-Mar-2013 12:06 PM	LB
	78456	NA	LABQC	WQ	LABQC	LCS 240-78456/18-A		1/1	15-Mar-2013 8:45 AM	15-Mar-2013 8:45 AM	28-Mar-2013 12:29 PM	BS
	78456	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 AM	15-Mar-2013 8:45 AM	28-Mar-2013 12:53 PM	N

Test Method: SW8330B; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
12703	12565	NA	LABQC	WQ	LABQC	MB 320-12565/1-A		1/1	19-Mar-2013 1:52 PM	19-Mar-2013 1:52 PM	21-Mar-2013 12:51 PM	LB
	12565	NA	LABQC	WQ	LABQC	LCS 320-12565/2-A		1/1	19-Mar-2013 1:52 PM	19-Mar-2013 1:52 PM	21-Mar-2013 1:31 PM	BS
	12565	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		2/1	14-Mar-2013 12:00 AM	19-Mar-2013 1:52 PM	21-Mar-2013 2:11 PM	N
12714	12568	NA	LABQC	WQ	LABQC	MB 320-12568/1-A		1/1	19-Mar-2013 2:18 PM	19-Mar-2013 2:18 PM	21-Mar-2013 1:01 PM	LB
	12568	NA	LABQC	WQ	LABQC	LCS 320-12568/2-A		1/1	19-Mar-2013 2:18 PM	19-Mar-2013 2:18 PM	21-Mar-2013 1:16 PM	BS
	12568	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	19-Mar-2013 2:18 PM	21-Mar-2013 1:45 PM	MS
	12568	NA	79-LL3-DU1-SB1	WG	079-0007-0001-SOURCEWATER	240-21987-1		1/1	14-Mar-2013 12:00 PM	19-Mar-2013 2:18 PM	21-Mar-2013 2:00 PM	SD
12878	12568	NA	LABQC	WQ	LABQC	MB 320-12568/1-A		2/1	19-Mar-2013 2:18 PM	19-Mar-2013 2:18 PM	22-Mar-2013 3:32 PM	LB
	12568	NA	79-841-DU1-SB	WG	079-0007-0001-SOURCEWATER	240-21987-1		3/1	14-Mar-2013 12:00 AM	19-Mar-2013 2:18 PM	22-Mar-2013 3:53 PM	N

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Field Batch Report

--No Records Found--

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

QC Outlier Report

Test/Prep/Leach	QC Element	Sample ID/ Lab Sample ID	Run# / Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
M8015V / SW5030B/NONE	Blank	MB 240-79100/38 (LB) / MB 240-79100/38	1 / 1.00	Petroleum Hydrocarbons C6-C12	57.2 (UG/L)	U/None	< 25	< 100	L		1	57.2
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Aluminum	4.6 (UG/L)	U/None	< 2.6	< 30	L		1	4.59
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Barium	0.18 (UG/L)	U/None	< 0.098	< 10	L		1	0.181
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Copper	0.32 (UG/L)	U/None	< 0.24	< 2	L		1	0.315
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Lead	0.24 (UG/L)	U/None	< 0.15	< 1	L		1	0.236
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Manganese	0.31 (UG/L)	U/None	< 0.16	< 5	L		1	0.314
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Potassium	40.6 (UG/L)	U/None	< 32	< 100	L		1	40.6
SW6020 / TOTAL/NONE	Blank	MB 180-66565/1-A (LB) / MB 180-66565/1-A	1 / 1.00	Sodium	67.4 (UG/L)	U/None	< 27	< 100	L		1	67.4
SW8151 / METHOD/NONE	LCS Recovery	LCS 240-78626/4-A (BS) / LCS 240-78626/4-A	1 / 1.00	2,4,5-T (Trichlorophenoxyacetic Acid)	111 (PERCENT)	J/U	35 - 110	35 - 110	C			
SW8151 / METHOD/NONE	LCS Recovery	LCS 240-78626/4-A (BS) / LCS 240-78626/4-A	1 / 1.00	Dichloroprop	126 (PERCENT)	J/U	70 - 120	70 - 120	C			
SW8260B / SW5030B/NONE	Blank	MB 240-79725/6 (LB) / MB 240-79725/6	1 / 1.00	Methylene Chloride	0.34 (UG/L)	U/None	< 0.33	< 1	L		2	0.688
SW8260B / SW5030B	Test Hold Time	079-0008-0001-TB TRI (N) / 240-21987-2	1 / 1.00	All in Run	14.2 (Days)	J/UJ	< 14	< 28	H1	Test Exceeds UWL		
SW8270C / SW3510/NONE	Blank	MB 240-78456/17-A (LB) / MB 240-78456/17-A	1 / 1.00	bis(2-Ethylhexyl) Phthalate	0.86 (UG/L)	U/None	< 0.8	< 2	L		5	4.28
SW8270C / SW3510/NONE	LCS Recovery	LCS 240-78456/18-A (BS) / LCS 240-78456/18-A	1 / 1.00	Cresols, m & p	67.0 (PERCENT)	J/UJ	70 - 130	70 - 130	C			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
M8015V/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Petroleum Hydrocarbons C6-C12	100	74.0	100 U	+	UG/L	L
M8015V/NONE	WG	079-0009-0001-TB TRIP BLANK	240-21987-3	N	Petroleum Hydrocarbons C6-C12	100	81.0	100 U	+	UG/L	L
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Arsenic	1.0	0.48	0.48 J		UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Chromium	2.0	1.3	1.3 J		UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Cobalt	0.50	0.054	0.054 J		UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Copper	2.0	1.4	2.0 U	+	UG/L	L/B2
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Thallium	1.0	0.11	0.11 J		UG/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8081/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Methoxychlor	0.10	0.10	0.10 UJ		UG/L	V2
SW8081/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Toxaphene	2.0	2.0	2.0 UJ		UG/L	V1
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8151/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Dalapon	2.0	0.55	2.0 U		UG/L	P1/Y1
SW8151/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	MCPA	400	400	400 UJ		UG/L	J
SW8151/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	MCPP	400	400	400 UJ		UG/L	J
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8260B/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Carbon Tetrachloride	1.0	1.0	1.0 UJ		UG/L	V2
SW8260B/NONE	WG	079-0008-0001-TB TRIP BLANK	240-21987-2	N	Carbon Tetrachloride	1.0	1.0	1.0 UJ		UG/L	V2
SW8260B/NONE	WG	079-0008-0001-TB TRIP BLANK	240-21987-2	N	Chloroform	1.0	0.31	0.31 J		UG/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	2,4-Dimethylphenol	2.0	2.0	2.0 UJ		UG/L	V1

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	2,4-Dinitrophenol	5.1	5.1	5.1 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	2-Chlorophenol	1.0	1.0	1.0 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	2-Methylphenol (o-Cresol)	1.0	1.0	1.0 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	2-Nitrophenol	2.0	2.0	2.0 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	3,3'-Dichlorobenzidine	5.1	5.1	5.1 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	4,6-Dinitro-2-Methylphenol	5.1	5.1	5.1 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	4-Nitroaniline	2.0	2.0	2.0 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	4-Nitrophenol	5.1	5.1	5.1 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	bis(2-Ethylhexyl) Phthalate	2.0	0.91	2.0 U	+	UG/L	L
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	n-Nitrosodiphenylamine	1.0	1.0	1.0 UJ		UG/L	J
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Pentachlorophenol	5.1	5.1	5.1 UJ		UG/L	V1
SW8270C/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Phenol	1.0	1.0	1.0 UJ		UG/L	V1

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Detected Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Arsenic	1.0	0.48	0.48 J	UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Barium	10.0	41.0	41.0	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Calcium	100	65000	65000	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Cobalt	0.50	0.054	0.054 J	UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Chromium	2.0	1.3	1.3 J	UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Iron	50.0	590	590	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Potassium	100	2500	2500	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Magnesium	100	27000	27000	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Manganese	5.0	94.0	94.0	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Sodium	100	37000	37000	UG/L	
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Thallium	1.0	0.11	0.11 J	UG/L	TR
SW6020/NONE	WG	079-0007-0001-SOURCEWATER	240-21987-1	N	Zinc	5.0	5.1	5.1	UG/L	

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	079-0008-0001-TB TRIP BLANK	240-21987-2	N	Chloroform	1.0	0.31	0.31 J	UG/L	TR

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Rejected Results

--No Records Found--

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Anomalies Count

SDG Name: 240-21987-1_79_SourceWater_TB_1

Test/Extraction Method/Leach	# of Field Samples Outside of Compliance	# of Analytes Outside of Compliance
M8015D/SW3520C/NONE	1	2
SW6020/TOTAL/NONE	1	1
SW8081/SW3520C/NONE	1	5
SW8082/SW3520C/NONE	1	7
SW8260B/SW5030B/NONE	2	2
SW8270C/SW3510/NONE	1	4
SW8330B/METHOD/NONE	1	3

Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Reporting Anomalies

SDG Name: 240-21987-1_79_SourceWater_TB_1

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
M8015D/NONE	079-0007-0001-SOURCEWATER	N	1	C10-C20 Diesel Range Organics	490 U	230	490	0.5	UG/L
M8015D/NONE	079-0007-0001-SOURCEWATER	N	1	C20-C34 Motor Oil Range Organics	490 U	230	490	0.5	UG/L
Test Leach	**FieldSample ID**	**Type**	**Dilution**	**Analyte**	**Result**	**DL**	**RL**	**Project RL**	**Units**
SW6020/NONE	079-0007-0001-SOURCEWATER	N	1	Cadmium	1 U	0.13	1	0.5	UG/L
Test Leach	**FieldSample ID**	**Type**	**Dilution**	**Analyte**	**Result**	**DL**	**RL**	**Project RL**	**Units**
SW8081/NONE	079-0007-0001-SOURCEWATER	N	1	Aldrin	0.05 U	0.0082	0.05	0.03	UG/L
SW8081/NONE	079-0007-0001-SOURCEWATER	N	1	alpha-BHC (alpha-Hexachlorocyclohexane)	0.05 U	0.007	0.05	0.03	UG/L
SW8081/NONE	079-0007-0001-SOURCEWATER	N	1	Dieldrin	0.05 U	0.0075	0.05	0.03	UG/L
SW8081/NONE	079-0007-0001-SOURCEWATER	N	1	Heptachlor	0.05 U	0.008	0.05	0.03	UG/L
SW8081/NONE	079-0007-0001-SOURCEWATER	N	1	Heptachlor Epoxide	0.05 U	0.0071	0.05	0.03	UG/L
Test Leach	**FieldSample ID**	**Type**	**Dilution**	**Analyte**	**Result**	**DL**	**RL**	**Project RL**	**Units**
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1016 (Arochlor 1016)	0.5 U	0.17	0.5	0.2	UG/L
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1221 (Arochlor 1221)	0.5 U	0.13	0.5	0.2	UG/L
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1232 (Arochlor 1232)	0.5 U	0.16	0.5	0.2	UG/L
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1242 (Arochlor 1242)	0.5 U	0.22	0.5	0.2	UG/L
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1248 (Arochlor 1248)	0.5 U	0.1	0.5	0.2	UG/L
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1254 (Arochlor 1254)	0.5 U	0.16	0.5	0.2	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Reporting Anomalies

SDG Name: 240-21987-1_79_SourceWater_TB_1

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8082/NONE	079-0007-0001-SOURCEWATER	N	1	PCB-1260 (Arochlor 1260)	0.5 U	0.17	0.5	0.2	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8260B/NONE	079-0007-0001-SOURCEWATER	N	1	1,2-Dichloroethene	2 U	0.34	2	1	UG/L
SW8260B/NONE	079-0008-0001-TB TRIP BLANK	N	1	1,2-Dichloroethene	2 U	0.34	2	1	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8270C/NONE	079-0007-0001-SOURCEWATER	N	1	2,4,5-Trichlorophenol	5.1 U	0.3	5.1	5	UG/L
SW8270C/NONE	079-0007-0001-SOURCEWATER	N	1	2,4,6-Trichlorophenol	5.1 U	0.81	5.1	5	UG/L
SW8270C/NONE	079-0007-0001-SOURCEWATER	N	1	3,3'-Dichlorobenzidine	5.1 UJ	0.37	5.1	5	UG/L
SW8270C/NONE	079-0007-0001-SOURCEWATER	N	1	Pentachlorophenol	5.1 UJ	2.4	5.1	5	UG/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8330B/NONE	079-0007-0001-SOURCEWATER	N	1	2-Nitrotoluene	0.51 U	0.09	0.51	0.2	UG/L
SW8330B/NONE	079-0007-0001-SOURCEWATER	N	1	3-Nitrotoluene	0.51 U	0.058	0.51	0.2	UG/L
SW8330B/NONE	079-0007-0001-SOURCEWATER	N	1	4-Nitrotoluene	0.51 U	0.09	0.51	0.2	UG/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Worksheet

SDG Name: 240-21987-1_79_SourceWater_TB_1

Method: E353.2

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?		•		
Was a field blank collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Was a LCS prepared and analyzed with each batch?	•			
Were the LCS recoveries within QAPP acceptance limits?	•			
Was a duplicate sample prepared and analyzed with each batch?			•	
Was the duplicate RPD within QAPP acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were the MS/MSD recoveries and RPDs within QAPP acceptance limits?	•			
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

Method: M8015D

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)		•		LCS was extracted with preparation batch.
Were the LCS recoveries within QAPP acceptance limits?		•		
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?			•	
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

Method: M8015V

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?	•			MB 240-79100/38: C6-C12 was detected above the MDL but below RL.
Was a field blank (equipment or trip) collected and analyzed?	•			
Were target analytes reported in the field blank analyses above the MDL?		•		
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			LCS was analyzed with each analytical batch.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW6020

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?	•			CCB1: Cu, K, and Na were detected above MDL but below RL. 2. MB 180-66565/1-A: Al, Ba, Cu, Mn, Na, Pb, and K were detected above MDL but below RL.
Was a field blank collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Was an Interference Check Standard (ICS) run at the beginning and end of every run?	•			
Was the ICS recovery within QAPP acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within criteria?	•			
Was a LCS prepared and analyzed with each batch?	•			LCS and LCSD were digested in the preparation batch : 66565.
Were the LCS recoveries within QAPP acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were the MS/MSD within QAPP acceptance limits?			•	
Was a serial dilution prepared and analyzed with each batch?	•			
Was the serial dilution within QAPP acceptance limits?	•			
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

Method: SW7196A

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the ICB/CCB/method blank?		•		
Was a field blank collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Was the ICS recovery within QAPP acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within criteria?			•	
Was a LCS prepared and analyzed with each batch?	•			
Were the LCS recoveries within QAPP acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were the MS/MSD within QAPP acceptance limits?	•			
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

Method: SW7470A

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			

Method: SW7470A

Review Questions	Yes	No	NA	Comment
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified RLs achieved?	•			
Were all QAPP specified target analytes reported?	•			
Was the initial calibration curve within QAPP acceptance limits?	•			
Were the ICV/CCVs analyzed (frequency) as required in the QAPP?	•			
Were ICV/CCV results within QAPP acceptance limits?	•			
Were the ICB/CCBs analyzed (frequency) as required in the QAPP?	•			
Was a method blank prepared and analyzed with each batch?	•	•		
Were target analytes detected in the ICB/CCB/method blank?		•		
Was a field blank collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Was the ICS recovery within QAPP acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within criteria?			•	
Was a LCS prepared and analyzed with each batch?	•			
Were the LCS recoveries within QAPP acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were the MS/MSD within QAPP acceptance limits?			•	
Were sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			

Method: SW8081

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW8081

Review Questions	Yes	No	NA	Comment
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?		•		Toxaphene %D=38.9%.
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			CCV 240-7956/14: Methoxychlor %D=20.2%
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			LCS was extracted with each preparation batch.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Were the Breakdown products within QAPP acceptance limits?	•			
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?			•	
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?			•	All Pesticides compounds in the samples were reported as non-detects.
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW8082

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			15%
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			15%
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			LCS was extracted with each preparation batch.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Were the Breakdown products within QAPP acceptance limits?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?			•	
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?			•	All PCBs were reported as non-detect.
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			

Method: SW8082

Review Questions	Yes	No	NA	Comment
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

Method: SW8151

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			LCS was extracted with each preparation batch.
Were the LCS recoveries within QAPP acceptance limits?		•		LCS 240-78626/4-A: Dichlorprop and 2,4,5-T were recovered above the QC limits. No qualifications were required due to these compounds were not detected in the native sample.
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Were the Breakdown products within QAPP acceptance limits?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?			•	

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW8151				
Review Questions	**Yes**	**No**	**NA**	**Comment**
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?		•		240-21987-1: Dalapon RPD was 56%. False Positive.
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

Method: SW8260B				
Review Questions	**Yes**	**No**	**NA**	**Comment**
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified PQLs achieved?	•			
Were all QAPP-specified target analytes reported?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was the criteria met during each 12 hour shift (prior to ICAL and Cal Ver.)?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Did the Calibration Check Compounds (CCCs) have a relative standard deviation within QAPP acceptance limits?	•			
Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) within QAPP acceptance limits?	•			
Were all other target analytes within criteria? OR Was the average across all target analytes within criteria? Was a different calibration option used?	•			
If a linear regression curve was used, was the correlation coefficient within criteria?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?				
Was the CCV a mid-level standard from the initial calibration curve?	•			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW8260B

Review Questions	Yes	No	NA	Comment
Did the CCCs have a %Difference within QAPP acceptance limits?	•			
Were the average RFs for the SPCCs within QAPP acceptance limits?				
Was the average %D (difference or drift) for all target analytes within QAPP acceptance limits?		•		CCV 240-79725/2: Carbon tetrachloride: %D= 24.4.
Were the internal standards added to every standard, blank, matrix spike, matrix spike duplicate, and sample?	•			
Were the retention times for all IS compounds within QAPP acceptance limits?	•			
Are the area counts of all IS compounds within QAPP acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?	•			MB 240-79725/6: Methylene chloride was detected above the MDL but below the RL.
Was a field blank (equipment or trip) collected and analyzed at the required frequency?	•			
Were target analytes reported in the field blank analyses above the MDL?	•			079-0008-0001-TB (Trip Blank): Chloroform was detected above the MDL but below the RL.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS was analyzed with each analytical batch.
Were the LCS/LCSD recoveries within QAPP acceptance limits?			•	
Were the LCS/LCSD RPDs within QAPP acceptance limits?			•	
Was the duplicate RPD within QAPP acceptance limits?			•	
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Was a MS/MSD pair prepared with each batch?	•			
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			
Were surrogate recoveries within QAPP acceptance limits?	•			
Were reported sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample prepration sheets present and filled out appropriately?	•			

Method: SW8270C

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were sample reciept temperatures met?	•			
Were QAPP specified PQLs achieved?	•			
Were all QAPP-specified target analytes reported?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was the criteria met during each 12 hour shift (prior to ICAL and Cal Ver.)?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Did the Calibration Check Compounds (CCCs) have a relative standard deviation within QAPP acceptance limits?	•			
Were the average response factors (RFs) for the System Performance Check Compounds (SPCCs) within QAPP acceptance limits?	•			
Were all other target analytes within criteria? OR Was the average across all target analytes within criteria? Was a different calibration option used?	•			
If a linear regression curve was used, was the correlation coefficient within criteria?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria?		•		ICV 240-79445/12: %Ds for several compounds were >20%. All non-detects compounds were qualified (UJ).
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Did the CCCs have a %Difference within QAPP acceptance limits?	•			
Were the average RFs for the SPCCs within QAPP acceptance limits?	•			
Was the average %D (difference or drift) for all target analytes within QAPP acceptance limits?	•			
Were the internal standards added to every standard, blank, matrix spike, matrix spike duplicate, and sample?	•			
Were the retention times for all IS compounds within QAPP acceptance limits?	•			
Are the area counts of all IS compounds within QAPP acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?	•			MB 240-78456/17-A: Bis (2-ethylhexyl) phthalate was detected above the MDL but below the RL.
Was a field blank (equipment or trip) collected and analyzed at the required frequency?			•	

Method: SW8270C

Review Questions	Yes	No	NA	Comment
Were target analytes reported in the field blank analyses above the MDL?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS was extracted with each preparation batch.
Were the LCS/LCSD recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits?			•	
Was the duplicate RPD within QAPP acceptance limits?			•	
Are all samples associated with QC non-compliances flagged appropriately?			•	
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?				
Was a MS/MSD pair prepared with each batch?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Were reported sample concentrations within calibration range?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample prepration sheets present and filled out appropriately?	•			

Method: SW8330B

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report?	•			
Were samples preserved properly and received in good condition?	•			
Were sample reciept temperatures met?	•			
Were holding times for prep and analysis met?	•			
Does the initial calibration curve consist of 5 concentration levels, with the low standard near but > MDL?	•			
Is the ICAL %RSD within acceptance limits (%D =20%) on both columns?	•			
Was a second source verification analyzed after the ICAL and all analytes within criteria (%D =20%)?	•			
Was a CCV run at the beginning of the analytical sequence and every 12 hours?	•			
Was the CCV a mid-level standard from the initial calibration curve?	•			
Was the CCV %D within criteria (%D =20%)?	•			

AUTOMATED DATA REVIEW SUMMARY for 240-21987-1_79_SourceWater_TB_1

Method: SW8330B

Review Questions	Yes	No	NA	Comment
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes detected in the method blank above the MDL?		•		
Was a field blank (equipment or trip) collected and analyzed?			•	
Were target analytes reported in the field blank analyses above the MDL?			•	
Were surrogate recoveries within QAPP acceptance limits?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch? (if applicable)	•			LCS was extracted with each preparation batch.
Were the LCS recoveries within QAPP acceptance limits?	•			
Were the LCS/LCSD RPDs within QAPP acceptance limits? (if applicable)			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits (RPD = 30%) ?			•	
Is the MS/MSD parent sample the one designated by the sampling team?			•	
Were MS/MSD recoveries and RPD within QAPP acceptance limits?	•			MS and MSD were performed on Nitroguanidine only.
Were all QAPP-specified target analytes reported?	•			
Were reported sample concentrations within calibration range?	•			
Were RPDs between primary and confirmation columns < 40%?		•		240-21987-1: Nitroguanidine was not confirmed on the column Hyrdo RP80A.
Did PDA spectra for reported compounds match associated standard spectra?			•	
Are all samples associated with QC non-compliances flagged appropriately?	•			
Are the Qualified, Detected, and Rejected tables of the ADR report in agreement?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were sample prepration sheets present and filled out appropriately?	•			
Were instrument run logs present and filled out appropriately?	•			

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WORKSHEET 4

Automated Data Review Summary for 99335
Rinsate Blank

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AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Facility: Ravenna Army Ammunition Plant

Event: Summer 2013 RI/SI Sampling Event

Guidance Document: Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Contract Laboratory: CT LABS., BARABOO, WI

Field Contractor: Environmental Chemical Corporation, Cincinnati, OH

Data Review Contractor:

SDG: Site 83 EB csv, Certified - 9/24/2013 by KathrynPriess

QC Level:

Project Manager:

Data Reviewer:

Data Reviewer Title:

Date of Review Report:

Samples Included in SDG Site 83 EB csv

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
BNASIM/NONE	0	1
ORTPHG/NONE	0	1
SW6010B/NONE	0	1
SW7470A/NONE	0	1
SW8081B/NONE	0	1
SW8082/NONE	0	1
SW8260C/NONE	0	2

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
SW8270D/NONE	0	1
SW8330/NONE	0	1
SW8330B/NONE	0	1

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Environmental Chemical Corporation, Cincinnati, OH; analyses were performed by CT LABS., BARABOO, WI and were reported under sample delivery group (SDG) Site 83 EB csv. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

- Blank
- Blank - Negative
- Equipment Blank
- Lab Replicate RPD
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

- Ambient Blank
- Calibration Blank
- Calibration Blank - Negative

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Continuing Calibration Verification

Field Blank

Field Duplicate RPD

Initial Calibration Verification

LCS RPD

Material Blank

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

A representative sampling or ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 49 results (22.58%) out of the 217 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Comment

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Reviewed by ,

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Reason and Comment Code Definitions

Reasons	
Code	**Definition**
A	Serial dilution
A1	Ambient Blank
B	The analyte was found in an associated blank as well as in the sample.
B2	CCB
B3	CCB - Neg
c	LCS - low
C	LCS Recovery
d	Field Duplicate RPD
D	MS RPD
D1	Lab Replicate RPD
D2	No precision available
F	Field Blank
F1	Hydrocarbon pattern does not match standard
G1	Initial Calibration RRF
G2	Initial Calibration RSD
h	Holding time exceeded by less than 2X.
H	Holding time exceeded by more than 2X.
H1	Test Hold Time
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
J	CRA/CRI Recovery
K	An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.
L	Lab Blank
L1	Lab Blank - Neg
m	MS - low
M	MS Recovery
N	Blank - No Action

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Reason and Comment Code Definitions

O	ICS
P	Sample preservation/collection requirement not met.
P1	Column RPD
P2	Improper preparation/extraction
q	Encore sample holding time exceeded by less than 2X.
Q	Encore sample holding time exceeded by more than 2X.
Q1	Material Blank
R	Exceeds LinearCalibration Range
S	Internal standard
T	Trip Blank
TI	Tentatively Identified Compound
TR	Trace Level Detect
U	Receipt Temperature
V	Equipment Blank
V1	ICV
V2	CCV
V3	CCV RRF
V4	Sample Receipt Condition
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Cooler temperature greater than 10 degreec C.
y	Cooler temperature greater than 4 degrees C, but less than 10 degreec C.
Y1	False Positive
Y2	Data rejected due to radiological anomolies
Z	LCS RPD
Z2	Analyte not confirmed on second column
Z3	High percent moisture in sample.

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Flag Code and Definitions	
Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Batch Report

Test Method: BNASIM; Leach Method: NONE											
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96939	45508	NA	LABQC	WQ	LABQC	339737		1/1	20-Aug-2013 7:30 AM	20-Aug-2013 7:30 AM	21-Aug-2013 11:46 AM	LB
	45508	NA	LABQC	WQ	LABQC	339738		1/1	20-Aug-2013 7:30 AM	20-Aug-2013 7:30 AM	21-Aug-2013 12:06 PM	BS
	45508	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	20-Aug-2013 7:30 AM	21-Aug-2013 12:26 PM	EB
Test Method: ORTPHG; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96940	96940	NA	LABQC	WQ	LABQC	342875		1/1	21-Aug-2013 11:11 AM		21-Aug-2013 11:11 AM	BS
	96940	NA	LABQC	WQ	LABQC	342876		1/1	21-Aug-2013 12:35 PM		21-Aug-2013 12:35 PM	LB
	96940	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM		21-Aug-2013 1:18 PM	EB
Test Method: SW6010B; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96853	45497	NA	LABQC	WQ	LABQC	339613		1/1	16-Aug-2013 12:30 PM	16-Aug-2013 12:30 PM	19-Aug-2013 2:39 PM	BS
	45497	NA	LABQC	WQ	LABQC	339612		1/1	16-Aug-2013 12:30 PM	16-Aug-2013 12:30 PM	19-Aug-2013 2:43 PM	LB
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	19-Aug-2013 2:47 PM	EB
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339614		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	19-Aug-2013 3:05 PM	LR
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339615		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	19-Aug-2013 3:09 PM	MS
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339616		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	19-Aug-2013 3:13 PM	SD
96854	45497	NA	LABQC	WQ	LABQC	339613		1/1	16-Aug-2013 12:30 PM	16-Aug-2013 12:30 PM	20-Aug-2013 10:03 AM	BS
	45497	NA	LABQC	WQ	LABQC	339612		1/1	16-Aug-2013 12:30 PM	16-Aug-2013 12:30 PM	20-Aug-2013 10:06 AM	LB

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Batch Report

Test Method: SW6010B; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96854	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	20-Aug-2013 10:07 AM	EB
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339614		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	20-Aug-2013 10:09 AM	LR
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339615		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	20-Aug-2013 10:10 AM	MS
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339616		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	20-Aug-2013 10:11 AM	SD
96853	45497	NA	LABQC	WQ	LABQC	339612		1/1	16-Aug-2013 12:30 PM	16-Aug-2013 12:30 PM	21-Aug-2013 1:51 PM	LB
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	21-Aug-2013 1:55 PM	EB
	45497	NA	FIELDQC	WQ	083SB-0023-0001-ER	339614		1/1	15-Aug-2013 9:30 AM	16-Aug-2013 12:30 PM	21-Aug-2013 2:03 PM	LR
Test Method: SW7470A; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96908	45527	NA	LABQC	WQ	LABQC	339931		1/1	20-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 10:54 AM	BS
	45527	NA	LABQC	WQ	LABQC	339930		1/1	20-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 10:56 AM	LB
	45527	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 10:58 AM	EB
	45527	NA	FIELDQC	WQ	083SB-0023-0001-ER	339932		1/1	15-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 11:02 AM	LR
	45527	NA	FIELDQC	WQ	083SB-0023-0001-ER	339933		1/1	15-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 11:04 AM	MS
	45527	NA	FIELDQC	WQ	083SB-0023-0001-ER	339934		1/1	15-Aug-2013 9:30 AM	20-Aug-2013 9:30 AM	21-Aug-2013 11:06 AM	SD
Test Method: SW8081B; Leach Method: NONE												
Analytical Batch	**Prep Batch**	**Leach Batch**	**Location**	**Matrix**	**Field Sample ID**	**Lab Sample ID**	**Calibration Ref**	**Run#/ Dil'n**	**Collection Date/Time**	**Extract Date/Time**	**Analysis Date/Time**	**Sample Type**
96883	45504	NA	LABQC	WQ	LABQC	339717		1/1	19-Aug-2013 8:00 AM	19-Aug-2013 8:00 AM	23-Aug-2013 12:59 PM	LB

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Batch Report

Test Method: SW8081B; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
96883	45504	NA	LABQC	WQ	LABQC	339718		1/1	19-Aug-2013 8:00 AM	19-Aug-2013 8:00 AM	23-Aug-2013 1:15 PM	BS
	45504	NA	LABQC	WQ	LABQC	339718		1/1	19-Aug-2013 8:00 AM	19-Aug-2013 8:00 AM	23-Aug-2013 1:32 PM	BS
	45504	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	19-Aug-2013 8:00 AM	23-Aug-2013 1:49 PM	EB
97001	45551	NA	LABQC	WQ	LABQC	340733		1/1	21-Aug-2013 8:00 AM	21-Aug-2013 8:00 AM	23-Aug-2013 3:46 PM	BS

Test Method: SW8082; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
96884	45505	NA	LABQC	WQ	LABQC	339720		1/1	19-Aug-2013 8:00 AM	19-Aug-2013 8:00 AM	21-Aug-2013 11:09 AM	LB
	45505	NA	LABQC	WQ	LABQC	339721		1/1	19-Aug-2013 8:00 AM	19-Aug-2013 8:00 AM	21-Aug-2013 11:29 AM	BS
	45505	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	19-Aug-2013 8:00 AM	21-Aug-2013 11:48 AM	EB

Test Method: SW8260C; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
96835	96835	NA	LABQC	WQ	LABQC	340024		1/1	19-Aug-2013 11:55 AM		19-Aug-2013 11:55 AM	BS
	96835	NA	LABQC	WQ	LABQC	340028		1/1	19-Aug-2013 12:25 PM		19-Aug-2013 12:25 PM	LB
	96835	NA	FIELDQC	WQ	083SB-0024-0001-TB	339581		1/1	15-Aug-2013 8:00 AM		19-Aug-2013 7:19 PM	TB
	96835	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM		19-Aug-2013 7:48 PM	EB
	96835	NA	FIELDQC	WQ	083SB-0023-0001-ER	340195		1/1	15-Aug-2013 9:30 AM		19-Aug-2013 9:16 PM	MS
	96835	NA	FIELDQC	WQ	083SB-0023-0001-ER	340715		1/1	15-Aug-2013 9:30 AM		19-Aug-2013 9:46 PM	SD
97040	97040	NA	LABQC	WQ	LABQC	343270		1/1	23-Aug-2013 3:40 PM		23-Aug-2013 3:40 PM	BS

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Batch Report

Test Method: SW8260C; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
97040	97040	NA	LABQC	WQ	LABQC	343278		1/1	23-Aug-2013 4:39 PM		23-Aug-2013 4:39 PM	LB

Test Method: SW8270D; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
96903	45503	NA	LABQC	WQ	LABQC	339715		1/1	19-Aug-2013 10:30 AM	19-Aug-2013 10:30 AM	20-Aug-2013 1:57 PM	LB
	45503	NA	LABQC	WQ	LABQC	339716		1/1	19-Aug-2013 10:30 AM	19-Aug-2013 10:30 AM	20-Aug-2013 2:17 PM	BS
	45503	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	19-Aug-2013 10:30 AM	20-Aug-2013 4:22 PM	EB
97009	45552	NA	LABQC	WQ	LABQC	340736		1/1	21-Aug-2013 8:00 AM	21-Aug-2013 8:00 AM	22-Aug-2013 2:11 PM	LB
	45552	NA	LABQC	WQ	LABQC	340737		1/1	21-Aug-2013 8:00 AM	21-Aug-2013 8:00 AM	22-Aug-2013 2:48 PM	BS

Test Method: SW8330B; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
97103	45570	NA	LABQC	WQ	LABQC	341681		1/1	22-Aug-2013 9:00 AM	22-Aug-2013 9:00 AM	28-Aug-2013 10:40 AM	LB
	45570	NA	LABQC	WQ	LABQC	341682		1/1	22-Aug-2013 9:00 AM	22-Aug-2013 9:00 AM	28-Aug-2013 10:59 AM	BS
	45570	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	22-Aug-2013 9:00 AM	28-Aug-2013 11:17 AM	EB
97104	45571	NA	LABQC	WQ	LABQC	341684		1/1	22-Aug-2013 9:00 AM	22-Aug-2013 9:00 AM	28-Aug-2013 3:14 PM	LB
	45571	NA	LABQC	WQ	LABQC	341685		1/1	22-Aug-2013 9:00 AM	22-Aug-2013 9:00 AM	28-Aug-2013 3:22 PM	BS

Test Method: SW8330; Leach Method: NONE

Analytical Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extract Date/Time	Analysis Date/Time	Sample Type
97104	45571	NA	FIELDQC	WQ	083SB-0023-0001-ER	339561		1/1	15-Aug-2013 9:30 AM	22-Aug-2013 9:00 AM	28-Aug-2013 3:31 PM	EB

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Field Batch Report

Test Method: BNASIM		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: ORTPHG		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW6010B		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW7470A		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8081B		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8082		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8260C		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8270D		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8330		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Field Batch Report

Test Method: SW8330B		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
15081301			FIELDQC	WQ	083SB-0023-0001-ER	339561	8/15/2013 9:30:00 AM	EB
Test Method: SW8260C		**Leach Method: NONE**						
EBLOT	**TBLOT**	**ABLOT**	**LOCID**	**Matrix**	**FLDSAMPID**	**LABSAMPID**	**LOGDATE**	**SACODE**
	15081301		FIELDQC	WQ	083SB-0024-0001-TB	339581	8/15/2013 8:00:00 AM	TB

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

QC Outlier Report

Test/Prep/Leach	QC Element	Sample ID/ Lab Sample ID	Run# / Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
ORTPHG / SW5030B/NONE	Equipment Blank	083SB-0023-0001-ER (EB) / 339561	1 / 1.00	Gasoline Components	26.0 (ug/L)	U/None	< 23	< 100	V		1	26.0
SW6010B / TOTAL/NONE	Blank	339612 (LB) / 339612	1 / 1.00	Calcium	109 (ug/L)	U/None	< 17	< 100	L		1	109
SW6010B / TOTAL/NONE	Blank	339612 (LB) / 339612	1 / 1.00	Iron	77.2 (ug/L)	U/None	< 16	< 100	L		1	77.2
SW6010B / TOTAL/NONE	Blank	339612 (LB) / 339612	1 / 1.00	Manganese	1.8 (ug/L)	U/None	< 0.7	< 4	L		1	1.82
SW6010B / TOTAL/NONE	Blank	339612 (LB) / 339612	1 / 1.00	Thallium	2.7 (ug/L)	U/None	< 2.5	< 15	L		1	2.66
SW6010B / TOTAL/NONE	Equipment Blank	083SB-0023-0001-ER (EB) / 339561	1 / 1.00	Silver	0.77 (ug/L)	U/None	< 0.7	< 4	V		1	0.770
SW8260C / SW5030B/NONE	Equipment Blank	083SB-0023-0001-ER (EB) / 339561	1 / 1.00	Chloroform	0.37 (ug/L)	U/None	< 0.15	< 0.5	V		1	0.370
SW8260C / SW5030B/NONE	Trip Blank	083SB-0024-0001-TB (TB) / 339581	1 / 1.00	Methylene Chloride	1.3 (ug/L)	U/None	< 0.4	< 2	T		2	2.60
SW8270D / SW3510/NONE	LCS Recovery	339716 (BS) / 339716	1 / 1.00	2,2'-Oxybis(1-chloro)propane	66.5 (PERCENT)	J/UJ	70 - 130	70 - 130	C			
SW8270D / SW3510/NONE	LCS Recovery	339716 (BS) / 339716	1 / 1.00	Cresols, m & p	59.0 (PERCENT)	J/UJ	70 - 130	70 - 130	C			
SW8270D / SW3510/NONE	LCS Recovery	339716 (BS) / 339716	1 / 1.00	Hexachlorocyclopentadiene	53.0 (PERCENT)	J/UJ	70 - 130	70 - 130	C			
SW8270D / SW3510/NONE	Surrogate	083SB-0023-0001-ER (EB) / 339561	1 / 1.00	Phenol-d5	27.0 (PERCENT)	J/UJ	40 - 100	10 - 100	I			
SW8330B / METHOD/NONE	LCS Recovery	341685 (BS) / 341685	1 / 1.00	NITROGUANIDINE	78.6 (PERCENT)	J/UJ	80 - 120	20 - 120	C			
SW8330B / METHOD/NONE	Surrogate	083SB-0023-0001-ER (EB) / 339561	1 / 1.00	1,2-Dinitrobenzene	120 (PERCENT)	J/None	78 - 118	10 - 118	I			

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
ORTPHG/NONE	WQ	083SB-0023-0001-ER	339561	EB	Gasoline Components	100	26.0	26.0 J		ug/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW6010B/NONE	WQ	083SB-0023-0001-ER	339561	EB	Silver	4.0	0.77	0.77 J		ug/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8260C/NONE	WQ	083SB-0023-0001-ER	339561	EB	Chloroform	0.50	0.37	0.37 J		ug/L	TR
SW8260C/NONE	WQ	083SB-0024-0001-TB	339581	TB	Methylene Chloride	2.0	1.3	1.3 J		ug/L	TR
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	1,2,4-Trichlorobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	1,2-Dichlorobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	1,3-Dichlorobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	1,4-Dichlorobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,2'-Oxybis(1-chloro)propane	1.0	1.0	1.0 UJ	-	ug/L	C/I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4,5-Trichlorophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4,6-Trichlorophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4-Dichlorophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4-Dimethylphenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4-Dinitrophenol	6.1	6.1	6.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,4-Dinitrotoluene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2,6-Dinitrotoluene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2-Chloronaphthalene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2-Chlorophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2-Methylphenol (o-Cresol)	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2-Nitroaniline	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	2-Nitrophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	3,3'-Dichlorobenzidine	2.5	2.5	2.5 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	3-Nitroaniline	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4,6-Dinitro-2-Methylphenol	6.1	6.1	6.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Bromophenyl phenyl ether	1.0	1.0	1.0 UJ	-	ug/L	I

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Qualified Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Chloro-3-Methylphenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Chloroaniline	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Chlorophenyl Phenyl Ether	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Nitroaniline	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	4-Nitrophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Benzoic acid	76.0	76.0	76.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Benzyl alcohol	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Benzyl butyl phthalate	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	bis(2-Chloroethoxy) Methane	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Carbazole	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Cresols, m & p	9.1	9.1	9.1 UJ	-	ug/L	C/I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Dibenzofuran	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Diethyl Phthalate	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Dimethyl Phthalate	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Di-n-Butyl Phthalate	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Di-n-Octylphthalate	3.0	3.0	3.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Hexachlorobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Hexachlorobutadiene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Hexachlorocyclopentadiene	1.2	1.2	1.2 UJ	-	ug/L	C/I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Hexachloroethane	1.2	1.2	1.2 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Isophorone	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Nitrobenzene	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	n-Nitrosodi-n-propylamine	1.0	1.0	1.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	n-Nitrosodiphenylamine	2.0	2.0	2.0 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Pentachlorophenol	5.1	5.1	5.1 UJ	-	ug/L	I
SW8270D/NONE	WQ	083SB-0023-0001-ER	339561	EB	Phenol	5.1	5.1	5.1 UJ	-	ug/L	I
Test Leach	**Matrix**	**FieldSample ID**	**LabSample ID**	**Type**	**Analyte**	**RL**	**Lab Result**	**Qualified Result**	**Bias**	**Units**	**Reason**
SW8330/NONE	WQ	083SB-0023-0001-ER	339561	EB	NITROGUANIDINE	120	120	120 UJ	-	ug/L	C

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Detected Results

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
ORTPHG/NONE	WQ	083SB-0023-0001-ER	339561	EB	Gasoline Components	100	26.0	26.0 J	ug/L	TR

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW6010B/NONE	WQ	083SB-0023-0001-ER	339561	EB	Silver	4.0	0.77	0.77 J	ug/L	TR

Test Leach	Matrix	FieldSample ID	LabSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260C/NONE	WQ	083SB-0023-0001-ER	339561	EB	Chloroform	0.50	0.37	0.37 J	ug/L	TR
SW8260C/NONE	WQ	083SB-0024-0001-TB	339581	TB	Methylene Chloride	2.0	1.3	1.3 J	ug/L	TR

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Rejected Results

--No Records Found--

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Anomalies Count

SDG Name: Site 83 EB csv

Test/Extraction Method/Leach	# of Field Samples Outside of Compliance	# of Analytes Outside of Compliance
ORTPHG/SW5030B/NONE	1	1
SW6010B/TOTAL/NONE	1	9
SW8082/SW3520C/NONE	1	9
SW8260C/SW5030B/NONE	2	2
SW8270D/SW3510/NONE	1	5
SW8330/METHOD/NONE	1	1
SW8330B/METHOD/NONE	1	16

Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Reporting Anomalies

SDG Name: Site 83 EB csv

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
ORTPHG/NONE	083SB-0023-0001-ER	EB	1	Gasoline Components	26 J	23	100	0.5	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Antimony	12 U	2	12	2	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Arsenic	24 U	4	24	5	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Cadmium	2 U	0.3	2	0.5	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Copper	7 U	1.2	7	5	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Lead	4 U	1.4	4	3	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Potassium	500 U	90	500	200	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Selenium	13 U	2.2	13	5	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Sodium	600 U	100	600	200	ug/L
SW6010B/NONE	083SB-0023-0001-ER	EB	1	Thallium	15 U	2.5	15	1	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1016 (Arochlor 1016)	1 U	0.12	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1221 (Arochlor 1221)	1 U	0.087	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1232 (Arochlor 1232)	1 U	0.15	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1242 (Arochlor 1242)	1 U	0.098	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1248 (Arochlor 1248)	1 U	0.09	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1254 (Arochlor 1254)	1 U	0.096	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1260 (Arochlor 1260)	1 U	0.1	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1262 (Arochlor 1262)	1 U	0.29	1	0.2	ug/L
SW8082/NONE	083SB-0023-0001-ER	EB	1	PCB-1268 (Arochlor 1268)	1 U	0.057	1	0.2	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8260C/NONE	083SB-0023-0001-ER	EB	1	Methylene Chloride	2 U	0.4	2	1	ug/L
SW8260C/NONE	083SB-0024-0001-TB	TB	1	Methylene Chloride	1.3 J	0.4	2	1	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8270D/NONE	083SB-0023-0001-ER	EB	1	2,4,5-Trichlorophenol	5.1 UJ	1.1	5.1	5	ug/L
SW8270D/NONE	083SB-0023-0001-ER	EB	1	2,4,6-Trichlorophenol	5.1 UJ	1	5.1	5	ug/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Reporting Anomalies

SDG Name: Site 83 EB csv

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8270D/NONE	083SB-0023-0001-ER	EB	1	Benzoic acid	76 UJ	11	76	25	ug/L
SW8270D/NONE	083SB-0023-0001-ER	EB	1	Hexachlorobenzene	1 UJ	0.27	1	0.2	ug/L
SW8270D/NONE	083SB-0023-0001-ER	EB	1	Pentachlorophenol	5.1 UJ	1.1	5.1	5	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8330/NONE	083SB-0023-0001-ER	EB	1	NITROGUANIDINE	120 UJ	32	120	20	ug/L

Test Leach	FieldSample ID	Type	Dilution	Analyte	Result	DL	RL	Project RL	Units
SW8330B/NONE	083SB-0023-0001-ER	EB	1	1,3,5-Trinitrobenzene	0.8 U	0.23	0.8	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	1,3-Dinitrobenzene	1 U	0.2	1	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	2,4,6-Trinitrotoluene	1 U	0.22	1	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	2,4-Dinitrotoluene	2 U	0.3	2	0.1	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	2,6-Dinitrotoluene	1 U	0.24	1	0.1	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	2-Amino-4,6-dinitrotoluene	1 U	0.24	1	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	2-Nitrotoluene	2 U	0.4	2	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	3-Nitrotoluene	0.8 U	0.23	0.8	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	4-Amino-2,6-Dinitrotoluene	1 U	0.28	1	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	4-Nitrotoluene	1 U	0.22	1	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	1 U	0.18	1	0.5	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Nitrobenzene	0.8 U	0.22	0.8	0.2	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Nitroglycerin	8 U	2.2	8	3	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine (HMX)	1 U	0.25	1	0.5	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Pentaerythritol Tetranitrate	12 U	3	12	3	ug/L
SW8330B/NONE	083SB-0023-0001-ER	EB	1	Tetryl	1 U	0.21	1	0.2	ug/L

Reporting Anomalies are cases where the reported RL exceeds that specified in the governing project document.

AUTOMATED DATA REVIEW SUMMARY for Site 83 EB csv

Worksheet

SDG Name: Site 83 EB csv

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WORKSHEET 5

Automated Data Review Summary for Field Duplicates

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Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
RVAAP, QAPP Oct. 2012

Location	Analysis
83-1039-DU1-SB3	BNASIM

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Methylnaphthalene	1.90	2.00	1.60	5.13	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Acenaphthene	0.780	0.710	1.60	9.40	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Acenaphthylene	ND	ND	1.60	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Anthracene	2.10	7.50	1.60	113	50	NA	5.4
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzo(a)anthracene	7.30	11.0	1.60	40.4	50	NA	3.7
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzo(a)pyrene	3.20	1.40	1.60	78.3	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzo(b)fluoranthene	8.90	5.10	1.60	54.3	50	NA	3.8
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzo(g,h,i)perylene	6.00	3.80	1.60	44.9	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzo(k)fluoranthene	1.90	0.980	1.60	63.9	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Chrysene	8.30	8.30	1.60	0.00	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Dibenz(a,h)anthracene	1.20	0.750	1.60	46.2	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Fluoranthene	10.0	4.10	1.60	83.7	50	NA	5.9
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Fluorene	0.930	0.740	1.60	22.8	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Indeno(1,2,3-c,d)pyrene	3.60	1.80	1.60	66.7	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Naphthalene	2.00	2.60	1.60	26.1	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Phenanthrene	11.0	7.70	1.60	35.3	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Pyrene	8.10	3.60	1.60	76.9	50	NA	4.5

Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
RVAAP, QAPP Oct. 2012

Location	Analysis
83-1039-DU1-SB3	E353.2

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Nitrocellulose	ND	ND	200	NA	40	NA	OK

Location	Analysis
83-1039-DU1-SB3	SW6010C

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Aluminum	12500	10800	1.20	14.6	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Antimony	1.20	1.00	4.10	18.2	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Arsenic	13.9	12.6	4.10	9.81	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Barium	78.1	70.2	0.260	10.7	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Beryllium	0.680	0.610	0.210	10.9	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Cadmium	ND	0.0460	0.210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Calcium	28900	24400	7.30	16.9	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Chromium	18.3	16.2	0.730	12.2	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Cobalt	11.8	11.0	1.20	7.02	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Copper	21.3	19.9	2.10	6.80	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Iron	27200	23800	9.30	13.3	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Lead	11.8	10.8	1.30	8.85	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Magnesium	7530	6660	4.10	12.3	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Manganese	428	380	0.780	11.9	50	OK	NA

Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
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Location	Analysis
83-1039-DU1-SB3	SW6010C

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Nickel	29.2	27.0	0.620	7.83	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Potassium	1300	1250	68.0	3.92	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Selenium	ND	ND	0.410	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Silver	ND	ND	0.100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Sodium	55.2	53.7	25.0	2.75	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Thallium	ND	ND	2.50	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Vanadium	18.8	16.7	0.410	11.8	50	OK	NA
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Zinc	70.2	64.1	1.60	9.08	50	OK	NA

Location	Analysis
83-1039-DU1-SB3	SW7471B

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Mercury	0.0130	0.0120	0.00910	8.00	50	NA	OK

Location	Analysis
83-1039-DU1-SB3	SW8260C

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,1,1-Trichloroethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,1,2,2-Tetrachloroethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,1,2-Trichloroethane	ND	ND	1.80	NA	50	NA	OK

Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
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Location	Analysis
83-1039-DU1-SB3	SW8260C

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,1-Dichloroethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,1-Dichloroethene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,2-Dibromoethane (EDB)	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,2-Dichloroethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,2-Dichloroethene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	1,2-Dichloropropane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	2-Butanone (MEK)	ND	ND	18.0	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	2-Hexanone	ND	ND	36.0	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	4-Methyl-2-pentanone (MIBK)	ND	ND	18.0	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Acetone	ND	ND	18.0	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Benzene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Bromochloromethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Bromodichloromethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Bromoform	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Bromomethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Carbon Disulfide	ND	ND	3.60	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Carbon Tetrachloride	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Chlorobenzene	ND	ND	1.80	NA	50	NA	OK

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Location	Analysis
83-1039-DU1-SB3	SW8260C

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Chloroethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Chloroform	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Chloromethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	cis-1,2-Dichloroethylene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	cis-1,3-Dichloropropene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Dibromochloromethane	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Ethylbenzene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	m,p-Xylene	ND	ND	3.60	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Methylene Chloride	ND	ND	9.00	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	o-Xylene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Styrene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Tetrachloroethene (PCE)	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Toluene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	trans-1,2-Dichloroethene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	trans-1,3-Dichloropropene	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Trichloroethene (TCE)	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Vinyl Chloride	ND	ND	1.80	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337819 / 337821	Xylenes, Total	ND	ND	3.60	NA	50	NA	OK

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Location	Analysis
83-1039-DU1-SB3	SW8270D

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,2,4-Trichlorobenzene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,2-Dichlorobenzene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,3-Dichlorobenzene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,4-Dichlorobenzene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,2'-Oxybis(1-chloro)propane	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4,5-Trichlorophenol	ND	ND	640	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4,6-Trichlorophenol	ND	ND	640	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4-Dichlorophenol	ND	ND	640	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4-Dimethylphenol	ND	ND	640	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4-Dinitrophenol	ND	ND	1100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4-Dinitrotoluene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,6-Dinitrotoluene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Chloronaphthalene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Chlorophenol	ND	ND	2100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Methylphenol (o-Cresol)	ND	ND	2100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Nitroaniline	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Nitrophenol	ND	ND	1100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	3,3'-Dichlorobenzidine	ND	ND	530	NA	50	NA	OK

Field Duplicate Report By Event and Site
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Location	Analysis
83-1039-DU1-SB3	SW8270D

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	3-Nitroaniline	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4,6-Dinitro-2-Methylphenol	ND	ND	1100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Bromophenyl phenyl ether	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Chloro-3-Methylphenol	ND	ND	2100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Chloroaniline	ND	ND	210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Chlorophenyl Phenyl Ether	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Nitroaniline	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Nitrophenol	ND	ND	2100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzoic acid	ND	ND	3200	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzyl alcohol	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Benzyl butyl phthalate	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	bis(2-Chloroethoxy) Methane	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Carbazole	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Cresols, m & p	ND	ND	3800	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Di-n-Butyl Phthalate	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Di-n-Octylphthalate	ND	ND	210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Dibenzofuran	ND	ND	130	NA	50	NA	OK

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Location	Analysis
83-1039-DU1-SB3	SW8270D

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Diethyl Phthalate	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Dimethyl Phthalate	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Hexachlorobenzene	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Hexachlorobutadiene	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Hexachlorocyclopentadiene	ND	ND	210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Hexachloroethane	ND	ND	130	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Isophorone	ND	ND	210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	n-Nitrosodi-n-propylamine	ND	ND	420	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	n-Nitrosodiphenylamine	ND	ND	250	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Nitrobenzene	ND	ND	210	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Pentachlorophenol	ND	ND	1100	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Phenol	ND	ND	640	NA	50	NA	OK

Location	Analysis
83-1039-DU1-SB3	SW8330

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	NITROGUANIDINE	ND	ND	0.250	NA	50	NA	OK

Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
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Location	Analysis
83-1039-DU1-SB3	SW8330B

Sample Date	Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,3,5-Trinitrobenzene	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	1,3-Dinitrobenzene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4,6-Trinitrotoluene	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,4-Dinitrotoluene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2,6-Dinitrotoluene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Amino-4,6-dinitrotoluene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	2-Nitrotoluene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	3,5-Dinitroaniline	ND	ND	0.300	NA	30	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	3-Nitrotoluene	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Amino-2,6-Dinitrotoluene	ND	ND	0.300	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	4-Nitrotoluene	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Nitrobenzene	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Nitroglycerin	ND	ND	2.00	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine (HMX)	ND	ND	0.500	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Pentaerythritol Tetranitrate	ND	ND	2.00	NA	50	NA	OK
Aug 12 2013	083SB-0005M-0001-SO / 083SB-0006M-0001-SO	337818 / 337820	Tetryl	ND	ND	0.300	NA	50	NA	OK

Field Duplicate Report By Event and Site
Ravenna Army Ammunition Plant
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FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil

ATTACHMENTS

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ATTACHMENT A

Field Blank Quality Control – Trip Blanks and Equipment Rinsate Blanks

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Trip Blanks
Chemistry Results
Ravenna Army Ammunition Plant
RVAAP, QAPP Oct. 2012

Site Name: Site 83

		TB-1	TB-2	TB-3
Field Sample ID:		083SB-0016-0001-TB	083SB-0018-0001-TB	083SB-0020-0001-TB
Lab Sample ID:		337835	337836	338809
Lab Name:		CTLB	CTLB	CTLB
Sample Date:		8/12/2013	8/12/2013	8/14/2013
Analysis Information:		1X	1X	1X
Volatile Organic Compounds by GC/MS	**Units**			
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (EDB)	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	µg/L	10 U	10 U	10 U
2-Hexanone	µg/L	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	µg/L	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	**15 J**
Benzene	µg/L	1.0 U	1.0 U	1.0 U
Bromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U
Bromomethane	µg/L	1.0 U	1.0 U	1.0 U
Carbon Disulfide	µg/L	2.0 U	2.0 U	2.0 U
Carbon Tetrachloride	µg/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U
Chloroform	µg/L	1.0 U	1.0 U	1.0 U
Chloromethane	µg/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethylene	µg/L	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U
m,p-Xylene	µg/L	2.0 U	2.0 U	2.0 U
Methylene Chloride	µg/L	2.0 U	2.0 U	2.0 U
o-Xylene	µg/L	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U
tert-Butyl Methyl Ether (MTBE)	µg/L			1.0 U
Tetrachloroethene (PCE)	µg/L	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Trichloroethene (TCE)	µg/L	1.0 U	1.0 U	1.0 U
Vinyl Chloride	µg/L	1.0 U	1.0 U	1.0 U
Xylenes, Total	µg/L	2.0 U	2.0 U	2.0 U

Notes:
CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter
J = Detected, Estimated
UJ = Compound was not detected and reporting limit is estimated
U = Compound was Not Detected

Trip Blanks
Chemistry Results
Ravenna Army Ammunition Plant
RVAAP, QAPP Oct. 2012

		QC TB-1	QC TB-5	QC TB-11
Field Sample ID:		070-0060-0001-TB	079-0008-0001-TB	083SB-0024-0001-TB
Lab Sample ID:		240-18735-7	240-21987-2	339581
Lab Name:		TAM0	TAM0	CTLB
Sample Date:		12/12/2012	3/14/2013	8/15/2013
Analysis Information:		1X	1X	1X
Volatile Organic Compounds by Capillary GC/MS	**Units**			
1,1,1-Trichloroethane	µg/L	0.25 U	0.25 U	0.25 U
1,1,2,2-Tetrachloroethane	µg/L	0.25 U	0.25 U	0.25 U
1,1,2-Trichloroethane	µg/L	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	µg/L	0.25 U	0.25 U	0.25 U
1,1-Dichloroethene	µg/L	0.25 U	0.25 U	0.25 U
1,2-Dibromoethane (EDB)	µg/L	0.25 U	0.25 U	0.25 U
1,2-Dichloroethane	µg/L	0.25 U	0.25 U	0.50 U
1,2-Dichloroethene	µg/L	0.50 U	0.50 U	0.25 U
1,2-Dichloropropane	µg/L	0.25 U	0.25 U	0.25 U
2-Butanone (MEK)	µg/L	0.57 U	0.57 U	2.5 U
2-Hexanone	µg/L	0.50 U	0.50 U	5.0 U
4-Methyl-2-pentanone (MIBK)	µg/L	0.50 U	0.50 U	5.0 U
Acetone	µg/L	1.1 U	1.1 U	5.0 U
Benzene	µg/L	0.25 U	0.25 U	0.25 U
Bromochloromethane	µg/L	0.50 U	0.50 U	0.25 U
Bromodichloromethane	µg/L	0.25 U	0.25 U	0.25 U
Bromoform	µg/L	0.64 U	0.64 U	0.25 U
Bromomethane	µg/L	0.50 U	0.50 U	0.50 U
Carbon Disulfide	µg/L	0.25 U	0.25 U	0.50 U
Carbon Tetrachloride	µg/L	0.25 U	0.25 UJ	0.25 U
Chlorobenzene	µg/L	0.25 U	0.25 U	0.25 U
Chloroethane	µg/L	0.50 U	0.50 U	0.50 U
Chloroform	µg/L	**0.32 J**	**0.31 J**	0.25 U
Chloromethane	µg/L	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethylene	µg/L			0.25 U
cis-1,3-Dichloropropene	µg/L	0.25 U	0.25 U	0.25 U
Dibromochloromethane	µg/L	0.25 U	0.25 U	0.25 U
Ethylbenzene	µg/L	0.25 U	0.25 U	0.25 U
m,p-Xylene	µg/L			0.50 U
Methylene Chloride	µg/L	0.50 U	0.50 U	**1.3 J**
o-Xylene	µg/L			0.25 U
Styrene	µg/L	0.25 U	0.25 U	0.25 U
tert-Butyl Methyl Ether (MTBE)	µg/L	0.25 U	0.25 U	0.50 U
Tetrachloroethene (PCE)	µg/L	0.50 U	0.50 U	0.50 U
Toluene	µg/L	0.25 U	0.25 U	0.25 U
trans-1,2-Dichloroethene	µg/L			0.25 U
trans-1,3-Dichloropropene	µg/L	0.25 U	0.25 U	0.25 U
Trichloroethene (TCE)	µg/L	0.25 U	0.25 U	0.25 U
Vinyl Chloride	µg/L	0.25 U	0.25 U	0.25 U
Xylenes, Total	µg/L	0.75 U	0.75 U	0.75 U

Notes:

TAM0 = TestAmerica, Inc., North Canton, OH
CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter
J = Detected, Estimated
UJ = Compound was not detected and reporting limit is estimated

Trip Blanks
Chemistry Results
Ravenna Army Ammunition Plant
RVAAP, QAPP Oct. 2012

		QC TB-2	QC TB-6
Field Sample ID:		070SB-0055-0001-TB	079-0009-0001-TB
Lab Sample ID:		240-18735-2	240-21987-3
Lab Name:		TAM0	TAM0
Sample Date:		12/12/2012	3/14/2013
Analysis Information:		1X	1X
Modified SW8015 for the Determination of Gasoline Range Organics in Soil and Water, GC/FID	**Units**		
Petroleum Hydrocarbons C6-C12	µg/L	**37 J**	50 U

Notes:

TAM0 = TestAmerica, Inc., North Canton, OH
UG/L = Micrograms per Liter
J = Detected, Estimated

Table Equipment Blanks
Equipment Blank Results
Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Explosives	**Units**	
1,3,5-Trinitrobenzene	ug/L	0.80 U
1,3-Dinitrobenzene	ug/L	1.0 U
2,4,6-Trinitrotoluene	ug/L	1.0 U
2,4-Dinitrotoluene	ug/L	2.0 U
2,6-Dinitrotoluene	ug/L	1.0 U
2-Amino-4,6-dinitrotoluene	ug/L	1.0 U
2-Nitrotoluene	ug/L	2.0 U
3,5-Dinitroaniline	ug/L	1.0 U
3-Nitrotoluene	ug/L	0.80 U
4-Amino-2,6-Dinitrotoluene	ug/L	1.0 U
4-Nitrotoluene	ug/L	1.0 U
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	ug/L	1.0 U
Nitrobenzene	ug/L	0.80 U
Nitroglycerin	ug/L	8.0 U
Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine (HMX)	ug/L	1.0 U
Pentaerythritol Tetranitrate	ug/L	12 U
Tetryl	ug/L	1.0 U

Notes:
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UJ = Not Detected, Estimated
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ID = Identification
QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Gasoline	Units	
Gasoline Components	ug/L	**26 J**

Notes:
J = Detected, Estimated
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U = Not Detected
ID = Identification
QC = Quality Control
gas.xls

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Mercury Water	**Units**	
Mercury	ug/L	0.12 U

Notes:
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UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

ICP Metals	**Units**	
Aluminum	ug/L	36 U
Antimony	ug/L	12 U
Arsenic	ug/L	24 U
Barium	ug/L	1.8 U
Beryllium	ug/L	0.60 U
Cadmium	ug/L	2.0 U
Calcium	ug/L	100 U
Chromium	ug/L	4.0 U
Cobalt	ug/L	4.0 U
Copper	ug/L	7.0 U
Iron	ug/L	100 U
Lead	ug/L	4.0 U
Magnesium	ug/L	40 U
Manganese	ug/L	4.0 U
Nickel	ug/L	6.0 U
Potassium	ug/L	500 U
Selenium	ug/L	13 U
Silver	ug/L	**0.77 J**
Sodium	ug/L	600 U
Thallium	ug/L	15 U
Vanadium	ug/L	5.0 U
Zinc	ug/L	10 U

Notes:
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QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Nitrocellulose	**Units**	
Nitrocellulose	mg/L	1.1U

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Nitroguanidine	**Units**	
NITROGUANIDINE	ug/L	120 UJ

Notes:
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U = Not Detected
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QC = Quality Control

nitrog.xls

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

SemiVolatiles SIM	**Units**	
2-Methylnaphthalene	ug/L	0.076 U
Acenaphthene	ug/L	0.076 U
Acenaphthylene	ug/L	0.076 U
Anthracene	ug/L	0.076 U
Benzo(a)anthracene	ug/L	0.076 U
Benzo(a)pyrene	ug/L	0.076 U
Benzo(b)fluoranthene	ug/L	0.076 U
Benzo(g,h,i)perylene	ug/L	0.076 U
Benzo(k)fluoranthene	ug/L	0.076 U
Chrysene	ug/L	0.076 U
Dibenz(a,h)anthracene	ug/L	0.076 U
Fluoranthene	ug/L	0.076 U
Fluorene	ug/L	0.076 U
Indeno(1,2,3-c,d)pyrene	ug/L	0.076 U
Naphthalene	ug/L	0.076 U
Phenanthrene	ug/L	0.076 U
Pyrene	ug/L	0.076 U

Notes:
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U = Not Detected
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QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Polychlorinated Biphenyls	**Units**	
PCB-1016 (Arochlor 1016)	ug/L	1.0 U
PCB-1221 (Arochlor 1221)	ug/L	1.0 U
PCB-1232 (Arochlor 1232)	ug/L	1.0 U
PCB-1242 (Arochlor 1242)	ug/L	1.0 U
PCB-1248 (Arochlor 1248)	ug/L	1.0 U
PCB-1254 (Arochlor 1254)	ug/L	1.0 U
PCB-1260 (Arochlor 1260)	ug/L	1.0 U
PCB-1262 (Arochlor 1262)	ug/L	1.0 U
PCB-1268 (Arochlor 1268)	ug/L	1.0 U

Notes:
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U = Not Detected
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QC = Quality Control

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UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

Organochlorine Pesticides	**Units**	
Aldrin	ug/L	0.024 U
alpha-BHC (alpha-Hexachlorocyclohexane)	ug/L	0.024 U
alpha-Chlordane	ug/L	0.040 U
alpha-Endosulfan	ug/L	0.040 U
beta-BHC (beta-Hexachlorocyclohexane)	ug/L	0.040 U
beta-Endosulfan	ug/L	0.024 U
delta-BHC (delta-Hexachlorocyclohexane)	ug/L	0.024 U
Dieldrin	ug/L	0.024 U
Endosulfan Sulfate	ug/L	0.024 U
Endrin	ug/L	0.024 U
Endrin Aldehyde	ug/L	0.040 U
Endrin Ketone	ug/L	0.024 U
gamma-BHC (Lindane)	ug/L	0.024 U
gamma-Chlordane	ug/L	0.024 U
Heptachlor	ug/L	0.024 U
Heptachlor Epoxide	ug/L	0.024 U
Methoxychlor	ug/L	0.040 U
p,p'-DDD	ug/L	0.024 U
p,p'-DDE	ug/L	0.040 U
p,p'-DDT	ug/L	0.024 U
Toxaphene	ug/L	0.60 U

Notes:
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Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

SemiVolatiles	Units	
1,2,4-Trichlorobenzene	ug/L	1.0 UJ
1,2-Dichlorobenzene	ug/L	1.0 UJ
1,3-Dichlorobenzene	ug/L	1.0 UJ
1,4-Dichlorobenzene	ug/L	1.0 UJ
2,2'-Oxybis(1-chloro)propane	ug/L	1.0 UJ
2,4,5-Trichlorophenol	ug/L	5.1 UJ
2,4,6-Trichlorophenol	ug/L	5.1 UJ
2,4-Dichlorophenol	ug/L	5.1 UJ
2,4-Dimethylphenol	ug/L	5.1 UJ
2,4-Dinitrophenol	ug/L	6.1 UJ
2,4-Dinitrotoluene	ug/L	1.0 UJ
2,6-Dinitrotoluene	ug/L	1.0 UJ
2-Chloronaphthalene	ug/L	1.0 UJ
2-Chlorophenol	ug/L	5.1 UJ
2-Methylphenol (o-Cresol)	ug/L	5.1 UJ
2-Nitroaniline	ug/L	1.0 UJ
2-Nitrophenol	ug/L	5.1 UJ
3,3'-Dichlorobenzidine	ug/L	2.5 UJ
3-Nitroaniline	ug/L	1.0 UJ
4,6-Dinitro-2-Methylphenol	ug/L	6.1 UJ
4-Bromophenyl phenyl ether	ug/L	1.0 UJ
4-Chloro-3-Methylphenol	ug/L	5.1 UJ

Notes:
J = Detected, Estimated
UJ = Not Detected, Estimated
U = Not Detected
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QC = Quality Control

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UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

4-Chloroaniline	ug/L	1.0 UJ
4-Chlorophenyl Phenyl Ether	ug/L	1.0 UJ
4-Nitroaniline	ug/L	1.0 UJ
4-Nitrophenol	ug/L	5.1 UJ
Benzoic acid	ug/L	76 UJ
Benzyl alcohol	ug/L	3.0 UJ
Benzyl butyl phthalate	ug/L	3.0 UJ
bis(2-Chloroethoxy) Methane	ug/L	1.0 UJ
bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	ug/L	1.0 UJ
Carbazole	ug/L	1.0 UJ
Cresols, m & p	ug/L	9.1 UJ
Dibenzofuran	ug/L	1.0 UJ
Diethyl Phthalate	ug/L	3.0 UJ
Dimethyl Phthalate	ug/L	3.0 UJ
Di-n-Butyl Phthalate	ug/L	3.0 UJ
Di-n-Octylphthalate	ug/L	3.0 UJ
Hexachlorobenzene	ug/L	1.0 UJ
Hexachlorobutadiene	ug/L	1.0 UJ
Hexachlorocyclopentadiene	ug/L	1.2 UJ
Hexachloroethane	ug/L	1.2 UJ
Isophorone	ug/L	1.0 UJ
Nitrobenzene	ug/L	1.0 UJ
n-Nitrosodi-n-propylamine	ug/L	1.0 UJ
n-Nitrosodiphenylamine	ug/L	2.0 UJ
Pentachlorophenol	ug/L	5.1 UJ
Phenol	ug/L	5.1 UJ

Notes:
J = Detected, Estimated
UJ = Not Detected, Estimated
U = Not Detected
ID = Identification
QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

NDMA	Units	
1,2,4-Trichlorobenzene	ug/L	1.0 UJ
1,2-Dichlorobenzene	ug/L	1.0 UJ
1,3-Dichlorobenzene	ug/L	1.0 UJ
1,4-Dichlorobenzene	ug/L	1.0 UJ
2,2'-Oxybis(1-chloro)propane	ug/L	1.0 UJ
2,4,5-Trichlorophenol	ug/L	5.1 UJ
2,4,6-Trichlorophenol	ug/L	5.1 UJ
2,4-Dichlorophenol	ug/L	5.1 UJ
2,4-Dimethylphenol	ug/L	5.1 UJ
2,4-Dinitrophenol	ug/L	6.1 UJ
2,4-Dinitrotoluene	ug/L	1.0 UJ
2,6-Dinitrotoluene	ug/L	1.0 UJ
2-Chloronaphthalene	ug/L	1.0 UJ
2-Chlorophenol	ug/L	5.1 UJ
2-Methylphenol (o-Cresol)	ug/L	5.1 UJ
2-Nitroaniline	ug/L	1.0 UJ
2-Nitrophenol	ug/L	5.1 UJ
3,3'-Dichlorobenzidine	ug/L	2.5 UJ
3-Nitroaniline	ug/L	1.0 UJ
4,6-Dinitro-2-Methylphenol	ug/L	6.1 UJ
4-Bromophenyl phenyl ether	ug/L	1.0 UJ
4-Chloro-3-Methylphenol	ug/L	5.1 UJ
4-Chloroaniline	ug/L	1.0 UJ
4-Chlorophenyl Phenyl Ether	ug/L	1.0 UJ

Notes:
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Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

4-Nitroaniline	ug/L	1.0 UJ
4-Nitrophenol	ug/L	5.1 UJ
Benzoic acid	ug/L	76 UJ
Benzyl alcohol	ug/L	3.0 UJ
Benzyl butyl phthalate	ug/L	3.0 UJ
bis(2-Chloroethoxy) Methane	ug/L	1.0 UJ
bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	ug/L	1.0 UJ
Carbazole	ug/L	1.0 UJ
Cresols, m & p	ug/L	9.1 UJ
Dibenzofuran	ug/L	1.0 UJ
Diethyl Phthalate	ug/L	3.0 UJ
Dimethyl Phthalate	ug/L	3.0 UJ
Di-n-Butyl Phthalate	ug/L	3.0 UJ
Di-n-Octylphthalate	ug/L	3.0 UJ
Hexachlorobenzene	ug/L	1.0 UJ
Hexachlorobutadiene	ug/L	1.0 UJ
Hexachlorocyclopentadiene	ug/L	1.2 UJ
Hexachloroethane	ug/L	1.2 UJ
Isophorone	ug/L	1.0 UJ
Nitrobenzene	ug/L	1.0 UJ
n-Nitrosodi-n-propylamine	ug/L	1.0 UJ
n-Nitrosodiphenylamine	ug/L	2.0 UJ
Pentachlorophenol	ug/L	5.1 UJ
Phenol	ug/L	5.1 UJ

Notes:
J = Detected, Estimated
UJ = Not Detected, Estimated
U = Not Detected
ID = Identification
QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event
Ravenna Army Ammunition Plant

Site Name: Site 83	
Field Sample ID:	083SB-0023-0001-ER
Lab Sample ID:	339561
Lab Name:	CTLB
Sample Date:	8/15/2013
Field QC:	ER-4 (Equipment Blank)
Analysis Information:	1X

VOCs	Units	
1,1,1-Trichloroethane	ug/L	0.50 U
1,1,2,2-Tetrachloroethane	ug/L	0.50 U
1,1,2-Trichloroethane	ug/L	1.0 U
1,1-Dichloroethane	ug/L	0.50 U
1,1-Dichloroethene	ug/L	0.50 U
1,2-Dibromoethane (EDB)	ug/L	0.50 U
1,2-Dichloroethane	ug/L	1.0 U
1,2-Dichloroethene	ug/L	0.50 U
1,2-Dichloropropane	ug/L	0.50 U
2-Butanone (MEK)	ug/L	5.0 U
2-Hexanone	ug/L	10 U
4-Methyl-2-pentanone (MIBK)	ug/L	10 U
Acetone	ug/L	10 U
Benzene	ug/L	0.50 U
Bromochloromethane	ug/L	0.50 U
Bromodichloromethane	ug/L	0.50 U
Bromoform	ug/L	0.50 U
Bromomethane	ug/L	1.0 U
Carbon Disulfide	ug/L	1.0 U
Carbon Tetrachloride	ug/L	0.50 U
Chlorobenzene	ug/L	0.50 U
Chloroethane	ug/L	1.0 U

Notes:
J = Detected, Estimated
UJ = Not Detected, Estimated
U = Not Detected
ID = Identification
QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

Equipment Blank Results

Summer 2013 RI/SI Sampling Event Sampling Event

Ravenna Army Ammunition Plant

Chloroform	ug/L	**0.37 J**
Chloromethane	ug/L	1.0 U
cis-1,2-Dichloroethylene	ug/L	0.50 U
cis-1,3-Dichloropropene	ug/L	0.50 U
Dibromochloromethane	ug/L	0.50 U
Ethylbenzene	ug/L	0.50 U
m,p-Xylene	ug/L	1.0 U
Methylene Chloride	ug/L	2.0 U
o-Xylene	ug/L	0.50 U
Styrene	ug/L	0.50 U
tert-Butyl Methyl Ether (MTBE)	ug/L	1.0 U
Tetrachloroethene (PCE)	ug/L	1.0 U
Toluene	ug/L	0.50 U
trans-1,2-Dichloroethene	ug/L	0.50 U
trans-1,3-Dichloropropene	ug/L	0.50 U
Trichloroethene (TCE)	ug/L	0.50 U
Vinyl Chloride	ug/L	0.50 U
Xylenes, Total	ug/L	1.0 U

Notes:
J = Detected, Estimated
UJ = Not Detected, Estimated
U = Not Detected
ID = Identification
QC = Quality Control

CTLB = CT LABS., BARABOO, WI
UG/L = Micrograms per Liter

ATTACHMENT B

Source Water

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ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012

Volatile Organic Compounds by Capillary GC/MS

1,1,1-Trichloroethane (UG/L)	1.0 U
1,1,2,2-Tetrachloroethane (UG/L)	1.0 U
1,1,2-Trichloroethane (UG/L)	1.0 U
1,1-Dichloroethane (UG/L)	1.0 U
1,1-Dichloroethene (UG/L)	1.0 U
1,2-Dibromoethane (EDB) (UG/L)	1.0 U
1,2-Dichloroethane (UG/L)	1.0 U
1,2-Dichloroethene (UG/L)	2.0 U
1,2-Dichloropropane (UG/L)	1.0 U
2-Butanone (MEK) (UG/L)	10.0 U
2-Hexanone (UG/L)	10.0 U
4-Methyl-2-pentanone (MIBK) (UG/L)	10.0 U
Acetone (UG/L)	10.0 U
Benzene (UG/L)	1.0 U
Bromochloromethane (UG/L)	1.0 U
Bromodichloromethane (UG/L)	1.0 U
Bromoform (UG/L)	1.0 U
Bromomethane (UG/L)	1.0 U
Carbon Disulfide (UG/L)	1.0 U
Carbon Tetrachloride (UG/L)	1.0 U
Chlorobenzene (UG/L)	1.0 U
Chloroethane (UG/L)	1.0 U
Chloroform (UG/L)	1.0 U
Chloromethane (UG/L)	1.0 U
cis-1,3-Dichloropropene (UG/L)	1.0 U
Dibromochloromethane (UG/L)	1.0 U
Ethylbenzene (UG/L)	1.0 U
Methylene Chloride (UG/L)	1.0 U
Styrene (UG/L)	1.0 U
tert-Butyl Methyl Ether (MTBE) (UG/L)	1.0 U
Tetrachloroethene (PCE) (UG/L)	1.0 U
Toluene (UG/L)	1.0 U
trans-1,3-Dichloropropene (UG/L)	1.0 U
Trichloroethene (TCE) (UG/L)	1.0 U
Vinyl Chloride (UG/L)	1.0 U
Xylenes, Total (UG/L)	2.0 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Semivolatile Organic Compounds by Capillary GC/MS	
1,2,4-Trichlorobenzene (UG/L)	0.95 U
1,2-Dichlorobenzene (UG/L)	0.95 U
1,3-Dichlorobenzene (UG/L)	0.95 U
1,4-Dichlorobenzene (UG/L)	0.95 U
2,4,5-Trichlorophenol (UG/L)	4.8 U
2,4,6-Trichlorophenol (UG/L)	4.8 U
2,4-Dichlorophenol (UG/L)	1.9 U
2,4-Dimethylphenol (UG/L)	1.9 U
2,4-Dinitrophenol (UG/L)	4.8 U
2,4-Dinitrotoluene (UG/L)	4.8 U
2,6-Dinitrotoluene (UG/L)	4.8 U
2-Chloronaphthalene (UG/L)	0.95 U
2-Chlorophenol (UG/L)	0.95 U
2-Methylnaphthalene (UG/L)	0.19 U
2-Methylphenol (o-Cresol) (UG/L)	0.95 U
2-Nitroaniline (UG/L)	1.9 U
2-Nitrophenol (UG/L)	1.9 U
3,3'-Dichlorobenzidine (UG/L)	4.8 U
3-Nitroaniline (UG/L)	1.9 U
4,6-Dinitro-2-Methylphenol (UG/L)	4.8 U
4-Bromophenyl phenyl ether (UG/L)	1.9 U
4-Chloro-3-Methylphenol (UG/L)	1.9 U
4-Chloroaniline (UG/L)	1.9 U
4-Chlorophenyl Phenyl Ether (UG/L)	1.9 U
4-Nitroaniline (UG/L)	1.9 U
4-Nitrophenol (UG/L)	4.8 U
Acenaphthene (UG/L)	0.19 U
Acenaphthylene (UG/L)	0.19 U
Anthracene (UG/L)	0.19 U
Benzo(a)anthracene (UG/L)	0.19 U
Benzo(a)pyrene (UG/L)	0.19 U
Benzo(b)fluoranthene (UG/L)	0.19 U
Benzo(g,h,i)perylene (UG/L)	0.19 U
Benzo(k)fluoranthene (UG/L)	0.19 U
Benzoic acid (UG/L)	24.0 U
Benzyl alcohol (UG/L)	4.8 U
Benzyl butyl phthalate (UG/L)	0.95 U
bis(2-Chloroethoxy) Methane (UG/L)	0.95 U
bis(2-Chloroethyl) Ether (2-Chloroethyl Ether) (UG/L)	0.95 U
bis(2-Chloroisopropyl) Ether (UG/L)	0.95 U
bis(2-Ethylhexyl) Phthalate (UG/L)	1.9 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012

Carbazole (UG/L)	0.95 U
Chrysene (UG/L)	0.19 U
Cresols, m & p (UG/L)	1.9 U
Dibenz(a,h)anthracene (UG/L)	0.19 U
Dibenzofuran (UG/L)	0.95 U
Diethyl Phthalate (UG/L)	0.95 U
Dimethyl Phthalate (UG/L)	0.95 U
Di-n-Butyl Phthalate (UG/L)	0.95 U
Di-n-Octylphthalate (UG/L)	0.95 U
Fluoranthene (UG/L)	0.19 U
Fluorene (UG/L)	0.19 U
Hexachlorobenzene (UG/L)	0.19 U
Hexachlorobutadiene (UG/L)	0.95 U
Hexachlorocyclopentadiene (UG/L)	9.5 U
Hexachloroethane (UG/L)	0.95 U
Indeno(1,2,3-c,d)pyrene (UG/L)	0.19 U
Isophorone (UG/L)	0.95 U
Naphthalene (UG/L)	0.19 U
Nitrobenzene (UG/L)	0.95 U
n-Nitrosodi-n-propylamine (UG/L)	0.95 U
n-Nitrosodiphenylamine (UG/L)	0.95 U
Pentachlorophenol (UG/L)	4.8 U
Phenanthrene (UG/L)	0.19 U
Phenol (UG/L)	0.95 U
Pyrene (UG/L)	0.19 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Trace Metals by Inductively Coupled Plasma/Mass Spectrometry	
Aluminum (UG/L)	**13.0 J**
Antimony (UG/L)	2.0 U
Arsenic (UG/L)	**0.49 J**
Barium (UG/L)	**39.0**
Beryllium (UG/L)	1.0 U
Cadmium (UG/L)	1.0 U
Calcium (UG/L)	**66000**
Chromium (UG/L)	2.0 U
Cobalt (UG/L)	**0.11 J**
Copper (UG/L)	**0.83 J**
Iron (UG/L)	**440**
Lead (UG/L)	1.0 U
Magnesium (UG/L)	**27000**
Manganese (UG/L)	**77.0**
Nickel (UG/L)	1.0 U
Potassium (UG/L)	**2500**
Selenium (UG/L)	5.0 U
Silver (UG/L)	1.0 U
Sodium (UG/L)	**35000**
Thallium (UG/L)	1.0 U
Vanadium (UG/L)	1.0 U
Zinc (UG/L)	**18.0**

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Mercury in Water (Manual Cold-Vapor Techique)	
Mercury (UG/L)	0.20 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Modified SW8015 for the Determination of Gasoline Range Organics in Soil and Water, GC/FID	
Petroleum Hydrocarbons C6-C12 (UG/L)	**39.0 J**

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Modified SW8015 for the Determination of Diesel Range Organics in Soil and Water, GC/FID	
C10-C20 Diesel Range Organics (UG/L)	480 U
C20-C34 Motor Oil Range Organics (UG/L)	480 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Polychlorinated Biphenyls (PCB) by Capillary GC	
PCB-1016 (Arochlor 1016) (UG/L)	0.48 U
PCB-1221 (Arochlor 1221) (UG/L)	0.48 U
PCB-1232 (Arochlor 1232) (UG/L)	0.48 U
PCB-1242 (Arochlor 1242) (UG/L)	0.48 U
PCB-1248 (Arochlor 1248) (UG/L)	0.48 U
PCB-1254 (Arochlor 1254) (UG/L)	0.48 U
PCB-1260 (Arochlor 1260) (UG/L)	0.48 U

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Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Organochlorine Pesticides by Capillary GC	
Aldrin (UG/L)	0.048 U
alpha-BHC (alpha-Hexachlorocyclohexane)	0.048 U
alpha-Chlordane (UG/L)	0.048 U
alpha-Endosulfan (UG/L)	0.048 U
beta-BHC (beta-Hexachlorocyclohexane) (UG/L)	0.048 U
beta-Endosulfan (UG/L)	0.048 U
delta-BHC (delta-Hexachlorocyclohexane) (UG/L)	0.048 U
Dieldrin (UG/L)	0.048 U
Endosulfan Sulfate (UG/L)	0.048 U
Endrin (UG/L)	0.048 U
Endrin Aldehyde (UG/L)	0.048 U
Endrin Ketone (UG/L)	0.048 U
gamma-BHC (Lindane) (UG/L)	0.048 U
gamma-Chlordane (UG/L)	0.048 U
Heptachlor (UG/L)	0.048 U
Heptachlor Epoxide (UG/L)	0.048 U
Methoxychlor (UG/L)	0.095 U
p,p'-DDD (UG/L)	0.048 U
p,p'-DDE (UG/L)	0.048 U
p,p'-DDT (UG/L)	0.048 U
Toxaphene (UG/L)	1.9 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation Derivatization: Capillary Column Technique	
2,4 DB (UG/L)	4.0 U
2,4,5-T (Trichlorophenoxyacetic Acid) (UG/L)	1.0 U
2,4-D (Dichlorophenoxyacetic Acid) (UG/L)	4.0 U
Dalapon (UG/L)	2.0 U
Dicamba (UG/L)	2.0 U
Dichloroprop (UG/L)	4.0 U
Dinoseb (UG/L)	0.60 U
MCPA (UG/L)	400 U
MCPP (UG/L)	400 U
Pentachlorophenol (UG/L)	0.10 U
Silvex (2,4,5-TP) (UG/L)	1.0 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Nitroaromatics and Nitramines by HPLC	
1,3,5-Trinitrobenzene (UG/L)	0.10 U
1,3-Dinitrobenzene (UG/L)	0.10 U
2,4,6-Trinitrotoluene (UG/L)	0.10 U
2,4-Dinitrotoluene (UG/L)	0.10 U
2,6-Dinitrotoluene (UG/L)	0.10 U
2-Amino-4,6-dinitrotoluene (UG/L)	0.20 U
2-Nitrotoluene (UG/L)	0.50 U
3-Nitrotoluene (UG/L)	0.50 U
4-Amino-2,6-Dinitrotoluene (UG/L)	0.10 U
4-Nitrotoluene (UG/L)	0.50 U
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.10 U
Nitrobenzene (UG/L)	0.10 U
Nitroglycerin (UG/L)	0.65 U
NITROGUANIDINE (UG/L)	20.0 U
Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine	0.10 U
Pentaerythritol Tetranitrate (UG/L)	0.65 U
Tetryl (UG/L)	0.10 U

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Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-1
Field Sample ID:	070-0056-0001-SOURCE WATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	12/12/2012
Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction)	
Nitrocellulose (MG/L)	2.0 U

ECC
Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	0
Sample End Depth:	0
Sample Date:	03/14/2013
Volatile Organic Compounds by Capillary GC/MS	
1,1,1-Trichloroethane (UG/L)	1.0 U
1,1,2,2-Tetrachloroethane (UG/L)	1.0 U
1,1,2-Trichloroethane (UG/L)	1.0 U
1,1-Dichloroethane (UG/L)	1.0 U
1,1-Dichloroethene (UG/L)	1.0 U
1,2-Dibromoethane (EDB) (UG/L)	1.0 U
1,2-Dichloroethane (UG/L)	1.0 U
1,2-Dichloroethene (UG/L)	2.0 U
1,2-Dichloropropane (UG/L)	1.0 U
2-Butanone (MEK) (UG/L)	10.0 U
2-Hexanone (UG/L)	10.0 U
4-Methyl-2-pentanone (MIBK) (UG/L)	10.0 U
Acetone (UG/L)	10.0 U
Benzene (UG/L)	1.0 U
Bromochloromethane (UG/L)	1.0 U
Bromodichloromethane (UG/L)	1.0 U
Bromoform (UG/L)	1.0 U
Bromomethane (UG/L)	1.0 U
Carbon Disulfide (UG/L)	1.0 U
Carbon Tetrachloride (UG/L)	1.0 UJ
Chlorobenzene (UG/L)	1.0 U
Chloroethane (UG/L)	1.0 U
Chloroform (UG/L)	1.0 U
Chloromethane (UG/L)	1.0 U
cis-1,3-Dichloropropene (UG/L)	1.0 U
Dibromochloromethane (UG/L)	1.0 U
Ethylbenzene (UG/L)	1.0 U
Methylene Chloride (UG/L)	1.0 U
Styrene (UG/L)	1.0 U
tert-Butyl Methyl Ether (MTBE) (UG/L)	1.0 U
Tetrachloroethene (PCE) (UG/L)	1.0 U
Toluene (UG/L)	1.0 U
trans-1,3-Dichloropropene (UG/L)	1.0 U
Trichloroethene (TCE) (UG/L)	1.0 U
Vinyl Chloride (UG/L)	1.0 U
Xylenes, Total (UG/L)	2.0 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Semivolatile Organic Compounds by Capillary GC/MS	
1,2,4-Trichlorobenzene (UG/L)	1.0 U
1,2-Dichlorobenzene (UG/L)	1.0 U
1,3-Dichlorobenzene (UG/L)	1.0 U
1,4-Dichlorobenzene (UG/L)	1.0 U
2,4,5-Trichlorophenol (UG/L)	5.1 U
2,4,6-Trichlorophenol (UG/L)	5.1 U
2,4-Dichlorophenol (UG/L)	2.0 U
2,4-Dimethylphenol (UG/L)	2.0 UJ
2,4-Dinitrophenol (UG/L)	5.1 UJ
2,4-Dinitrotoluene (UG/L)	5.1 U
2,6-Dinitrotoluene (UG/L)	5.1 U
2-Chloronaphthalene (UG/L)	1.0 U
2-Chlorophenol (UG/L)	1.0 UJ
2-Methylnaphthalene (UG/L)	0.20 U
2-Methylphenol (o-Cresol) (UG/L)	1.0 UJ
2-Nitroaniline (UG/L)	2.0 U
2-Nitrophenol (UG/L)	2.0 UJ
3,3'-Dichlorobenzidine (UG/L)	5.1 UJ
3-Nitroaniline (UG/L)	2.0 U
4,6-Dinitro-2-Methylphenol (UG/L)	5.1 UJ
4-Bromophenyl phenyl ether (UG/L)	2.0 U
4-Chloro-3-Methylphenol (UG/L)	2.0 U
4-Chloroaniline (UG/L)	2.0 U
4-Chlorophenyl Phenyl Ether (UG/L)	2.0 U
4-Nitroaniline (UG/L)	2.0 UJ
4-Nitrophenol (UG/L)	5.1 UJ
Acenaphthene (UG/L)	0.20 U
Acenaphthylene (UG/L)	0.20 U
Anthracene (UG/L)	0.20 U
Benzo(a)anthracene (UG/L)	0.20 U
Benzo(a)pyrene (UG/L)	0.20 U
Benzo(b)fluoranthene (UG/L)	0.20 U
Benzo(g,h,i)perylene (UG/L)	0.20 U
Benzo(k)fluoranthene (UG/L)	0.20 U
Benzoic acid (UG/L)	25.0 U
Benzyl alcohol (UG/L)	5.1 U
Benzyl butyl phthalate (UG/L)	1.0 U
bis(2-Chloroethoxy) Methane (UG/L)	1.0 U
bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1.0 U
bis(2-Chloroisopropyl) Ether (UG/L)	1.0 U
bis(2-Ethylhexyl) Phthalate (UG/L)	2.0 U
Carbazole (UG/L)	1.0 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Semivolatile Organic Compounds by Capillary GC/MS	
Chrysene (UG/L)	0.20 U
Cresols, m & p (UG/L)	2.0 U
Dibenz(a,h)anthracene (UG/L)	0.20 U
Dibenzofuran (UG/L)	1.0 U
Diethyl Phthalate (UG/L)	1.0 U
Dimethyl Phthalate (UG/L)	1.0 U
Di-n-Butyl Phthalate (UG/L)	1.0 U
Di-n-Octylphthalate (UG/L)	1.0 U
Fluoranthene (UG/L)	0.20 U
Fluorene (UG/L)	0.20 U
Hexachlorobenzene (UG/L)	0.20 U
Hexachlorobutadiene (UG/L)	1.0 U
Hexachlorocyclopentadiene (UG/L)	10.0 U
Hexachloroethane (UG/L)	1.0 U
Indeno(1,2,3-c,d)pyrene (UG/L)	0.20 U
Isophorone (UG/L)	1.0 U
Naphthalene (UG/L)	0.20 U
Nitrobenzene (UG/L)	1.0 U
n-Nitrosodi-n-propylamine (UG/L)	1.0 U
n-Nitrosodiphenylamine (UG/L)	1.0 UJ
Pentachlorophenol (UG/L)	5.1 UJ
Phenanthrene (UG/L)	0.20 U
Phenol (UG/L)	1.0 UJ
Pyrene (UG/L)	0.20 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Modified SW8015 for the Determination of Gasoline Range Organics in Soil and Water, GC/FID	
Petroleum Hydrocarbons C6-C12 (UG/L)	100 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Modified SW8015 for the Determination of Diesel Range Organics in Soil and Water, GC/FID	
C10-C20 Diesel Range Organics (UG/L)	490 U
C20-C34 Motor Oil Range Organics (UG/L)	490 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Trace Metals by Inductively Coupled Plasma/Mass Spectrometry	
Aluminum (UG/L)	30.0 U
Antimony (UG/L)	2.0 U
Arsenic (UG/L)	**0.48 J**
Barium (UG/L)	**41.0**
Beryllium (UG/L)	1.0 U
Cadmium (UG/L)	1.0 U
Calcium (UG/L)	**65000**
Chromium (UG/L)	**1.3 J**
Cobalt (UG/L)	**0.054 J**
Copper (UG/L)	2.0 U
Iron (UG/L)	**590**
Lead (UG/L)	1.0 U
Magnesium (UG/L)	**27000**
Manganese (UG/L)	**94.0**
Nickel (UG/L)	1.0 U
Potassium (UG/L)	**2500**
Selenium (UG/L)	5.0 U
Silver (UG/L)	1.0 U
Sodium (UG/L)	**37000**
Thallium (UG/L)	**0.11 J**
Vanadium (UG/L)	1.0 U
Zinc (UG/L)	**5.1**

ECC
Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Mercury in Water (Manual Cold-Vapor Techique)	
Mercury (UG/L)	0.20 U

ECC
Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Polychlorinated Biphenyls (PCB) by Capillary GC	
PCB-1016 (Arochlor 1016) (UG/L)	0.50 U
PCB-1221 (Arochlor 1221) (UG/L)	0.50 U
PCB-1232 (Arochlor 1232) (UG/L)	0.50 U
PCB-1242 (Arochlor 1242) (UG/L)	0.50 U
PCB-1248 (Arochlor 1248) (UG/L)	0.50 U
PCB-1254 (Arochlor 1254) (UG/L)	0.50 U
PCB-1260 (Arochlor 1260) (UG/L)	0.50 U

ECC
Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Organochlorine Pesticides by Capillary GC	
Aldrin (UG/L)	0.050 U
alpha-BHC (alpha-Hexachlorocyclohexane)	0.050 U
alpha-Chlordane (UG/L)	0.050 U
alpha-Endosulfan (UG/L)	0.050 U
beta-BHC (beta-Hexachlorocyclohexane) (UG/L)	0.050 U
beta-Endosulfan (UG/L)	0.050 U
delta-BHC (delta-Hexachlorocyclohexane) (UG/L)	0.050 U
Dieldrin (UG/L)	0.050 U
Endosulfan Sulfate (UG/L)	0.050 U
Endrin (UG/L)	0.050 U
Endrin Aldehyde (UG/L)	0.050 U
Endrin Ketone (UG/L)	0.050 U
gamma-BHC (Lindane) (UG/L)	0.050 U
gamma-Chlordane (UG/L)	0.050 U
Heptachlor (UG/L)	0.050 U
Heptachlor Epoxide (UG/L)	0.050 U
Methoxychlor (UG/L)	0.10 UJ
p,p'-DDD (UG/L)	0.050 U
p,p'-DDE (UG/L)	0.050 U
p,p'-DDT (UG/L)	0.050 U
Toxaphene (UG/L)	2.0 UJ

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation Derivatization: Capillary Column Technique	
2,4 DB (UG/L)	4.0 U
2,4,5-T (Trichlorophenoxyacetic Acid) (UG/L)	1.0 U
2,4-D (Dichlorophenoxyacetic Acid) (UG/L)	4.0 U
Dalapon (UG/L)	2.0 U
Dicamba (UG/L)	2.0 U
Dichloroprop (UG/L)	4.0 U
Dinoseb (UG/L)	0.60 U
MCPA (UG/L)	400 UJ
MCPP (UG/L)	400 UJ
Pentachlorophenol (UG/L)	0.10 U
Silvex (2,4,5-TP) (UG/L)	1.0 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Nitroaromatics and Nitramines by HPLC	
1,3,5-Trinitrobenzene (UG/L)	0.10 U
1,3-Dinitrobenzene (UG/L)	0.10 U
2,4,6-Trinitrotoluene (UG/L)	0.10 U
2,4-Dinitrotoluene (UG/L)	0.10 U
2,6-Dinitrotoluene (UG/L)	0.10 U
2-Amino-4,6-dinitrotoluene (UG/L)	0.20 U
2-Nitrotoluene (UG/L)	0.51 U
3-Nitrotoluene (UG/L)	0.51 U
4-Amino-2,6-Dinitrotoluene (UG/L)	0.10 U
4-Nitrotoluene (UG/L)	0.51 U
Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.10 U
Nitrobenzene (UG/L)	0.10 U
Nitroglycerin (UG/L)	0.66 U
NITROGUANIDINE (UG/L)	20.0 U
Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine	0.10 U
Pentaerythritol Tetranitrate (UG/L)	0.66 U
Tetryl (UG/L)	0.10 U

ECC
Chemistry Results
Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012
Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Chromium, Hexavalent (Colorimetric)	
Chromium, Hexavalent (MG/L)	0.020 U

ECC

Chemistry Results

Ravenna Army Ammunition Plant, Quality Assurance Project Plan, Oct. 3, 2012

Ravenna Army Ammunition Plant

Locations:	SorW-3
Field Sample ID:	079-0007-0001-SOURCEWATER
Sample Begin Depth:	1
Sample End Depth:	4
Sample Date:	03/14/2013
Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction)	
Nitrocellulose (MG/L)	2.0 U

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APPENDIX E

Laboratory Analytical Results, Laboratory Data, and Chain of Custody Forms (Note – To be provided on disc only)

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APPENDIX F

Data Validation Report
(Note – To be provided on disc only)

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U.S. Army Corps of Engineers
Louisville District

Ravenna Army Ammunition Plant
Ravenna, Ohio
Site Investigation
Compliance Restoration Sites:
RVAAP-70 East Classification Yard, RVAAP-71 Barn No. 5 Petroleum Release RVAAP-72 Facility-Wide USTs, RVAAP-75 George Road Sewer Treatment Plant Mercury Spill, RVAAP-77 Building 1037 Laundry Waste Water Sump and RVAAP-83 Former Buildings 1031 and 1039

Final Data Validation Report
Sample Delivery Groups:
Multiple

August 2014

Prepared for:
U.S. Army Corps of Engineers
Louisville District
Contract No. W912QR-08-D-0012
Delivery Order 001

Prepared by:

North Wind Services
352 Corporate Center Court
Stockbridge, Georgia 30218

MEC^X
12269 East Vassar Drive
Aurora, Colorado 80014

CONTRACTOR STATEMENT OF INDEPENDANT TECHNICAL REVIEW

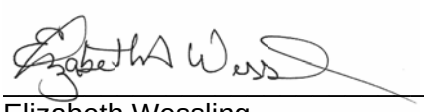
MEC^X, Inc. (MEC^X) has completed the Data Validation Report for Multiple Sample Delivery Groups from the Ravenna Army Ammunition Plant Site Investigation Compliance Restoration Sites.

Notice is hereby given that an independent technical review has been conducted to determine the usability and bias of the analytical data.

Significant concerns and the resolution are as follows:

None

As noted above, all concerns resulting from this independent technical review have been considered.



Elizabeth Wessling
Senior Environmental Chemist
MEC^X Independent Technical Review Team Leader

Patti Meeks, Ph.D.
Senior Environmental Chemist
MEC^X Independent Technical Review Team Member

EXECUTIVE SUMMARY

The overall objective for the project data described in this document is to define the nature and extent of contamination for the completion of Site Investigations (SI) at each Compliance Restoration (CR) site.

Data described in this report are comprised of samples collected from six CR sites at the Ravenna Army Ammunition Plant (RVAAP) by Environmental Chemical Corporation (ECC) from November 2012 to August 2013. The number and matrix of the samples, as described in numerous ECC Site Inspection Reports, are as shown below:

Analysis	Soil		
	MI	Discrete	Duplicate
Metals	35	99	15
Semivolatiles	43	45	10
PAH	0	74	7
Explosives	21	21	4
Propellants[1]	16	19	4
Volatiles	37	27	7
BTEX	0	72	7
Pesticides	4	9	2
PCBs	19	21	4
Herbicides	6	6	6
TPH	25	85	12
Hexavalent Chromium	0	29	3

1 –nitroguanidine and nitrocellulose
MI – multi-incremental
PAH – polynuclear aromatic hydrocarbons
BTEX – benzene, toluene, ethylbenzene, xylenes
PCBs – polychlorinated biphenyls
TPH – total petroleum hydrocarbons

This report details the data validation of approximately 10% of the primary sample data, analysis of field duplicate results, and the determination of data usability of the validated samples. Validation results, field duplicate comparisons, and data usability are presented by site in Sections 4 through 9.

The majority of the primary samples were analyzed for one or more of the following parameters by TestAmerica Laboratories, North Canton (TA-North Canton) located in North Canton, Ohio.

- United States Environmental Protection Agency (USEPA) SW-846 Method 8260B for volatile organic compounds (VOCs)
- USEPA SW-846 Method 8270C for semivolatile compounds (SVOCs) or polynuclear aromatic hydrocarbons (PAHs)
- USEPA SW-846 Method 8015B for total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) and diesel range organics (DRO)

- USEPA SW-846 Method 8081 for pesticides
- USEPA SW-846 Method 8082 for polychlorinated biphenyls (PCBs)
- USEPA SW-846 Method 8151 for herbicides
- USEPA SW-846 Method 6020 for metals
- USEPA SW-846 Method 7470A/7471A for mercury
- USEPA SW-846 Method 7196A for hexavalent chromium

TA-North Canton subcontracted the hexavalent chromium analyses by USEPA SW-846 Method 7196A to TA-Pittsburg. TA-North Canton also subcontracted the following analyses to TA-West Sacramento:

- USEPA SW-846 Method 8330B for explosive compounds
- USEPA SW-846 8330 Modified for nitroguanidine
- Laboratory Standard Operating Procedure (SOP) WS-WC-0050 for nitrocellulose

Samples from two CR sites (71 and 83) collected in August 2013, were analyzed for one or more of the following parameters by CT Laboratories (CT) located in Baraboo, Wisconsin.

- USEPA SW-846 Method 8260C for volatile organic compounds (VOCs)
- USEPA SW-846 Method 8270D for semivolatile compounds (SVOCs) or polynuclear aromatic hydrocarbons (PAHs)
- USEPA SW-846 Method 8015C for total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) and diesel range organics (DRO)
- USEPA SW-846 Method 8081B for pesticides
- USEPA SW-846 Method 8082A for polychlorinated biphenyls (PCBs)
- USEPA SW-846 Method 6010C for metals
- USEPA SW-846 Method 7470A/7471A for mercury
- USEPA SW-846 Method 8330B for explosive compounds
- USEPA SW-846 8330 Modified for nitroguanidine
- USEPA SW-846 Method 9056 Modified for nitrocellulose

The quality assurance (QA) split samples were submitted to Microbac Laboratories (Microbac) in Marietta, Ohio. Michigan and were analyzed for one or more of the aforementioned parameters. These data are discussed in a separate report.

Specific concerns regarding the data are noted below:

- Hexavalent chromium was reported utilizing the method of standard additions (MSA), which is recommended for matrices expected to have interference. Results from MSA are best when the MSA linear regression slope is nearly equivalent to the initial calibration slope; however the slopes for most site samples were more than a factor of 10 less than the initial calibration slope, indicating a nominal change in absorbance was observed in the MSA analyses for a relatively significant change in concentration.

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

Some data were rejected due to quality control outliers. Rejected data, presented in the table below, are not usable. Results with LODs that exceed project criteria may be usable for their intended purposes; however, it is dependent on the final data user to make this determination on a case-by-case basis. All remaining results are usable for their intended purposes as qualified by MEC^{X}.

Table 1. Rejected data

Site	Sample	SDG	Analyte	Reason
70	070SB-044M-0001-SO	240-18581-1	n-Nitrosodiphenylamine	calibration
	070SB-046M-0001-SO	240-18581-1	n-Nitrosodiphenylamine	calibration
	070SS-006M-0001-SO	240-17230-1	4-Chloroaniline	matrix spike
			3,3'-Dichlorobenzidine	matrix spike
71	071SB-0018M-0001-SO	9923	Benzyl alcohol	calibration
	071SB-0013M-0001-SO	99236	Benzyl alcohol	calibration
72	072SB-0014-0001-SO	240-18297	4-Nitroanline	calibration
	072SB-0026-0001-SO	240-18441	Antimony	matrix spike
	072SB-0039-0001-SO	240-18449	Antimony	matrix spike
75	075SD-0002-0001-SD	240-17457	3,3'-Dichlorobenzidine	matrix spike
77	077SS-0001M-0001-SO	240-17525	Benzoic acid	matrix spike
			n-Nitrosodiphenylamine	calibration
83	083SB-0005M-0001-SO	99211	3,5-Dinitroaniline	calibration
			Benzyl alcohol	calibration

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TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ADR	Automated Data Review
AST	Aboveground Storage Tank
°C	Degrees Celsius
CCB	Continuing Calibration Blank
CCC	Calibration Check Compounds
CCV	Continuing Calibration Verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CR	Compliance Restoration
CT	CT Laboratories
CUG	Cleanup Goal
%D	Percent Difference
DL	Detection Limit
DoD	Department of Defense
DRO	Diesel Range Organics
ECC	Environmental Chemical Corporation
EDD	Electronic Data Deliverable
FWQAPP	Facility-Wide Quality Assurance Project Plan
GC/MS	Gas Chromatography/Mass Spectrometry
GRO	Gasoline Range Organics
HHR	Historical Records Review
HTRW	Hazardous, Toxic, Radioactive Waste
ICSA	Interference Check Sample A
ICSAB	Interference Check Sample AB
ICV	Initial Calibration Verification
ICP	Inductively Coupled Plasma
LS	Louisville Supplement
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MEC	Munitions and Explosives of Concern
MEC^X	MEC^X, Inc.
Microbac	Microbac Laboratories
MRL	Method Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
RPD	Relative Percent Difference
RRF	Relative Response Factor
RSD	Relative Standard Deviation
RSL	Regional Screening Levels
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation

SAP	Sampling and Analysis Plan
SDG	Sample Delivery Group
SI	Site Investigation
SOP	Standard Operating Procedure
SPCC	System Performance Check Compound
RSL	Regional Screening Level
SVOC	Semivolatile Organic Compound
TA	TestAmerica Laboratories
TPH	Total Petroleum Hydrocarbon
USACE	United State Army Corps of Engineers
USEPA	United State Environmental Protection Agency
VOC	Volatile Organic Compound

1 INTRODUCTION

1.1 Project Overview

The overall objective for the project data described in this document is to define the nature and extent of contamination for the completion of Site Investigations (SI) at each Compliance Restoration (CR) site. Project details can be found in the project documents, including *Final Site Inspection and Remedial Investigation Work Plan at Compliance Restoration Sites* (ECC, 2012).

Data described in this report are comprised of samples collected from six CR sites at the Ravenna Army Ammunition Plant (RVAAP) by Environmental Chemical Corporation (ECC) from November 2012 to August 2013. The number and matrix of the samples, as described in numerous ECC Site Inspection Reports, are as shown below:

Table 2. SI Site sample counts

Analysis	Soil		
	MI	Discrete	Duplicate
Metals	35	99	15
Semivolatiles	43	45	10
PAH	0	74	7
Explosives	21	21	4
Propellants[1]	16	19	4
Volatiles	37	27	7
BTEX	0	72	7
Pesticides	4	9	2
PCBs	19	21	4
Herbicides	6	6	6
TPH	25	85	12
Hexavalent Chromium	0	29	3

1 –nitroguanidine and nitrocellulose
MI – multi-incremental
PAH – polynuclear aromatic hydrocarbons
BTEX – benzene, toluene, ethylbenzene, xylenes
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The majority of the primary samples were analyzed for one or more of the following parameters by TestAmerica Laboratories, North Canton (TA-North Canton) located in North Canton, Ohio.

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- USEPA SW-846 Method 8081 for pesticides

- USEPA SW-846 Method 8082 for polychlorinated biphenyls (PCBs)
- USEPA SW-846 Method 8151 for herbicides
- USEPA SW-846 Method 6020 for metals
- USEPA SW-846 Method 7470A/7471A for mercury
- USEPA SW-846 Method 7196A for hexavalent chromium

TA-North Canton subcontracted the hexavalent chromium analyses by USEPA SW-846 Method 7196A to TA-Pittsburg. TA-North Canton also subcontracted the following analyses to TA-West Sacramento:

- USEPA SW-846 Method 8330B for explosive compounds
- USEPA SW-846 8330 Modified for nitroguanidine
- Laboratory Standard Operating Procedure (SOP) WS-WC-0050 for nitrocellulose

Samples (35 primary soil samples and 7 aqueous quality control samples) from two CR sites (71 and 83) collected in August 2013, were analyzed for one or more of the following parameters by CT Laboratories (CT) located in Baraboo, Wisconsin.

- USEPA SW-846 Method 8260C for volatile organic compounds (VOCs)
- USEPA SW-846 Method 8270D for semivolatile compounds (SVOCs) or polynuclear aromatic hydrocarbons (PAHs)
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- USEPA SW-846 Method 8082A for polychlorinated biphenyls (PCBs)
- USEPA SW-846 Method 6010C for metals
- USEPA SW-846 Method 7470A/7471A for mercury
- USEPA SW-846 Method 8330B for explosive compounds
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The quality assurance (QA) split samples were submitted to Microbac Laboratories (Microbac) in Marietta, Ohio and were analyzed for one or more of the aforementioned parameters. These data are discussed in a separate report.

This report details the data validation of 10% of the primary sample data, analysis of field duplicate results, and the determination of data usability of the validated samples. Validation results, field duplicate comparisons and data usability are presented by site, in Sections 4 through 9.

1.2 Previous Activities and Data

The following summary was adapted from the Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio

(FWQAPP) prepared by Science Applications International Corporation (SAIC), March 2001. Site-specific information is presented in Sections 4 through 21.

Located in northeastern Ohio on approximately 21,000 acres, RVAAP was established in 1940 to load, store, and demilitarize conventional artillery ammunition, bombs, mines, fuses and boosters, primers and percussion elements. Originally RVAAP operated as two separate units, the Portage Ordnance Depot and the Ravenna Ordnance Plant. During World War II, a contractor operated the Ravenna Ordnance Depot and the government operated the Portage Ordnance Depot. Ordnance production and storage for World War II continued until August 1945, at which time the facility was renamed the Ravenna Arsenal, and the government assumed control of all operations. Then, from 1951 to 1999, the entire facility was operated by contractors. Ordnance production at the facility was phased out and sent to Plum Brook Ordnance Works in Sandusky, Ohio and Keystone Ordnance Works in Meadville, Pennsylvania. All production at the facility had ceased by 1957 and the plant was placed on standby. In 1961, the plant was operational for seven months, processing and performing explosive melt-out of bombs. After deactivation late in 1961, the facility was renamed RVAAP. From mid-1968 until 1971, the plant was reactivated to load, assemble, and pack munitions on three load lines and two component lines. Operations ceased at Load Lines 1, 2, 3, and 4 in 1971; however, the Lines were reactivated to perform demilitarization operations for several months in 1973 and 1974. In 1992, RVAAP was again placed on inactive status. Salvage and demolition operations started in 1998 and administrative control of the facility was transferred to the Ohio Army National Guard in 1999.

Since 1978, approximately 20 environmental condition investigations have been performed at RVAAP. Only a portion of these investigations are discussed below.

2 DESCRIPTION OF WORK PERFORMED

This section describes the data verification and data validation procedures used during the evaluation of the site samples reported in 40 sample delivery groups (SDGs) from TA-North Canton or CT.

2.1 Data Validation Process

Level IV validation was performed on 10% of the total number of primary samples collected. Primary samples with associated QA and field duplicate samples were prioritized for Level IV validation; however, not all samples validated at Level IV had associated QA or field duplicate samples.

Data validators assessed results based on the FWQAPP, Department of Defense Quality Systems Manual for Environmental Laboratories Version 4.2 (DoD QSM), Louisville DOD Quality Systems Manual Supplement, Version 1 (LS), the specific EPA methods, the National Functional Guidelines for Superfund Organic Methods Data Review (2008), and the National Functional Guidelines for Inorganic Superfund Data Review (2010). The following were reviewed for Level IV validation:

- Sample management (collection techniques, sample containers, preservation, handling, transport, chain-of-custody, holding times),
- Calibration results (initial, continuing, and method reporting limit),
- Method and calibration blank sample results,
- Laboratory control sample (LCS) or LCS/LCS duplicate (LCS/LCSD) recoveries and/or precision,
- Surrogate recoveries (if applicable),
- Metals interference check sample results
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision,
- Laboratory duplicate precision
- Post digestion spike accuracy,
- Serial dilution precision,
- Field QA/QC sample results (equipment rinsate, field blank, trip blank)
- Gas Chromatography/Mass Spectrometry (GC/MS) or inductively coupled plasma (ICP) MS tuning,
- Internal standards performance,
- Sample results verification,
- Target compound identification,
- Raw data.

Blanks – method, calibration, trip, field and equipment – were assessed using the National Functional Guidelines 5× and 10× rules. Target compound detections less than or equal to 5× a blank detection and common laboratory contaminant compound detections less than or equal to 10× a blank detect were qualified as nondetected. Nondetected results were reported at the

limit of detection (LOD) if the original detect was less than or equal to the LOD or reported at the level of contamination if the original detect was greater than the LOD.

ECC provided a list of field blank/source water, equipment rinsate, and trip blank samples collected in association with the SI samples. These samples are listed below.

Table 3. Field blank/source water and equipment rinsate samples

Sampling Event	Applicability	Sample	Water Type	Date Collected	Validator Application
All 2012-2013 Sampling Event	Non-dedicated hand sampling tools	070-0057-0001-Source Water	ECC bottled decontamination water	12/12/2012	Surface soil ("SS") samples collected in 2012
2012 Subsurface Sampling Event	Direct push drilling tools	070-0056-0001-Source Water	Driller bottled decontamination water	12/12/2012	Not used
2013 Subsurface Sampling Event	Direct push drilling tools	079-0007-0001-Source Water	Driller bottled decontamination water	3/14/2013	Not used
2012 SI Sampling Event	Non-dedicated hand sampling tools during sampling event	076-0067-0001-ER	N/A	11/15/2012	Surface soil ("SS") samples collected in November 2012
2012 SI Sampling Event	Non-dedicated hand sampling tools during sampling event	076-0140-0001-ER	N/A	12/9/2012	Surface soil ("SS") samples collected in December 2012
2013 SI Sampling Event and Sites 71 and 83 Sampling Event	Non-dedicated hand sampling tools during sampling event	083SB-0023-0001-ER	N/A	8/15/2013	Surface soil ("SS") samples collected in August 2013

Due to the large number of high concentration detects for metals analytes in samples 070-0056-0001-Source Water and 079-0007-0001-Source Water, these samples were not used to qualify site sample results. Therefore, there was no field blank/source water associated with the subsurface samples.

2.2 Data Validation Qualifiers

Data qualifiers, as defined below, were applied following the FWQAPP and the DoD QSM:

U Nondetected at the limit of detection
The analyte was analyzed for but not definitively detected.

J Estimated
The identification of the analyte is acceptable but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision. Additionally used to identify detects reported below the limit of quantitation (LOQ).

N Identity Presumptive and Tentative
There is presumptive evidence that the analyte is present but it has not been confirmed. There is an indication that the reported analyte is present; however, all quality control requirements necessary for confirmation were not met.

R Rejected
Data are considered to be rejected and shall not be used for environmental decisions.

2.3 Data Validation Flagging Codes

The qualification codes in the following table may have been used to flag the data described in this document: Sample qualifications are summarized in Appendix B. All qualifications and associated qualification codes have been entered into the electronic data deliverables (EDD) received from the laboratories and may be reviewed Appendices A and B of this report.

Table 4. Qualification code reference table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant. MRL was outside control limits or missing.	Correlation coefficient was noncompliant. MRL was outside control limits or missing.
R	Calibration RRF was noncompliant.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Control Sample/Control Sample Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tuning was noncompliant
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was	Post Digestion Spike recovery was not within

Qualifier	Organics	Inorganics
	poor.	control limits.
*II, *III	A deficiency was found that has been described in the "Sample Management," section (*II) or the "Method Analyses" section (*III).	A deficiency was found that has been described in the "Sample Management," section (*II) or the "Method Analyses" section (*III).

3 DATA ACQUISITION ACTIVITIES

3.1 Sample Collection

Samples were collected from November 2012 to August 2013. The samples were submitted under chain of custody to the primary laboratories, TA-North Canton or CT.

Unless otherwise noted In Sections 4 through 9, the chains-of-custody associated with the samples validated at Level IV were appropriately signed by both field and/or laboratory personnel with all samples and analyses accounted for, cooler custody seals intact, and within the temperature limits of 4±2^{o}C. All documentation regarding sample handling as presented in the case narratives, chains of custody, correspondence, and sample condition upon receipt forms was evaluated. No further requests were made to the primary contractor or the laboratories, and no data were qualified.

3.2 Sample Analysis

The primary laboratories, or their subcontractors, analyzed the samples for the parameters shown in the table ined in Section1.1.

3.3 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing.

3.4 Sample Preservation and Holding Time Requirements

All method preservation requirements were met. The extraction and analytical holding times for the soil analyses validated in this document are listed in the table below.

Table 5. Holding times

Method	Analysis	Holding Time	
		Extraction	Analysis
6010C/6020	Metals	N/A	180 days
7471A	Mercury	N/A	28 days
8260B/8260C	VOCs	N/A	14 days
8270C/8270D	SVOCs	14 days	40 days
8015B/8015C	TPH-GRO	N/A	14 days
8015B/8015C	TPH-DRO	14 days	40 days
8081/8081B	Pesticides	14 days	40 days
8082/8082A	PCBs	14 days	40 days
8151	Herbicides	14 days	40 days
8330B	Explosives	14 days	40 days
8330	Nitroguanidine	14 days	40 days
9056M/WS-WC-0050	Nitrocellulose	N/A	28 days
7196A	Hexavalent chromium	30 days	24 hours

Qualifications applied for missed holding times are discussed by Site in Sections 4 through 9.

3.5 Detection Limit Requirements

Limits of detection (LODs) and detection limits for nondetected analytes were compared against the most stringent criteria listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the USEPA Regional Screening Levels (RSLs).

Some LODs and DLs exceeded the cleanup goals (CUGs) or project criteria. These exceedances are reported by site in Sections 4 through 9. As noted in the Executive Summary, results with DLs exceeding project criteria may be usable for their intended purposes; however, it is dependent on the final data user to make this determination on a case-by-case basis.

4 EAST CLASSIFICATION YARD, RVAAP-70

4.1 Current Investigation

ECC completed an SI at the East Classification Yard (RVAAP-70). The SI for RVAAP-70 was conducted in accordance with the *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992).

A historical records review (HRR) evaluation reviewed historic uses at RVAAP-70 for potential environmental concerns with respect to possible hazardous, toxic, and radioactive waste (HTRW) and/or munitions and explosives of concern (MEC) issues (SAIC 2011). The HHR identified the following facilities within RVAAP-70 as candidates for investigation:

- Former Fuel Oil Spill Area – In 1986, a leak of No.5 fuel oil occurred from a former aboveground storage tank (AST) located west of Building 47-40 (Roundhouse). Contaminated soil was stockpiled within the containment area and over 16,000-gallons of fuel oil was salvaged from the containment area. Approximately 120-gallons of oil/soil/straw were disposed of as per Ohio EPA instructions. The spill report indicated samples of contaminated soil were collected for analysis. The laboratory report indicated the soil in the containment area was acceptable for burning; however, no final report regarding the disposition of the contaminated soil was discovered.

- Building 47-40 (Roundhouse) – Although no documented releases were discovered during the HHR, staining was visible on the concrete floor within the building. According to the HHR, chemicals used within the building included engine washing compounds, valve oil, electrolytes (battery maintenance), locomotive black paint, solvents for parts degreasing, lubrication oil, metal preservatives, carbolineum, creosote, and cold patch asphalt. No documented waste management practices were found.

- Former Herbicide Storage Shed – This shed (Building 47-60) was used to house the track-mounted sprayer and herbicides. Herbicide mixing operations may have occurred in this site.

- Outdoor Wash Rack Area – This area was used to wash box cars which carried explosives and engines. An interviewee noted there were no controls in place to collect the wash water.

The data validated in this report are part of the initial intrusive SI at RVAAP-70 conducted to assess the potential presence of contamination. The sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 6. Total sample count for RVAAP-70

Matrix	Field Duplicates	Split Samples	Explosives	Propellants	Herbicides	PCBs	SVOCs	TPHs	VOCs/BTEX	Metals
Soil	5	0	15	7	14	32	51	18	19	24

Table 7. RVAAP-70 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	Herbicides	PCBs	SVOCs	TPHs	VOCs/BTEX	Metals
070SS-0003M-0001-SO	240-17230-1	Soil	11/5/2012					x			
070SS-0006M-0001-SO	240-17230-1	Soil	11/5/2012	x	x	x	x	x	x	x	x
070SB-042M-0001-SO	240-18735-1	Soil	12/7/2012						x		
070SB-044M-0001-SO	240-18581-1	Soil	12/7/2012	x		x	x	x		x	x
070SB-046M-0001-SO	240-18581-1	Soil	12/7/2012					x			

Table 8. RVAAP-70 field duplicate samples

Duplicate Sample ID	Parent Sample
070SS-0007M-0001-SO	070SS-0006M-0001-SO
070SB-0042M-0001-SO	070SB-0043M-0001-SO
070SB-0045M-0001-SO	070SB-0044M-0001-SO
070SB-0047M-0001-SO	070SB-0046M-0001-SO

4.1.1 Sample Collection

The chains-of-custody were appropriately signed and dated by field and laboratory personnel. According to the laboratory Sample Receipt Form, custody seals were not utilized; however, in reviewing the relinquish and receipt times, it appeared the samples were transferred to the laboratory by courier. For SDG 240-18581-1, the laboratory Sample Receipt Checklist did not list a temperature, noted the samples were not received on ice, but also noted the samples were received chilled. No other sample collection issues were noted.

4.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

4.1.3 Preservation and Holding Time Requirements

A portion of the sample coolers were received at temperatures below the 4 ±2^{o}C control limit; however, as the samples were not noted to be frozen or damaged, no qualifications were

required. All remaining method preservation requirements were met. All holding times, as listed in Table 4, were met.

4.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. The table below lists the number of LODs and DLs that exceeded criteria.

Table 9. RVAAP-70 LOD/DL validated sample exceedances

Method	LOD	DL
Explosives	0	0
Propellants	0	0
PCBs	0	0
Herbicides	0	0
TPH	0	0
SVOCs	12	12
VOCs	0	0
Metals	0	0

Results with LODs/DLs exceeding project criteria may be usable for their intended purposes; however, it is dependent on the final data user to make this determination on a case-by-case basis.

4.2 RVAAP-70 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

4.2.1 Explosives

A total of 15 primary soil samples and 1 field duplicate sample were analyzed by TA-West Sacramento for explosives by USEPA SW-846 Method 8330B. A total of 2 primary soils were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column initial calibration average percent relative standard deviations (%RSDs) for RDX and 2-nitrotoluene exceeded the control limit at 20% and 16%, respectively; therefore, the nondetected results for these compounds were qualified as estimated, "UJ," in 070SS-0006M-0001-SO and 070SB-044M-0001-SO. The qualified results were coded with a "C" qualification code. The remaining initial calibration average %RSDs were within the control limits listed in DoD QSM Table F-3 of ≤15%, or the linear regression r^2 values were ≥0.990.

- The second source initial calibration verification (ICV) standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.

- The continuing calibration verification (CCV) standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. Low-level MRL standards were analyzed in association with the validated samples and the results were within the reasonable control limits of 70-130%.

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the limit of quantitation (LOQ).

- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%).

- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, surrogate recoveries were assessed against the reasonable laboratory-established control limits of 78-118%. Recoveries were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 070SS0006M-0001-SO. The recoveries for 4-amino-2,6-dinitrotoluene (124%, 135%) were above the control limit (81-121%); however, qualifications are only applied to detects for high recoveries. Both recoveries for nitroglycerin (63%, 62%) were below the control limits (76-116%); therefore, nondetected nitroglycerin in the parent sample was qualified as estimated, "UJ," and the result coded with a "Q" qualification code.

- Compound Identification: Compound identification was verified for those samples validated at a Level IV. Review of sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: As no target compounds were detected in the samples validated at Level IV, compound quantification was verified for a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the laboratory detection limits (DLs). Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Confirmation analyses were performed; however, no compounds were confirmed.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in samples 070SS-0006M-0001-SO and 070SB-044M-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8330B results for nitrobenzene were

rejected, "R," as duplicate data and coded with a "D" qualification code. The 8330B results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations and low-level CCVs. All manual integrations were performed in order to report incompletely resolved peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The field blank and equipment rinsate had no target compound detects. The validated subsurface soil sample had no associated field QC samples.

    - Field Duplicates: One field duplicate sample was collected and analyzed for explosive compounds. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.2.2 Propellants

A total of 7 primary soil samples and 1 field duplicate were analyzed by TA-West Sacramento for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory standard operating procedure (SOP) WS-WC-0050. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration:

    - The nitroguanidine initial calibration average percent %RSD was within the control limit listed in DoD QSM Table F-2 of ≤20%. Nitrocellulose linear regression r values were within the control limit listed in the DoD QSM Table F-11 of ≥0.995.

    - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recovery exceeded the

control limit at 192% (limits are 90-110%); however, as nitrocellulose was not detected in the sample, no qualifications were required.

- The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.

- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.

- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. All nitroguanidine recoveries were within the control limits of 72-121% for soils. The nitrocellulose recoveries were within the laboratory-established control limits of 34-115% for soils.

- Surrogate Recovery: A surrogate was not required for the analysis of nitroguanidine or nitrocellulose.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 070SB-0006M-0001-SO for both propellants. The recoveries were within the laboratory-established control limits of 72-121% for nitroguanidine and 34-115% for nitrocellulose. Both RPDs were ≤20%.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for those samples validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

    - Field Duplicates: One field duplicate sample was collected and analyzed for propellants. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.2.3 Polychlorinated Biphenyls (PCBs)

A total of 30 primary soil samples and 2 field duplicates samples were analyzed by TA-North Canton for PCBs by USEPA SW-846 Method 8082. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

    - Initial calibration average %RSDs were within the control limit of ≤20%.

    - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.

    - The CCV standard recoveries were within the control limit of ±20%.

    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.

- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 070SS-0006M-0001-SO. Both recoveries for Aroclor 1016 were above the control limits of 40-140%, at 155% and 149%. The parent sample detect for Aroclor 1242 was qualified as estimated, "J," and coded with a "Q" qualification code. Recoveries for Aroclor 1260 were within the control limits listed in DoD QSM Table G-17 and RPDs for both Aroclors were within the control limit listed in the DoD QSM Table F-2 of ≤30%.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Sample 070SS-0006M-0001-SO was analyzed at a 5× dilution for a high concentration of Aroclor 1242. The intercolumn RPD exceeded the control limit of ≤40%; therefore, the result was qualified as estimated, "J," and coded with a "*III" qualification code.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily due to poor baseline integration. All manual integrations reviewed at Level IV were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The field blank and equipment rinsate had no target compound detects. The validated subsurface soil sample had no associated field QC samples.

  - Field Duplicate Samples: Two field duplicate samples were collected and analyzed for PCBs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The result for Aroclor-1242 in pair 070SS-0006M-0001-SO/070SS-0007M-0001-SO was not within ± the LOQ. The remaining results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.2.4 Herbicides

A total of 12 primary soil samples and 2 field duplicate samples were analyzed by TA-North Canton for herbicides by USEPA SW-846 Method 8151. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
  - Initial calibration average %RSDs were within the DoD QSM Table F-2 control limit of ≤20% or linear regression r^2 values ≥0.990.
  - The second source ICV recoveries were within the DoD QSM Table F-2 control limit of ±20%.
  - The CCV standard recoveries were within the DoD QSM Table F-2 control limit of ±20%.
  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%, with exceptions noted in the table below. The sample results, all nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code.

Samples qualified for MRL %Recovery outliers		
Analyte	**%Recoveries**	**Qualified Samples**
MCPP	42% / 59%	070SS-0006M-0001-SO
MCPA	48% / 62%	
MCPP	53%	070SB-0044M-0001-SO
MCPA	56%	

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2 of one-half the LOQ.
- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-9, or within laboratory-established control limits when no QSM limits were prescribed. Spiked analytes utilizing laboratory established control limits included dalapon (30-122%) and MCPA (25-132%). The reviewer noted MCPP and pentachlorophenol were not included in the LCS.
- Surrogate Recovery: Recoveries for surrogate 2,4-dichlorophenylacetic acid were within the laboratory-established control limits of 1-122%, as no QSM limits were prescribed.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on samples 070SS-0006M-0001-SO and 070SB-0044M-0001-SO. Recoveries affecting sample data

were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-9, or within laboratory-established control limits when no QSM limits were prescribed (see Laboratory Control Samples section). Exceptions are noted in the table below. RPDs were within the control limit listed in the DoD QSM Table F-2 of ≤30%. The nondetected parent sample results for the outliers were qualified as estimated, "UJ," and coded with a "Q" qualification code. Pentachlorophenol and MCPP were not spiked in to the MS/MSD.

Samples qualified for MS/MSD %Recovery outliers			
Analyte	**%Recoveries**	**Recovery Limits**	**Qualified Sample(s)**
Dicamba	45% / 51%	55-110%	070SS-0006M-0001-SO
Dichlorprop	57% / 66%	75-140%	

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily to correct baseline integration of pentachlorophenol. All manual integrations reviewed at Level IV were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The field blank and equipment rinsate had no target compound detects. The validated subsurface soil sample had no associated field QC samples.

    - Field Duplicate Samples: Two field duplicate samples were collected and analyzed for herbicides. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results

were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.2.5 Total Petroleum Hydrocarbons (TPH)

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by TA-North Canton for GRO (C6-C12) and DRO (C10-C20, C20-C34) by USEPA SW-846 Method 8015B. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
  - Initial calibration average %RSDs were within the DoD QSM Table F-2 vcontrol limit of ≤20% or linear regression r^2 values ≥0.990.
  - The second source ICV recoveries were within the DoD QSM Table F-2 control limit of ±20%.
  - The CCV standard recoveries were within the DoD QSM Table F-2 control limit of ±20%.
  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%, with exception of one recovery of 133% in the beginning MRL associated with the GRO analysis of sample 070SS-0006M-0001-SO. The sample detect was qualified as estimated, "J," and coded with a "C" qualification code.
- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.
- Laboratory Control Samples: As no QSM limits are prescribed, recoveries were within the laboratory-established control limits of 60-142% for GRO, and 47-138% for DRO.
- Surrogate Recovery: As no QSM limits are prescribed, recoveries were within the laboratory-established control limits of 10-150% for GRO surrogate trifluorotoluene and 10-110% for DRO surrogate n-nonane.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on samples 070SS-0006M-0001-SO and 070SB-0042M-0001-SO for both GRO and DRO. As no QSM limits are prescribed, the laboratory-established soil control limits of 10-142% for GRO and 10-199% for DRO were applied, and RPDs were evaluated using the control limit listed in the DoD QSM Table F-2 of ≤30%.

The RPD exceeded the control limit for the GRO MS/MSD of sample 070SS-0006M-0001-SO, at 35%, partially due to a difference in spiking amounts; however, when the difference was accounted for in the calculation, the RPD was still above the control limit at 32%. The detected result associated with the RPD outlier was qualified as estimated, "J," and coded with a "Q" qualification code in sample 070SS-0006M-0001-SO. The remaining RPD was within the control limit.

DRO recoveries for the MS/MSD of sample 070SS-0006M-0001-SO were within the laboratory-established control limits of 10-199%, and the RPD was within the control limit of ≤30%. The DRO concentration in parent sample 070SB-0042M-0001-SO exceeded 4× the spiked amount, and the sample and MS/MSD were also analyzed at 10× dilutions; therefore, recoveries were not evaluated.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification. The laboratory analyzed for GRO hydrocarbon range C6-C12, and DRO ranges C10-C20 and C20-C34.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The DRO analysis of sample 070SB-0042M-0001-SO required a 10× dilution due to high concentrations of both hydrocarbon ranges. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for some GRO calibration and QC data associated with the sample data, primarily to correct baseline integration of the surrogate trifluorotoluene. All manual integrations reviewed at Level IV were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: QC samples:

    - Trip Blanks: The validated samples had no associated trip blanks analyzed for GRO.

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The field blank and

equipment rinsate had detects for C6-C12 below the LOQ; however, the concentrations were not sufficient to qualify site sample results. The validated subsurface soil sample had no associated field QC samples.

- Field Duplicate Samples: Twoe field duplicate sample was collected and analyzed for GRO. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
070SS-0006M-0001-SO	070SS-0007M-0001-SO	C20-C34	N/A	No
070SB-0042M-0001-SO	070SB-043M-0001-SO	C6-C12	N/A	No

4.2.6 Semivolatile Organic Compounds (SVOCs)

A total of 47 primary soil samples and 4 field duplicate samples were analyzed by TA-North Canton for SVOCs by USEPA Method 8270C. A total of 4 samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.
- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the tables below.
  - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050. All initial calibration %RSDs were within the control limits of ≤30% for calibration check compounds (CCCs) and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.
  - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%, with the exception of the recovery of 73.3% for 3,3'dichlorobenzidine in one ICV associated with sample 070SS-0003M-0001-SO. The nondetected result was qualified as estimated, "UJ," in the sample and coded with a "C qualification code.
  - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.
  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%, with exceptions noted in the table below. The nondetected results for n-nitrosodiphenylamine were rejected, "R," in the affected samples and remaining

results listed in the table below, all nondetects, were qualified as estimated, "UJ." All qualified results were coded with a "C" qualification code.

Samples qualified for MRL %R outliers		
Analyte	**%R**	**Qualified Samples**
2,4-dinitrophenol	42%	070SS-0003M-0001-SO 070SS-0006M-0001-SO
4,6-dinitro-2-methylphenol	47%	
2,4-dinitrophenol	57%	070SB-0044M-0001-SO 070SB-0046M-0001-SO
benzo(g,h,i)perylene	62%	
n-nitrosodiphenylamine	**0%**	

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no common laboratory contaminants detected above the LOQ.

- Laboratory Control Samples: Benzoic acid was reported as not detected in one LCS; however, the recovery calculated from the raw data was acceptable. All LCS recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the LCS.

- Surrogate Recovery: All surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated samples 070SS-0006M-0001-SO and 070SB-0044M-0001-SO. Sample 070SB-0044M-0001-SO was analyzed at a 10× dilution; therefore, the recoveries were not evaluated, as the spike was considered diluted out.

  As the spiking level was below the DL for benzoic acid, it was reported as "NC" (not calculated); however, the reviewer-calculated recoveries and RPDs from the MS/MSD concentrations in the raw data were within the control limits. Qualifications were not assigned if recoveries were not outside of control limits in both the MS and MSD; however, if RPDs exceeded the control limit due to inconsistent recoveries, parent sample results were qualified.

  The MS and MSD of sample 070SS-0006M-0001-SO had no recoveries of 4-chloroaniline or 3,3-dichlorobenzidine; therefore, the nondetected results for both compounds were rejected, "R," in the parent sample. Recoveries for 3-nitroaniline were below the control limits of 25-110%, at 16% and 13%. The nondetected result for 3-nitroaniline was qualified as estimated, "UJ," for the recovery outliers. The MSD had no recoveries for 4,6-dinitro-2-methylphenol or 4-nitroaniline, resulting in RPDs of 200%, and the MS recovery for 4-nitroaniline was also below the control limits of 35-115%, at 25%. The nondetected results for 4,6-dinitro-2-methylphenol and 4-nitroaniline were qualified as estimated, "UJ," for the RPD outliers, and 4-nitroaniline was also qualified as estimated, "UJ," for the recoveries. Remaining recoveries were within the control limits

listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the MS/MSD. Remaining RPDs were within the control limit of ≤30% listed in DoD QSM Table F-4. All qualified results were coded with a "Q" qualification code.

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the samples validated at Level IV. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

  The samples had a 2-ml final extract volume, resulting in an effective 2× dilution. Sample 070SS-0006M-0001-SO was analyzed at an additional 5× dilution, and the remaining samples at additional 10× dilutions. The case narratives for these SDGs attributed the dilutions to the nature of the sample matrix; however, as all sample chromatograms were scaled to the large aldol condensate peak (an artifact of the preparation process), the matrix interference cited by the laboratory was not visually apparent.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in samples 070SS-0006M-0001-SO and 070SB-044M-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8270C results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were rejected, "R," as duplicate data and coded with a "D" qualification code. The 8270C results for nitrobenzene were retained.

  Pentachlorophenol was analyzed both by Method 8270 and Method 8151. As the LOQ for Method 8151 was significantly lower than the Method 8270C LOQ, pentachlorophenol in this analysis was rejected, "R," as duplicate data.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the samples, and for calibration and QC data associated with the sample data, primarily due to peaks missed or incorrectly chosen by the data system, or poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with samples 070SS-0003M-0001-SO and 070SS-006M-0001-SO. The field blank and equipment rinsate had no target compound detects. The validated subsurface soil samples had no associated field QC samples.

    - Field Duplicate Samples: Four field duplicate samples were collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
070SS-0006M-0001-SO	070SS-0007M-0001-SO	Pyrene	53%	N/A
		Benzo(a)anthracene	N/A	No
		Benzo(a)pyrene	N/A	No
		Benzo(g,h,i)perylene	N/A	No
		Fluorene	N/A	No
070SB-0042M-0001-SO	070SB-043M-0001-SO	Acenaphthene	N/A	No
		Chrysene	N/A	No

4.2.7 Volatile Organic Compounds (VOCs)

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by TA-North Canton for volatile compounds by USEPA Method 8260B. A total of 2 primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met, with exceptions noted below.

    - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.

    - All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

- All second source initial calibration verification standard recoveries were within the control limit of ±20%.

- Continuing calibration %Ds affecting validated sample data were within the method control limit of ≤20%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%, with exceptions listed in the table below. The sample results, all nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code.

Samples qualified for MRL recovery outliers		
Analyte	**% Recovery**	**Qualified Sample(s)**
Acetone	58%	070SS-0006M-0001-SO
2-Hexanone	68%	070SB-0044M-0001-SO

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ, with exceptions affecting sample data listed in the table below. As the sample detects were below the LOQ, results were qualified as nondetected, "U," at the LOQ and coded with a "B" qualification code.

Samples qualified for method blank contamination				
Analyte	**Method Blank Concentration**	**Sample Result (µg/Kg)**	**LOQ (µg/Kg)**	**Associated Sample**
2-Hexanone	2.37(J) µg/Kg	1.8(J)	23	070SS-0044M-0001-SO
Methyl isobutyl ketone	1.41(J) µg/Kg	1.3(J)	23	

- Laboratory Control Samples: LCS/LCSD recoveries were within the control limits listed in DoD QSM Table G-4, and RPDs were within the QSM Table F-4 control limit of ≤30%.

- Surrogate Recovery: Surrogate recoveries affecting sample data were within the control limits listed in DoD QSM Table G-3, with the exception of BFB recovered below the control limits of 85-120% in both samples, at 75% in sample 070SS-0006M-0001-SO and 72% in sample 070SB-0044M-0001-SO. Results in both samples were qualified as estimated, "J," for detects, and "UJ," for nondetects. The qualified results were coded with an "S" qualification code. The MSD analysis of 070SB-0044M-0001-SO had a similar recovery for BFB, suggesting a matrix effect on the surrogate; however, the remaining MS and MSD analyses of both samples were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on both validated samples. The MSD of sample 070SS-0006M-0001-SO had recoveries below the control limits of 75-125% for chlorobenzene (69%), ethylbenzene (74%), and styrene (67%); however, qualifications were not assigned if recoveries were not out of control

limits in both the MS and MSD. The laboratory also reported 14 RPDs above the control limit of ≤30% for the MS/MSD of 070SS-0006M-0001-SO; however, the reviewer determined the outliers were due to an approximately 16% difference in spike amounts based on the difference in sample weight. With the disparity of spike amounts taken into account, all RPDs were within the control limit.

All recoveries for 070SB-044M-0001-SO MS/MSD were within the control limits listed in DoD QSM Table G-4 and RPDs were within the control limit listed in DoD QSM Table F-4, with the exception of the RPD for 1,1,2,2-tetrachloroethane, of 57%. The RPD outlier was not due to a disparity in spike amount. The nondetected parent sample result for 1,1,2,2-tetrachloroethane was qualified as estimated, "UJ," and coded with a "Q" qualification code.

- Internal Standards Performance: The internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were not performed for the validated samples or for associated calibration and QC samples.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Trip Blanks: The trip blanks associated with the validated samples in this SDG had no reportable detects.

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The field blank had detects below the LOQ for acetone, bromodichloromethane, toluene,

dibromochloromethane, 2-butanone, and chloroform, and the equipment rinsate also had a detect below the LOQ for chloroform; however, none of the field QC contaminants were present in the site sample. The validated subsurface soil sample had no associated field QC samples.

- Field Duplicate Samples: Two field duplicate samples were collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.2.8 Metals

A total of 22 primary soil samples and 2 field duplicate samples were analyzed by TA-North Canton for metals by USEPA Methods 6020 and 7471A. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration: Except as noted below, calibration criteria were met.
  - As per DoD QSM Table F-8, the mass calibrations were ≤0.1 atomic mass units (amu) of the true values and the resolutions were <0.9 amu at full width at 10% peak height. Except as noted below, the %RSDs were within the control limit listed in the DoD QSM Table F-8 of ≤5%. The detected results listed in the table below were qualified as estimated, "J," and were coded with an "M" qualification code.

Samples qualified for tune %RSD outliers		
Analyte	**%RSD**	**Qualified Samples**
^{78}Selenium	20.43	070SS-0006M-0001-SO
^{137}Barium	24.31	070SB-044M-0001-SO
^{138}Barium	9.85	070SB-044M-0001-SO

  - Initial calibration: Linear regression r-values were within the control limit listed in the DoD QSM Tables F-7 and F-8 of ≥0.995.
  - The ICPMS ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-8 of 90-110%. The mercury ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110% and 80-120%, respectively.
  - CRI/MRL recoveries affecting sample results were within the control limits listed in DoD QSM Tables F-7 and F-8 of 80-120%.
- Blanks: Method blanks had no applicable detects above the control limits listed in DoD QSM Tables F-7 and F-8 of one-half the LOQ or greater than one-tenth the amount

measured in any sample. CCBs had no detects above the control limit listed in DoD QSM Tables F-7 and F-8 of greater than the LOD.

- Interference Check Samples: ICPMS interference check sample A (ICSA) and AB (ICSAB) recoveries were within the control limits listed in DoD QSM Table F-8 of 80-120%. Selenium was detected in the ICSA associated with 070SB-044M-0001-SO at 1.15 µg/L. As the interferents were present in the sample at concentrations similar to the ICSA, selenium detected in 070SB-044M-0001-SO was qualified as estimated with a potential positive bias, "J+," and the qualified result was coded with an "I" qualification code. There were no analytes affecting sample results detected in the ICSA above the control limit listed in DoD QSM Table F-8 of >LOD.

- Laboratory Control Samples: The recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. All 6020 RPDs were within the control limit listed in DoD QSM Table F-8 of ≤20%.

- Laboratory Duplicates: Laboratory duplicate analyses were performed on 070SS-0006M-0001-SO for all analytes. Except for the analytes listed below, RPDs were within the control limits listed in DoD QSM Tables F-7 and F-8 of ≤20%. Results listed below were qualified as estimated, "J," and were coded with an "E" qualification code.

Samples qualified for laboratory duplicate outliers		
Analyte	**RPD**	**Qualified sample**
Chromium	42%	070SS-0006M-0001-SO
Cadmium	41%	070SS-0006M-0001-SO
Lead	94%	070SS-0006M-0001-SO

- Matrix Spike/Matrix Spike Duplicate: Except as noted below, recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. Matrix spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more.

  The results listed in the table below, all detects, were qualified as estimated, "J," and coded with a "Q" qualification code. When no other qualifications with conflicting bias were assigned to a result, detected results with low recoveries were assigned a negative bias, "J-," and detected results with high recoveries were assigned a positive bias, "J+."

Samples qualified for matrix spike recovery outliers		
Parent Sample	**Analyte**	**%R**
070SS-0006M-0001-SO	Antimony	19%
	Chromium	72%
	Potassium	136%
	Selenium	79%
	Vanadium	130%

- Serial Dilution: Except as noted below, serial dilution %Ds were within the control limits listed in DoD QSM Table F-8 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

  Results listed in the table below were qualified as estimated, "J." The qualified results were coded with an "A" qualification code.

Samples qualified for serial dilution %D outliers			
Parent Sample	**Analyte**	**%Ds**	**Qualified Samples**
070SS-0006M-0001-SO	Copper	15%	070SS-0006M-0001-SO
	Lead	12%	
	Nickel	11%	

- Internal Standards: All ICPMS sample internal standards intensities were within 30-120% of those in the ICV, as per the DOD QSM Table F-8. Yttrium (^{89}Y) was spiked into the QC samples but not the site samples.

- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data. Manganese in sample 070SS-0006M-0001-SO was reported from a 5× dilution. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

- Manual Integrations: No manual integrations were noted in the mercury analyses.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with sample 070SS-006M-0001-SO. The validated subsurface soil sample had no associated field QC samples. Sodium was detected at 1600 µg/L in 070-0057-0001-Source Water; therefore, sodium detected in 070SS-0006M-0001-SO was qualified as nondetected, "U," at the level of contamination. The qualified result was coded with an "F" qualification code. There were other detects in the field QC samples, but non at sufficient concentration to qualify the associated sample.

  - Field Duplicate Samples: A total of two field duplicate samples were collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only

applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The results for beryllium in pair 070SB-046M-0001-SO.070SB-047M-0001-SO were not within ± the LOQ. The remaining results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

4.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

Four data points were rejected for poor MS/MSD recoveries or calibration outliers. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These rejected data points do not affect data quality or usability and are not included in the table below. Data with LODs or DLs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 10. Analytical completeness for RVAAP-70 validated primary data

			Number of Results					
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	**Percent Complete**
Explosives*	2	16	30	0	0/0	5	0	100%
Nitroguanidine	1	1	1	0	0/0	0	0	100%
Nitrocellulose	1	1	1	0	0/0	0	1	100%
Herbicides	2	11	22	0	0/0	6	0	100%
PCBs	2	7	14	0	0/0	1	1	100%
SVOCs*	4	66	258	4	12/12	11	4	98.4%
VOCs	2	36	72	0	0/0	72	4	100%
TPH	2	3 or 1	5	0	0/0	1	0	100%
Metals	2	23	42	0	0/0	11	6	100%
		Totals	**445**	**4**	**12/12**	**107**	**16**	**99.1%**

*Results rejected as duplicate data do not appear in the Total Analyte count.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

4.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in good agreement as only 2.5% of the field duplicate pair results were above the FWQAPP control limit of 50% or +/- the LOQ for results below 5× the LOQ.

Of the eleven outliers, seven were in pair 070SS-0006M-0001-SO/070SS-0007M-0001-SO, with five of the outliers for SVOCs. All comparison results are presented in Appendix C. A summary of the field duplicate results is presented in the table below. Please note that rejected results were not assessed and the rejected analytes do not appear in the "Total Analytes" field.

Table 11. RVAAP-70 primary/field duplicate sample comparison summary

Method	Primary/Field Duplicate Pairs	Number of Analytes	Total Analytes	Results within control limits	Results above control limit
Explosives*	16	1	15	15	0
Nitroguanidine	1	1	1	1	0
Nitrocellulose	1	1	1	1	0
Herbicides	11	2	22	22	0
PCBs	7	2	14	13	1
SVOCs*	66	4	254	247	7
VOCs	36	2	72	72	0
TPH	2	2 or 3	5	3	2
Metals	23	2	46	45	1

*Results rejected as duplicate data do not appear in the Total Analyte count

4.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends the laboratory be requested to alter the IPCMS and mercury instrument set up in order to report mercury and ICPMS raw absorbances and ICPMS ICV, CCV, ICSAB, and MRL concentrations.

5 BARN NUMBER 5 PETROLEUM RELEASE, RVAAP-71

5.1 Current Investigation

ECC completed an SI at the Barn Number 5 Petroleum Release Site (RVAAP-71). This work was carried out in accordance with the *Final Site Inspection/Remedial Investigation Work Plan Addendum for CC RVAAP-71 and CC RVAAP-83* (ECC 2013). The SI for RVAAP-71 was conducted in accordance with the *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992).

In 1964, a gasoline release from a broken underground pipeline occurred in the vicinity of Barn Number 5. As the HHR (ECC, 2012) found no records indicating environmental sampling had been conducted at the site, RVAAP-71 was identified as a candidate for further investigation. Contaminants released at RVAAP-71 were petroleum-related chemicals and were primarily gasoline range hydrocarbons associated with the former buried gasoline pipeline. The HRR evaluation determined there were no historic uses or potential environmental concerns at this site with respect to possible HTRW and/or MEC issues (ECC 2012).

The data validated in this report are part of the initial intrusive SI at RVAAP-71 conducted to assess the potential presence of contamination. The sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 12. Total sample count for RVAAP-71

Matrix	Primary Samples	Field Duplicates	Split Samples	Explosives	Propellants	PCBs	Pesticide	SVOCs	TPHs	VOCs	Metals
Soil	17	2	4	2	2	2	2	17	17	17	17

Table 13. RVAAP-71 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	PCBs	SVOCs	TPHs	VOCs	Metals
071SB-0013M-0001-SO	99236	Soil	8/13/2013				x	x	x	x
071SB-0017M-0001-SO	99236	Soil	8/13/2013	x	x	x				
071SB-0018M-001-SO	99236	Soil	8/13/2013				x	x	x	x

Table 14. RVAAP-71 field duplicate samples

Duplicate Sample ID	Parent Sample
071SB-0014M-0001-SO	071SB-0013M-0001-SO
071SB-0019M-0001-SO	071SB-0018M-0001-SO

5.1.1 Sample Collection

The chains-of-custody were appropriately signed and dated by field and laboratory personnel. Custody seals were intact. The following sample collection issues were noted.

- Two trip blanks were shipped with the samples but were not listed on the chains-of-custody.
- The collection dates for all samples were listed as 2012. The laboratory entered the collection dates correctly, as 2013.

5.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

5.1.3 Preservation and Holding Time Requirements

The sample coolers were received with temperatures within the control limit of 4 ±2^{o}C. All method preservation requirements were met. All holding times, as listed in Table 4, were met.

5.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. No LODs or DLs exceeded criteria.

5.2 RVAAP-71 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

5.2.1 Explosives

A total of 2 primary soil samples were analyzed by CT for explosives by USEPA SW-846 Method 8330B. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column correlation coefficients were within the control limit listed in DoD QSM Table F-3 of ≤15%, or the linear regression r values were ≥0.990.
    - The second source initial calibration verification standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.

- The CCV standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. The MRLs associated with the sample had low recoveries for 4-amino-2,6-dinitrotoluene (68% and 60%) and 2-nitrotoluene (57%); therefore, the nondetected results for these compounds were qualified as estimated, "UJ," in 071SB-0017M-0001-SO. The qualified results were coded with a "C" qualification code. The remaining MRL standard recoveries were within the reasonable control limits of 70-130%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the LOQ.

- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (66-130%) and PETN (65-134%).

- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, surrogate recoveries were assessed against the reasonable laboratory-established control limits of 74-134%. Recoveries were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: As no target compounds were detected in the sample validated at Level IV, compound quantification was verified for a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Confirmation analyses were performed; however, no compounds were confirmed.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations and low-level CCVs. All manual integrations were performed in order to report incompletely resolved peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: The site sample had no associated field blank or equipment rinsate samples.

    - Field Duplicates: No explosive field duplicate samples were collected for RVAAP-71.

5.2.2 Propellants

Nine primary soil samples were analyzed by CT for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory SOP WS-WC-0050. One primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration:

    - The nitroguanidine and nitrocellulose correlation coefficients were within the control limit listed in the DoD QSM Tables F-2 and F-11 of ≥0.995.

    - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

    - The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.

- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.

- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. All nitroguanidine recoveries were within the control limits of 37-134% for soils. The nitrocellulose recoveries were within the laboratory-established control limits of 63-130% for soils.

- Surrogate Recovery: The nitroguanidine surrogate recovery was within the laboratory control limits of 50-150%. A surrogate was not required for the analysis of nitrocellulose.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for those samples validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: The site sample had no associated field blank or equipment rinsate samples.

  - Field Duplicates: No propellant field duplicate samples were collected for Site 71.

5.2.3 Polychlorinated Biphenyls (PCBs)

A total of 2 primary soil samples were analyzed by CT for PCBs by USEPA SW-846 Method 8082. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

  - Initial calibration average %RSDs were within the control limit of ≤20%.

  - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.

  - The CCV standard recoveries were within the control limit of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.

- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Manual integrations were not performed for the validated samples or associated calibration and QC.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: The site sample had no associated field blank or equipment rinsate samples.

  - Field Duplicates: No field duplicate samples were collected from Site 71 for PCBs.

5.2.4 Total Petroleum Hydrocarbons (TPH)

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by CT for GRO and DRO by USEPA SW-846 Method 8015B. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

  - Initial calibration average %RSDs were within the control limit of ≤20% or linear regression r^2 values ≥0.990.

  - The second source ICV recoveries were within the control limit of ±20%.

  - The CCV standard recoveries affecting sample data were within the control limit of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: As no QSM limits are prescribed, recoveries were assessed against the laboratory-established control limits of 60-142% for GRO and 47-138% for DRO. All recoveries were within the control limits.

- Surrogate Recovery: As no QSM limits are prescribed, the recoveries were assessed against the laboratory-established control limits of 10-150% for GRO surrogate trifluorotoluene and 10-110% for DRO surrogate n-nonane. All recoveries were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on a validated sample. Evaluation of method accuracy was based on the LCS results.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Manual integrations were not performed for the validated samples or associated calibration and QC.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: QC samples:

    - Trip Blanks: The GRO analysis was not requested for the trip blanks associated with the validated samples.

    - Field Blanks and Equipment Rinsates: The site sample had no associated field blank or equipment rinsate samples.

    - Field Duplicate Samples: Two field duplicate samples were collected and analyzed for TPH. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

5.2.5 Semivolatile Organic Compounds (SVOCs)

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by CT for SVOCs by USEPA Method 8270D. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.

- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the tables below.

    - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050 for SPCCs. All initial calibration %RSDs were within the control limits of ≤30% for CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990, with the exception of %RSDs for benzyl alcohol at 15.2%, benzoic acid at 17.7%, and hexachlorocyclopentadiene at 15.5%. Retained results for the %RSD outliers, all nondetects, were qualified as estimated, "UJ," in the samples. The qualified results were coded with a "C" qualification code.

    - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%.

    - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting validated sample data were within the reasonable control limit of ±30%, with the exception of no recovery of benzyl alcohol and a recovery of 60% for 4,6-dinitro-2-methylphenol in the closing MRL. The nondetected results for benzyl alcohol were rejected, "R," and the results for 4,6-dinitro-2-methylphenol were qualified as estimated, "UJ," in samples 071SB-0013M-0001-SO and 071SB-0018M-0001-SO. Qualified results were coded with a "C" qualification code.

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no common laboratory contaminants detected above the LOQ, with exceptions listed in the table below. Results listed in the table below were qualified as nondetected, "U," at the LOD if detected below the LOD, or at the level of contamination if detected above. Qualified results were coded with a "B" qualification code.

Sample	Analyte	Method Blank (µg/Kg)	Sample (µg/Kg)	LOD (µg/Kg)
071SB-0013M-0001-SO	Benzo(a)anthracene	0.45	0.90	0.82
	Phenanthrene	0.97	4.0	0.82
071SB-0018M-0001-SO	Benzo(a)anthracene	0.45	1.2	0.82
	Naphthalene	0.35	0.35	0.82
	Phenanthrene	.097	4.7	0.82

- Laboratory Control Samples: All LCS recoveries affecting sample data were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7.

- Surrogate Recovery: All surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on a validated sample. Evaluation of method accuracy was based on the LCS results.

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the samples validated at Level IV. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and

the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for calibration and QC data associated with the sample data, primarily to correct the integration of improperly split peaks, or to correct poor baseline integration. The manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: The site samples had no associated field blank or equipment rinsate samples.

    - Field Duplicate Samples: A total of 2 soil field duplicate samples were collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The result for naphthalene in pair 071SB-013M-0001-SO/071SB-0014M-0001-SO exceeded ± the LOQ. The remaining results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

5.2.6 Volatile Organic Compounds (VOCs)

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by CT for volatile compounds by USEPA Method 8260B. A total of 2 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met, with exceptions noted below.

    - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.

- All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

- All second source initial calibration verification standard recoveries were within the control limit of ±20%.

- Continuing calibration %Ds affecting validated sample data were within the method control limit of ≤20%, with the exception of low responses for bromomethane (20.3%) and methylene chloride (44.8%). The nondetected results for both target compounds were qualified as estimated, "UJ," in the samples. The qualified results were coded with a "C" qualification code.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. The MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ. Methylene chloride was detected in the method blank at 6.4(J) µg/L; therefore, methylene chloride detected in the validated samples was qualified as nondetected, "U," at the levels of contamination.

- Laboratory Control Samples: LCS recoveries affecting validated sample data were within the control limits listed in DoD QSM Table G-4.

- Surrogate Recovery: Surrogate recoveries affecting validated sample data were within the control limits listed in DoD QSM Table G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on a validated sample. Evaluation of method accuracy was based on the LCS results.

- Internal Standards Performance: The internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

  The laboratory reported isomers o-xylene and m,p-xylenes as well as total xylenes. The isomers o-xylene and m,p-xylenes were rejected, "R," as duplicate data. The result for total xylenes was retained to maintain consistency with data reported from other laboratories.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were performed for some calibration and QC data associated with the validated samples, primarily to correct baseline integration. The manual integrations were considered appropriate.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Trip Blanks: The trip blanks associated with the validated samples in this SDG had no detects affecting sample results.

    - Field Blanks and Equipment Rinsates: The site samples had no associated field blank or equipment rinsate samples.

    - Field Duplicate Samples: A total of 2 soil field duplicate samples were collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

5.2.7 Metals

A total of 17 primary soil samples and 2 field duplicate samples were analyzed by CT for various metals by USEPA Methods 6010C and 7471B. A total of 2 primary soils, analyzed for lead only, were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Except as noted below, calibration criteria were met.

    - Initial calibration: Linear regression r-values were within the control limit listed in the DoD QSM Table F-7 of ≥0.995.

    - The ICP ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110%.

- MRL recoveries affecting sample results were within the control limits listed in DoD QSM Table F-7 of 80-120%.

- Blanks: Method blanks had no applicable detects above the control limits listed in DoD QSM Table F-7 of one-half the LOQ or greater than one-tenth the amount measured in any sample. CCBs had no detects above the control limit listed in DoD QSM Table F-7 of greater than the LOD.

- Interference Check Samples: ICP ICSA and ICSAB recoveries were within the control limits listed in DoD QSM Table F-7 of 80-120%. There were no analytes affecting sample results detected in the ICSA above the control limit listed in DoD QSM Table F-7 of >LOD.

- Laboratory Control Samples: All recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

- Laboratory Duplicates: Laboratory duplicate analyses were performed on 071SB-0003M-0001-SO and 071SB-0010M-0001-SO for lead. RPDs were within the control limit listed in DoD QSM Table F-7 of ≤20%.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on 071SB-0003M-0001-SO and 071SB-0010M-0001-SO. Except as noted below, recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. The results listed in the table below, both detects, were qualified as estimated with a potential low bias, "J-," and coded with a "Q" qualification code.

Samples qualified for MS/MSD recovery outliers			
Parent Sample	**Analyte**	**%R**	**Qualified samples**
071SB-0003M-0001-SO	Lead	67%, 58%	071SB-0013M-0001-SO, 071SB-0018M-0001-SO
071SB-0010M-0001-SO	Lead	57%, 60%	

- Post Digestion Spike: Except as noted below, recoveries were within the control limits listed in DoD QSM Table F-7 of 75-125%. Spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more. The results listed in the table below, all detects, were qualified as estimated with a potential low bias, "J-," and coded with a "P" qualification code.

Samples qualified for post digestion spike recovery outliers			
Parent Sample	**Analyte**	**%R**	**Qualified samples**
071SB-0003M-0001-SO	Lead	74%	071SB-0013M-0001-SO, 071SB-0018M-0001-SO
071SB-0010M-0001-SO	Lead	58%	

- Serial Dilution: Serial dilution analyses were performed on 071SB-0003M-0001-SO and 071SB-0010M-0001-SO. The %Ds were within the control limits listed in DoD QSM

Table F-7 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data. Lead in 071SB-0003M-0001-SO and 071SB-0010M-0001-SO was reported from a 5× dilution. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- Manual Integrations: No manual integrations were noted in the mercury analyses.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: The site sample had no associated field blank or equipment rinsate samples.

    - Field Duplicate Samples: A total of 2 field duplicate samples were collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

5.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

Two data points were rejected for poor calibration recoveries. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These data points data do not affect data quality or usability and are not included in the table below. Data with LODs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 15. Analytical completeness for RVAAP-71 validated primary data

			Number of Results					
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	**Percent Complete**
Explosives*	1	17	17	0	0/0	1	0	100%
Nitroguanidine	1	1	1	0	0/0	0	0	100%
Nitrocellulose	1	1	1	0	0/0	0	0	100%
PCBs	1	9	9	0	0/0	0	0	100%
SVOCs	2	65	130	2	0/0	11	12	98.5%
TPH	2	2	4	0	0/0	0	2	100%
VOCs	2	40	76	0	0/0	4	0	100%
Metals	2	1	2	0	0/0	2	0	100%
		Totals	**240**	**2**	**0/0**	**18**	0/0	**99.2%**

*Results rejected as duplicate data do not appear in the Total Analyte count.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

5.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in good agreement as less than 1% of the field duplicate pair results were above the FWQAPP control limit of 50% for soils or +/- the LOQ for results below 5× the LOQ. All comparison results are presented in Appendix C.

Table 16. RVAAP-71 primary/field duplicate sample comparison summary

Method*	**Primary/Field Duplicate Pairs**	**Number of Analytes**	**Total Analytes**	**Results within control limits**	**Results above control limit**
SVOCs*	2	65	128	127	1
TPH	2	2	4	4	0
VOCs	2	40	76	76	0
Metals	1	2	2	2	0

*Results rejected as duplicate data do not appear in the Total Analyte count.

5.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- None

6 FACILITY-WIDE UNDERGROUND STORAGE TANKS, RVAAP-72

6.1 Current Investigation

ECC completed an SI for the Facility-Wide Underground Storage Tanks (RVAAP-72). The SI for RVAAP-72 was conducted in accordance with the USEPA *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992). The HRR identified historic uses and potential environmental concerns at this site with respect to possible HTRW and/or MEC issues (SAIC 2011).

RVAAP-72 consists of 58 underground storage tanks (USTs). Of these, 43 have received a No Further Action (NFA) designation and 15 were identified as candidates for further investigation in the HRR (SAIC 2011b). The data validated in this report are part of the initial intrusive SI at RVAAP-72 conducted to assess the potential presence of contamination. The total sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 17. Total sample count for RVAAP-72

Matrix	Primary Samples	Field Duplicates	Split Samples	Explosives	Propellants	PCBs	Pesticides	SVOCs/PAHs	TPHs	VOCs/BTEX	Metals	Hexavalent Chromium
Soil	101	10	0	7	7	7	7	74	74	74	74	29

Table 18. RVAAP-72 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	PCBs	Pesticides	SVOCs/PAHs	TPHs	VOCs/BTEX	Metals	Hexavalent Chromium
072SB-0001-0001-SO	240-18297-1	Soil	12/3/2012					x	x	x	x	
072SB-0012-0001-SO	240-18297-1	Soil	12/3/2012					x	x	x	x	
072SB-0014-0001-SO	240-18297-1	Soil	12/3/2012	x	x	x	x	x	x	x	x	
072SB-0026-0001-SO	240-18441-1	Soil	12/4/2012					x	x	x	x	
072SB-0030-0001-SO	240-18441-1	Soil	12/4/2012						x	x		
072SB-0039-0001-SO	240-18449-1	Soil	12/5/2012					x	x	x	x	
072SB-0063-0001-SO	240-18544-1	Soil	12/6/2012					x	x	x	x	
072SB-0083-0001-SO	240-18703-1	Soil	12/10/2012						x	x		
072SB-0085-0001-SO	240-18703-1	Soil	12/10/2012						x	x		
076SB-0119-0001-SO	240-18735-1	Soil	12/11/2012									x
076SB-0122-0001-SO	240-18735-1	Soil	12/11/2012									x
076SB-0126-0001-SO	240-18735-1	Soil	12/11/2012									x
076SB-0130-0001-SO	240-18735-1	Soil	12/12/2013									x

Table 19. RVAAP-72 field duplicate samples

Duplicate Sample ID	Parent Sample
072SB-0002-0001-SO	072SB-0001-0001-SO
072SB-0013-0001-SO	072SB-0012-0001-SO
072SB-0027-0001-SO	072SB-0026-0001-SO
072SB-0036-0001-SO	072SB-0035-0001-SO
072SB-0064-0001-SO	072SB-0063-0001-SO
072SB-0077-0001-SO	072SB-076-0001-SO
072SB-0086-0001-SO	072SB-0085-0001-SO
076SB-0089-0001-SO	076SB-0076-0001-SO
076SB-0127-0001-SO	076SB-0126-0001-SO
076SB-0133-0001-SO	076SB-0132-0001-SO

6.1.1 Sample Collection

The chains-of-custody were appropriately signed and dated by field and laboratory personnel. When utilized, cooler custody seals were intact upon receipt at the laboratory. When not utilized, it was determined by reviewing the relinquish and receipt times, that the samples were transferred to the laboratory by courier. With exceptions noted below, no sample collection issues were identified.

- Some corrections made to the chains-of-custody were initialed but not dated and some were neither initialed nor dated.
- Some corrections were made by overwriting the original entry.
- Samples 072SB-0001-0001-SO and 072SB-0012-0001-SO did not have PAHs requested on the chains-of-custody, but this analysis was reported for both samples. There was no documentation for this change.

6.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

6.1.3 Preservation and Holding Time Requirements

A portion of the sample coolers were received at temperatures nominally below the 4±2^{o}C control limit; however, as the samples were not noted to be frozen or damaged, no qualifications were required. All remaining method preservation requirements were met.

The hexavalent chromium samples were prepared within 30 days of collection but, according to the preparation summary form, the samples were analyzed 24 hours beyond the 24-hour analysis holding time. The hexavalent chromium raw data, however, indicates the samples were prepared and immediately analyzed. In the reviewer's professional opinion, the preparation referred to in the raw data was the addition of the color development reagents and the preparation referred to on the summary form was the sample extraction. As the method

specifically states the 24-hour holding time begins after extraction, the hexavalent chromium results were qualified as estimated, "UJ," for nondetects and estimated with a potential low bias, "J-," for detects. The qualified results were coded with an "H" qualification code. All remaining holding times, as listed in Table 4, were met.

6.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. No LODs or DLs exceeded criteria.

6.2 RVAAP-72 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

6.2.1 Explosives

A total of 7 primary soil samples were analyzed by TA-West Sacramento for explosives by USEPA SW-846 Method 8330B. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column initial calibration average %RSDs for RDX and 2-nitrotoluene exceeded the control limit at 20% and 16%, respectively; therefore, the nondetected results for these compounds were qualified as estimated, "UJ," in 072SB-0014-0001-SO. The qualified results were coded with a "C" qualification code. The remaining initial calibration average %RSDs were within the control limits listed in DoD QSM Table F-3 of ≤15%, or the linear regression r^2 values were ≥0.990.
    - The second source initial calibration verification standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.
    - The CCV standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. Low-level MRL standards were analyzed in association with the validated samples and the results affecting the sample were within the reasonable control limits of 70-130%.
- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the LOQ.

- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%).

- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, surrogate recoveries were assessed against the reasonable laboratory-established control limits of 78-118%. Recoveries were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatogram and retention times indicated no problems with target compound identification.

  Although not affecting the nondetected sample results, the primary column MRL recoveries for the later eluting compounds were recovered above the control limit. Review of the chromatogram indicated poorer peak shape for these compounds.

- Compound Quantification and Reported Detection Limits: As no target compounds were detected in the sample validated at Level IV, compound quantification was verified for a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Confirmation analyses were performed; however, no compounds were confirmed.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in sample 072SB-0014-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8330B result for nitrobenzene was rejected, "R," as duplicate data and coded with a "D" qualification code. The 8330B results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations and low-level CCVs. All manual integrations were performed in order to report incompletely resolved peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

- Field Duplicates: No field duplicate samples were collected from RVAAP-72 for explosive compounds.

6.2.2 Propellants

A total of 7 primary soil samples were analyzed by TA-West Sacramento for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory SOP WS-WC-0050. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration:

  - The nitroguanidine initial calibration average percent %RSD was within the control limit listed in DoD QSM Table F-2 of ≤20%. Nitrocellulose linear regression r values were within the control limit listed in the DoD QSM Table F-11 of ≥0.995.

  - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recovery exceeded the control limit at 192% (limits are 90-110%); however, as nitrocellulose was not detected in the sample, no qualifications were required.

  - The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.

- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.

- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. The nitroguanidine recovery was within the control limits of 72-121%. The nitrocellulose recovery was within the laboratory-established control limits of 34-115%.

- Surrogate Recovery: A surrogate was not required for the analysis of nitroguanidine or nitrocellulose.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

  - Field Duplicates No field duplicate samples were collected from RVAAP-72 for propellants.

6.2.3 Polychlorinated Biphenyls (PCBs)

A total of 7 primary soil samples were analyzed by TA-North Canton for PCBs by USEPA SW-846 Method 8082. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

  - Initial calibration average %RSDs were within the control limit of ≤20%.

  - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.

  - The CCV standard recoveries were within the control limit of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.

- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily due to split incompletely resolved peaks. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

  - Field Duplicates: No field duplicate samples were collected from RVAAP-72 for PCBs.

6.2.4 Pesticides

A total of 7 primary soil samples were analyzed by TA-North Canton for pesticides by USEPA SW-846 Method 8081. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.
    - Initial calibration average %RSDs were within the control limit of ≤20%.
    - The performance evaluation mixture (PEM) %breakdown results were within the DoD QSM Table F-2 control limit of ≤15%.
    - Both columns had individual toxaphene peaks with %Ds exceeding the control limit. Column CLP-1 had three outliers at -43.2%, -20.2%, and 49.8%, and column CLP-2 had two outliers at -30.1% and -32.9%. The nondetected result for toxaphene in sample 072SB-0014-0001-SO was qualified as estimated, "UJ." The qualified results were coded with a "C" qualification code. The remaining second source ICV recoveries were within the control limit of ±20%.
    - The CCV standard recoveries were within the control limit of ±20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.
- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.
- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Table G-15. Toxaphene was not spiked in the LCS sample.
- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on the validated sample, 072SB-0014-0001-SO. Qualifications were only applied for recovery outliers when both the MS and MSD were recovered outside the control limits. Due to generally low recoveries in the MSD, all but four RPDs exceeded the control limit listed in DoD QSM Table F-2 of ≤30%. Sample 072SB-0014-0001-SO results listed in the table below, all nondetects, were qualified as estimated, "UJ," and coded with "Q" qualification codes. The remaining recoveries were within the control limits listed in DoD QSM Table G-15. Toxaphene was not spiked in the MS/MSD samples.

Compounds qualified for MS/MSD outliers				
Compound	MS %R	MSD %R	Limits	%RPD
4,4'-DDD	acceptable	42%	30-135%	37%
4,4'-DDE	66%	45%	70-125%	34%
alpha-BHC	acceptable	44%	60-125%	37%
alpha-Chlordane	62%	41%	65-120%	37%
beta-BHC	acceptable	39%	60-125%	41%
delta-BHC	acceptable	43%	55-130%	40%
Dieldrin	acceptable	46%	65-125%	39%
Endosulfan I	acceptable	39%	15-135%	39%
Endosulfan II	acceptable	acceptable	N/A	37%
Endosulfan sulfate	acceptable	39%	60-135%	35%
Endrin	acceptable	43%	60-135%	36%
Endrin aldehyde	acceptable	acceptable	N/A	36%
Endrin ketone	53%	39%	65-135%	acceptable
gamma-BHC	58%	39%	60-125%	36%
gamma-Chlordane	62%	41%	65-125%	40%
Heptaclor epoxide	acceptable	46%	65-130%	39%
Methoxyclor	53%	40%	55-145%	acceptable

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data, primarily due to poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicate Samples: No field duplicate samples were collected from Site 72 for pesticide compounds.

6.2.5 Total Petroleum Hydrocarbons (TPH)

A total of 74 primary soil samples and 7 field duplicate samples were analyzed by TA-North Canton for GRO and DRO by USEPA SW-846 Method 8015B. A total of 9 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.
    - Initial calibration average %RSDs were within the control limit of ≤20% or linear regression r^2 values ≥0.990.
    - The second source ICV recoveries were within the control limit of ±20%.
    - The CCV standard recoveries affecting sample data were within the control limit of ±20%. One high %D for gasoline range C6-C12 was attributed to carryover from a previous site sample; however, as C6-C12 was not detected in the associated validated sample, no qualification was necessary.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%. One high recovery for gasoline range C6-C12 in an ending MRL was attributed to carryover from a previous site sample; however, as C6-C12 was not detected in the associated validated sample, no qualification was necessary.
- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.
- Laboratory Control Samples: As no QSM limits are prescribed, recoveries were assessed against the laboratory-established control limits of 60-142% for GRO and 47-138% for DRO. All recoveries were within the control limits.
- Surrogate Recovery: As no QSM limits are prescribed, the recoveries were assessed against the laboratory-established control limits of 10-150% for GRO surrogate trifluorotoluene and 10-110% for DRO surrogate n-nonane. All recoveries were within the control limits.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated samples 072SB-0001-0001-SO, 072SB-0012-0001-SO, 072SB-0026-0001-SO, and 072SB-0063-0001-SO for both GRO and DRO. As no QSM limits are prescribed, the recoveries were assessed against the laboratory-established soil control limits of 10-142% for GRO and 10-199% for DRO, and RPDs were evaluated using the control limit listed in the DoD QSM Table F-2 of ≤30%.

The RPDs exceeded the control limit for the GRO MS/MSDs of samples 072SB-0001-0001-SO and 072SB-0026-0001-SO, at 49% and 67%, respectively. The detected result for the RPD outlier (C6-C12) in sample 072SB-0001-0001-SO was qualified as estimated, "J," and coded with a "Q" qualification code. As C6-C12 was not detected in sample 072SB-0026-0001-SO, and recoveries were within the control limits, no qualifications were assigned for the RPD outlier. The remaining GRO and DRO recoveries and RPDs were within the control limits.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification. The laboratory analyzed for GRO hydrocarbon range C6-C12, and DRO ranges C10-C20 and C20-C34.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for some GRO calibration and QC data associated with the sample data, primarily to correct baseline integration of the surrogate trifluorotoluene. All manual integrations reviewed at Level IV were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Trip Blanks: Two of four trip blanks associated with the validated samples had detects below the LOQ for GRO; however, the trip blank concentrations were not sufficient to qualify associated site sample detects.

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

    - Field Duplicate Samples: Seven field duplicate samples were collected and analyzed for GRO. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where

results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The results for TPH range C6-C12 in pair 072SB-0001-0001-SO/072SB-0002-0001-SO exceeded ± the LOQ. The remaining results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

6.2.6 Semivolatile Organic Compounds (SVOCs) and Polynuclear Aromatic Hydrocarbons (PAHs)

A total of 74 primary soil samples and 7 field duplicate samples were analyzed by TA-North Canton for SVOCs and/or PAHS by USEPA Method 8270C. A total of 6 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.
- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the text and table below.
    - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050. All initial calibration %RSDs were within the control limits of ≤30% for calibration check compounds (CCCs) and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.
    - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%, with the exception of the recovery of 78.9% for 3,3'-dichlorobenzidine in the ICV associated with sample 072SB-0014-0001-SO. The nondetected result was qualified as estimated, "UJ," in the sample. The qualified result was coded with a "C" qualification code.
    - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%, with exceptions noted in the table below. The nondetected result for 4-nitroaniline was rejected, "R," and the remaining results listed in the table below, both nondetects, were qualified as estimated, "UJ." The qualified results were coded with a "C" qualification code.

Samples qualified for MRL %R outliers		
Analyte	**%R**	**Qualified Samples**
2,4-dinitrophenol	55%	072SB-0014-0001-SO
4,6-dinitro-2-methylphenol	69%	
4-nitroaniline	**0%**	

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no common laboratory contaminants detected above the LOQ. Bis(2-ethylhexyl)phthalate was detected below the LOQ at 19.2(J) µg/Kg in the method blank associated with sample 072SB-0014-0001-SO. The sample result of 22(J) µg/Kg was qualified as nondetected, "U," at the LOQ of 56 µg/Kg, and coded with a "B" qualification code.

- Laboratory Control Samples: All LCS recoveries affecting sample data were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the LCS associated with the full-list analysis of sample 072SB-0014-0001-SO.

- Surrogate Recovery: All applicable surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3, with the exception of a recovery of 44% (limits 45-105%) for 2-fluorobiphenyl in sample 072SB-0026-0001-SO. The sample was re-extracted outside of the holding time, with a recovery of 46%. As the recoveries were very similar, indicating a matrix effect on the surrogate, the reviewer chose to retain the original extraction analysis. The retained sample results were qualified as estimated, "J," for detects and "UJ," for nondetects, and were coded with an "S" qualification code. The re-extraction results were rejected, "R," as duplicate data and were coded with a "D" qualification code.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated samples 072SB-0001-0001-SO, 072SB-0012-0001-SO, 072SB-0026-0001-SO, and 072SB-0063-0001-SO. Recoveries affecting parent sample data were within the control limits listed in DoD QSM Table G-7 and RPDs were within the control limit of ≤30% listed in DoD QSM Table F-4. Hexachlorocyclopentadiene was not spiked in to the MS/MSD.

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the samples validated at Level IV. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD. The samples had a 2-ml final extract volume, resulting in an effective 2× dilution.

Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Methods 8330B and 8270C in sample 072SB-0014-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8270C results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were rejected, "R," as duplicate data and coded with a "D" qualification code. The 8270C result for nitrobenzene was retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the samples, and for calibration and QC data associated with the sample data, primarily to correct the integration of improperly split peaks, or to correct poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

    - Field Duplicate Samples: Six field duplicate samples were collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
072SB-0026-0001-SO	072SB-0027-0001-SO	Pyrene	N/A	No
		Benzo(a)anthracene	N/A	No
		Benzo(a)pyrene	N/A	No
		Naphthalene	N/A	No
		Benzo(g,h,i)perylene	61	N/A
072SB-035-0001-SO	072SB-0036-0001-SO	2-Methylnaphthylene	N/A	No
		Benzo(a)pyrene	N/A	No
		Phenanthrene	N/A	No
072SB-0076-0001-SO	072SB-0077-0001-SO	Benzo(a)anthracene	N/A	No
		Benzo(a)pyrene	N/A	No
		Benzo(b)fluoranthene	N/A	No
		Benzo(g,h,i)perylene	N/A	No
		Benzo(k)fluoranthene	N/A	No
		Chrysene	N/A	No
		Fluoranthene	N/A	No
		Indeno(1,2,3-cd)pyrene	N/A	No

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
		Phenanthrene	N/A	No
		Pyrene	N/A	No

6.2.7 Volatile Organic Compounds (VOCs)

A total of 74 primary soil samples and 7 field duplicate samples were analyzed by TA-North Canton for volatile compounds by USEPA Method 8260B. A total of 9 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.
- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met, with exceptions noted below.
    - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.
    - All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.
    - All second source initial calibration verification standard recoveries were within the control limit of ±20%.
    - Continuing calibration %Ds affecting validated sample data were within the method control limit of ≤20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. Except as noted below, the MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%. Results listed in the table below, all nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code.

Samples qualified for MRL recovery outliers		
Analyte	**%R**	**Qualified samples**
Acetone	61%, 28%	072SB-0014-0001-SO, 072SB-0030-0001-SO
2-Hexanone	65%	
2-Hexanone	63%	072SB-0039-0001-SO

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ.

- Laboratory Control Samples: LCS recoveries were within the control limits listed in DoD QSM Table G-4.

- Surrogate Recovery: Except as noted below the surrogate recoveries affecting sample data were within the control limits listed in DoD QSM Table G-3. Results listed in the table below, all nondetects, were qualified as estimated, "UJ." The qualified results were coded with an "S" qualification code.

Samples qualified for surrogate recovery outliers				
Sample	Surrogate	%R	Limits	Qualified Results
072SB-0001-0001-SO	4-bromofluorobenzene	72%	85-120%	all
	toluene-d8	73%	85-115%	
072SB-0012-0001-SO	4-bromofluorobenzene	76%	85-120%	all
072SB-0026-0001-SO	4-bromofluorobenzene	47%	85-120%	all
	toluene-d8	73%	85-115%	
072SB-0030-0001-SO	4-bromofluorobenzene	58%	85-120%	all

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on samples 072SB-0001-0001-SO, 072SB-0012-0001-SO, 072SB-0026-0001-SO, and 072SB-0063-0001-SO. All recoveries were within the control limits listed in DoD QSM Table G-4 and RPDs were within the control limit listed in DoD QSM Table F-4 of ≤30%.

  All RPDs for the MS/MSD of 072SB-0063-0001-SO exceeded 30%; however, the reviewer determined the outliers were due to an approximately 33% difference in spike amounts based on the difference in sample weight. With the disparity of spike amounts taken into account, all RPDs were within the control limit.

- Internal Standards Performance: With one exception, the internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas. Internal standard 1,4-dichlorobenzene-d4 was recovered below the control limit at 41% in sample 072SB-0030-0001-SO; therefore, the associated compound, nondetected 1,1,2,2-tetrachloroethane, was qualified as estimated, "UJ," and coded with an "I" qualification code.

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the samples validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were not performed for the validated samples or for associated calibration and QC samples.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Trip Blanks: The trip blanks associated with the validated samples in this SDG had no detects affecting sample results.

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

    - Field Duplicate Samples: Seven field duplicate samples were collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

VOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
072SB-0076-0001-SO	072SB-0077-0001-SO	Benzene	N/A	No
		Ethylbenzene	N/A	No
		Toluene	N/A	No
		Xylenes	N/A	No

6.2.8 Metals

A total of 74 primary soil samples and 7 field duplicate samples were analyzed by TA-North Canton for various metals by USEPA Methods 6020 and 7471. A total of 6 primary soils were validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Except as noted below, calibration criteria were met.

    - As per DoD QSM Table F-8, the mass calibrations were ≤0.1 amu of the true values and the resolutions were <0.9 amu at full width at 10% peak height. Except as noted below, the %RSDs were within the control limit listed in the DoD QSM Table F-8 of ≤5%. The detected results listed in the table below were qualified as estimated, “J,” and were coded with an “M” qualification code.

Samples qualified for tune %RSD outliers		
Analyte	**%RSD**	**Qualified Samples**
^{137}Barium	35.98	072SB-0026-0001-SO, 072SB-0039-0001-SO
	19.32	072SB-0063-0001-SO
^{138}Barium	7.81	072SB-0063-0001-SO

- Initial calibration: The mercury linear regression correlation coefficients were within the control limit listed in the DoD QSM Table F-7 of ≥0.995. The ICPMS analytes used a single point calibration.

- The ICPMS ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-8 of 90-110%. The mercury ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110% and 80-120%, respectively.

- CRI/MRL recoveries affecting sample results were within the control limits listed in DoD QSM Tables F-7 and F-8 of 80-120%.

- Blanks: The method blanks had no applicable detects above the control limits listed in DoD QSM Tables F-7 and F-8 of one-half the LOQ or greater than one-tenth the amount measured in any sample. CCBs had no applicable detects above the control limit listed in DoD QSM Tables F-7 and F-8 of greater than the LOD.

- Interference Check Samples: ICPMS ICSA and ICSAB recoveries were within the control limits listed in DoD QSM Table F-8 of 80-120%. Except as noted below, there were no analytes affecting sample results detected in the ICSA above the control limit listed in DoD QSM Table F-8 of >LOD.

  When the interferents were present in the samples at similar concentration to the ICSA, the samples were further reviewed for possible matrix interference, based on detects for unspiked compounds in the ICSA. If the unspiked compounds were present in the samples at concentrations within 10× of the ICSA detect, the results were qualified. Results listed in the table below, all detects, were qualified as estimated, "J," and coded with an "I" qualification code. When no other qualifications with conflicting bias were assigned, the results were qualified as estimated with a potential positive bias, "J+."

Samples qualified for ICSA detects			
SDG	Analyte	Detect (µg/L)	Qualified samples
240-18441-1, 240-18449-1	Cadmium	0.315	072SB-0026-0001-SO, 072SB-0039-0001-SO
	Silver	0.098	
240-18544-1	Antimony	0.32	072SB-0063-0001-SO
	Cadmium	0.385	
	Selenium	0.912	
	Silver	0.15	

- Laboratory Control Samples: The recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

- Laboratory Duplicates: Laboratory duplicate analyses were performed on 072SB-0001-0001-SB, 072SB-0012-0001-SO, 072SB-0026-0001-SO, 073SB-0007M-0001-SO, 072SB-0035-0001-SO, 072SB-0063-0001-SO, 076SB-0090M-0001-SO, 076SB-0091M-0001-SO, 076SB-0100M-0001-SO, and 075TR-0002-0001-SO. The results were only assessed for common detects ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted in the table below, the RPDs were within the control limits listed in DoD QSM Tables F-7 and F-8 of ≤20%.

  Results listed in the table below were qualified as estimated, "J," and coded with an "E" qualification code. As per the *National Function Guidelines*, all samples in an SDG were qualified; however, the parent samples were qualified only for their own outliers.

Samples qualified for laboratory duplicate RPD outliers			
Parent Sample	Analyte	RPD	Qualified samples
072SB-0001-0001-SO	Calcium	28%	072SB-0001-0001-SO, 072SB-0014-0001-SO
072SB-0012-0001-SO	Arsenic	29%	072SB-0012-0001-SO, 072SB-0014-0001-SO
072SB-0035-0001-SO	Potassium	24%	072SB-0039-0001-SO
072SB-0063-0001-SO	Manganese	36%	072SB-0063-0001-SO

- Matrix Spike/Matrix Spike Duplicate: Matrix spike analyses were performed on 072SB-0001-0001-SB, 072SB-0012-0001-SO, 072SB-0026-0001-SO, 073SB-0007M-0001-SO, 072SB-0035-0001-SO, 072SB-0063-0001-SO, 076SB-0090M-0001-SO, 076SB-0091M-0001-SO, 076SB-0100M-0001-SO, and 075TR-0002-0001-SO. The results were not assessed when the native sample concentration exceeded the spiked amount by a factor of four or more. Except as noted in the table below, the recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

  Based on consistently poor recoveries from all SI Sites, the nondetected antimony results associated with recoveries below 30% were rejected, "R," even though the post digestion spike recoveries were acceptable. Detected results listed in the table below were qualified as estimated, "J." In the absence of qualifications with conflicting bias, the results were qualified as estimated with a potential low bias, "J-," or estimated with a potential high bias, "J+." The qualified results were coded with a "Q" qualification code. As per the *National Function Guidelines*, all samples in an SDG were qualified; however, the parent samples were qualified only for their own outliers.

Samples qualified for matrix spike recovery outliers			
Parent Sample	Analyte	%R	Qualified samples
072SB-0001-0001-SO	Arsenic	77%	072SB-0001-0001-SO, 072SB-0014-0001-SO
	Barium	127%	

Samples qualified for matrix spike recovery outliers			
Parent Sample	Analyte	%R	Qualified samples
	Beryllium	79%	
	Calcium	298%	
	Cadmium	79%	
	Nickel	69%	
	Antimony	24%	
	Potassium	55%	
	Selenium	68%	
072SB-0012-0001-SO	Beryllium	78%	072SB-0012-0001-SO, 072SB-0014-0001-SO
	Copper	123%	
	Lead	122%	
	Antimony	18%	
	Potassium	71%	
	Selenium	74%	
072SB-0026-0001-SO	Arsenic	69%	072SB-0026-0001-SO
	Calcium	74%	
	Copper	75%	
	Antimony	**20%**	
	Thallium	75%	
	Selenium	73%	
072SB-0035-0001-SO	Arsenic	64%	072SB-0039-0001-SO
	Barium	32%	
	Beryllium	76%	
	Chromium	73%	
	Nickel	79%	
	Lead	159%	
	Antimony	**23%**	
	Vanadium	61%	
	Potassium	5%	
	Selenium	68%	
072SB-0063-0001-SO	Silver	39%	072SB-0063-0001-SO
	Arsenic	0%	
	Calcium	193%	
	Cadmium	60%	
	Chromium	79%	
	Cobalt	52%	
	Copper	16%	
	Sodium	39%	
	Antimony	28%	
	Potassium	70%	
	Selenium	25%	

Bold analytes were nondetected and rejected in the associated samples.

All post digestion spike recoveries were within the control limits listed in DoD QSM Table F-8 of 75-125%.

- Serial Dilution: Serial dilution analyses were performed on 072SB-0001-0001-SB, 072SB-0012-0001-SO, 072SB-0026-0001-SO, 073SB-0007M-0001-SO, 072SB-0035-0001-SO, 072SB-0063-0001-SO, 076SB-0090M-0001-SO, 076SB-0091M-0001-SO, and 076SB-0100M-0001-SO for the 6020 analytes. A zinc %D associated with sample 072SB-0026-0001-SO exceeded the control limit at 11%; therefore, the zinc detect in the sample was qualified as estimated, "J," and coded with an "A" qualification code. All remaining %Ds were within the control limits listed in DoD QSM Table F-7 and F-8 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

- Internal Standards: As per the DOD QSM Table F-8, the ICPMS sample internal standards intensities were within 30-120% of those in the ICV. Yttrium (^{89}Y) was spiked into the QC samples but not the site samples.

- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

- Manual Integrations: No manual integrations were noted in the mercury analyses.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

  - Field Duplicate Samples: Seven field duplicate samples were collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, all results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

Metals field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
072SB-0001-0001-SO	072SB-0002-0001-SO	Barium	64%	N/A
		Calcium	149%	N/A
072SB-0026-0001-SO	072SB-0027-0001-SO	Arsenic	61%	N/A

Metals field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
		Manganese	116%	N/A

6.2.9 General Chemistry - Hexavalent Chromium

A total of 29 primary soil samples and 3 field duplicate samples were analyzed by TA-Pittsburg for hexavalent chromium by USEPA Method 7196A. A total of 4 primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration: Calibration criteria were met.
    - Initial calibration: The linear regression correlation coefficient was within the control limit listed in DoD QSM Table F-9 of ≥0.995.
    - The ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-9 of 90-110%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries affecting sample results were within the reasonable control limits of 70-130%.
- Blanks: The method blank and CCBs had no applicable detects above the control limit listed in DoD QSM Table F-9 of one-half the LOQ.
- Laboratory Control Samples: The recoveries were within the matrix spike control limits listed in DoD QSM Table F-9 of 85-115%
- Laboratory Duplicates: A laboratory duplicate analysis was performed on 076SB-0125-0001-SO. Hexavalent chromium was not detected in either sample.
- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on a site sample. Method accuracy was evaluated based on LCS results.
- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Hexavalent chromium was reported utilizing the method of standard additions (MSA), which is recommended for matrices expected to have interference. Results from MSA are best when the MSA linear regression slope is nearly equivalent to the initial calibration slope; however, the slopes for most site samples were more than a factor of 10 less than the initial calibration slope, indicating a nominal change in absorbance is observed in the MSA analyses for a relatively significant change in concentration.

- Manual Integrations: Manual integrations are not applicable to this analysis.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

    - Field Duplicate Samples: Four field duplicate samples were collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

6.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

Three data points were rejected for poor MS/MSD and calibration standard recoveries. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These data points do not affect data quality or usability and are not included in the table below. Data with LODs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 20. Analytical completeness for RVAAP-72 validated primary data

			Number of Results					
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	**Percent Complete**
Explosives*	1	16	15	0	0/0	2	0	100%
Nitroguanidine	1	1	1	0	0/0	0	0	100%
Nitrocellulose	1	1	1	0	0/0	0	0	100%
PCBs	1	7	7	0	0/0	0	0	100%
Pesticides	1	21	21	0	0/0	20	0	100%
TPH	9	3	27	0	0/0	1	0	100%
SVOCs*	6	66 or 16	144	1	0/0	20	7	99.3%
VOCs	9	36 or 4	132	0	0/0	51	3	100%
Metals	6	23	138	2	0/0	60	15	98.6%
Hexavalent chromium	4	1	4	0	0/0	4	1	100%
		Totals	**490**	**3**	**0/0**	**154**	**26**	**99.4%**

*Results rejected as duplicate data do not appear in the Total Analyte count.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

6.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in good agreement as only 5.5% of the field duplicate pair results were above the FWQAPP control limit of 50% for soils or +/- the LOQ for results below 5× the LOQ.

Fifteen of the twenty-seven outliers were in pair 072SB-0076-001-SO/072SB-0077-0001-SO and eighteen of the twenty-seven outliers were for SVOCs. In general, 072SB-0077-0001-SO had higher concentrations than 072SB-0076-001-SO. All comparison results are presented in Appendix C.

Table 21. RVAAP-72 primary/field duplicate sample comparison summary

Method	Primary/Field Duplicate Pairs	Number of analytes	Total Analytes	Results within control limits	Results above control limit
TPH	7	3	21	20	1
SVOCs	7	16 or 66	262	244	18
VOCs	7	4 or 5	30	26	4
Metals*	7	23	160	156	4
Hexavalent chromium	3	1	3	3	0
Herbicide	1	11	11	11	0

*Total Analyte count affected by rejected results

6.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- Hexavalent chromium was reported utilizing MSA, which is recommended for matrices expected to have interference. Results from MSA are best when the MSA linear regression slope is nearly equivalent to the initial calibration slope; however the slopes for most site samples were more than a factor of 10 less than the initial calibration slope, indicating a nominal change in absorbance is observed in the MSA analyses for a relatively significant change in concentration.

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends requesting the laboratory, TA-North Canton, to analyze one MRL standard and one matrix spike by MSA in order to confirm the laboratory's accuracy in reporting hexavalent chromium by MSA.

- MEC^X recommends the laboratory be requested to alter the IPC-MS and mercury instrument set up in order to report mercury and ICP-MS raw absorbances and ICP-MS ICV, CCV, ICSAB, and MRL concentrations.

7 GEORGE ROAD SEWER TREATMENT PLANT MERCURY SPILL, RVAAP-75

7.1 Current Investigation

ECC completed an SI at George Road Sewage Treatment Plant Mercury Spill (RVAAP-75). The SI for RVAAP-75 was conducted in accordance with the USEPA *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992). The HRR identified historic uses and potential environmental concerns at this site with respect to possible HTRW and/or MEC issues (SAIC 2011).

Due to a spill of a one pint jar of elemental mercury within the comminutor building that subsequently entered the building's drain system, the HHR concluded the RVAAP-75 was a candidate for further investigation. The data validated in this report are part of the initial intrusive SI at RVAAP-75 conducted to assess the potential presence of contamination. The total sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 22. Total sample count for RVAAP-75

Matrix	Primary Samples	Field Duplicates	Split Samples	Explosives	Propellants	PCBs	Pesticides	SVOCs	VOCs	Metals
Soil	8	2	0	1	1	1	1	1	1	8

Table 23. RVAAP-75 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	PCBs	SVOCs	VOCs	Metals
075SD-0002-0001-SD	240-17467-1 240-17467-2	Soil	11/9/2012	x	x	x	x	x	x

Table 24. RVAAP-75 field duplicate samples

Duplicate Sample ID	Parent Sample
075TR-0003-0001-SO	075TR-0002-0001-SO
075SD-0003-0001-SD	075SD-0002-0001-SD

7.1.1 Sample Collection

According to the laboratory Sample Receipt Form, custody seals were not utilized; however, in reviewing the relinquish and receipt times, it appeared the samples were transferred to the laboratory by courier. One correction was made to the chain-of-custody by overwriting the original entry. The correction was not initialed or dated. No other sample collection issues were noted.

7.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

7.1.3 Preservation and Holding Time Requirements

The sample coolers were received within the temperature control limit of 4 ±2^{o}C control limit. All method preservation requirements were met.

All holding times, as listed in Table 4, were met, with the exception of a re-extraction of SVOC sample 075SD-0002-0001-SD, due to a noncompliant method blank. Only target compound bis(2-ethylhexyl)phthalate was reported from the re-extraction analysis. The result was qualified as an estimated nondetect, "UJ," and coded with an "H" qualification code.

7.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. No LODs or DLs exceeded criteria.

7.2 RVAAP-75 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

7.2.1 Explosives

A single soil sample and one field duplicate sample were analyzed by TA-West Sacramento for explosives by USEPA SW-846 Method 8330B. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column initial calibration average %RSDs for RDX and 2-nitrotoluene exceeded the control limit at 20% and 16%, respectively; therefore, the nondetected results for these compounds were qualified as estimated, "UJ," in 075SD-0002-0001-SD. The qualified results were coded with a "C" qualification code. The remaining initial calibration average %RSDs were within the control limits listed in DoD QSM Table F-3 of ≤15%, or the linear regression r^2 values were ≥0.990.
    - The second source initial calibration verification standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.

  - The CCV standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. Low-level MRL standards were analyzed in association with the validated samples and the results were within the reasonable control limits of 70-130%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the LOQ.

- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%).

- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, surrogate recoveries were assessed against the reasonable laboratory-established control limits of 78-118%. Recoveries affecting sample results were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 075SB-0002-0001-SD. Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%). The RPDs were within the control limit listed in DoD QSM Table F-3 of ≤20%.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of sample chromatograms and retention times indicated no problems with target compound identification. The intercolumn %RPD for tetryl was 105%; therefore, tetryl detected in 075SD-0002-0001-SD was qualified as tentatively identified, "N," and coded with an "*III" qualification code.

  Although not affecting the nondetected sample results, the primary column MRL recoveries for the later eluting compounds were recovered above the control limit. Review of the chromatogram indicated poorer peak shape for these compounds.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample detect and a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  The intercolumn %RPD for tetryl exceeded the control limit listed in DoD QSM Table F-3 of ≤40%, at 105%; therefore, tetryl detected in 075SD-0002-0001-SD was qualified as estimated, "J," and coded with an "*III" qualification code.

Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in sample 075SD-0002-0001-SD. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8330B result for nitrobenzene was rejected, "R," as duplicate data and coded with a "D" qualification code. The 8330B results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations, CCVs, and the site sample. All manual integrations were performed in order to report closely eluting peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicates: One field duplicate sample was collected and analyzed for explosive compounds. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

7.2.2 Propellants

A single soil sample and one field duplicate sample were analyzed by TA-West Sacramento for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory SOP WS-WC-0050. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration:

    - The nitroguanidine initial calibration average percent %RSD was within the control limit listed in DoD QSM Table F-2 of ≤20%. Nitrocellulose linear regression r values were within the control limit listed in the DoD QSM Table F-11 of ≥0.995.

    - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recovery exceeded the

control limit at 192% (limits are 90-110%); however, as nitrocellulose was not detected in the sample, no qualifications were required.

- The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.

- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.

- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. The nitroguanidine recovery was within the control limits of 72-121%. The nitrocellulose recovery was within the laboratory-established control limits of 34-115%.

- Surrogate Recovery: A surrogate was not required for the analysis of nitroguanidine or nitrocellulose.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 075SD-0002-0001-SD for both propellants. The nitroguanidine recoveries (56%, 58%) were below the laboratory-established control limits of 72-121%; therefore, nondetected nitroguanidine was qualified as estimated, UJ," in 075SD-0002-0001-SD. The qualified result was coded with a "Q" qualification code. The nitrocellulose recoveries were within the laboratory-established control limits of 34-115%. Both RPDs were ≤20%.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicates: One field duplicate sample was collected and analyzed for propellants. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

7.2.3 Polychlorinated Biphenyls (PCBs)

A single soil sample and one field duplicate sample were analyzed by TA-North Canton for PCBs by USEPA SW-846 Method 8082. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

    - Initial calibration average %RSDs were within the control limit of ≤20%.

    - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.

    - The CCV standard recoveries were within the control limit of ±20%.

    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.

- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 075SD-0002-0001-SD. Recoveries were within the control limits listed in DoD QSM Table G-17 and RPDs for both Aroclors were within the control limit listed in the DoD QSM Table F-2 of ≤30%.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily to correct baseline integration and/or separate coeluting peaks. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for PCBs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

7.2.4 Semivolatile Organic Compounds (SVOCs)

A single soil sample and one field duplicate sample were analyzed by TA-North Canton for SVOCs by USEPA Method 8270C. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.

- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the text and table below.

  - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050 for SPCCs. All initial calibration %RSDs were within the control limits of ≤30% for CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

  - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%, with the exception of the recovery of 79.9% for 3,3'dichlorobenzidine. The associated sample result was rejected for other reasons (see Matrix Spike/Matrix Spike Duplicate section), and was not further qualified for the ICV recovery outlier.

  - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%, with exceptions noted in the table below. Results listed in the table below were qualified as estimated, "J," for detects, and "UJ," for nondetects in the affected sample. The qualified results were coded with a "C" qualification code.

Samples qualified for MRL %R outliers		
Analyte	**%R**	**Qualified Samples**
2,4-dinitrophenol	37%	075SD-0002-0001-SD
4,6-dinitro-2-methylphenol	46%	
benzo(g,h,i)perylene	58%	
dibenz(a,h)anthracene	68%	
hexachloroethane	58%	
Indeno(1,2,3-cd)pyrene	67%	

- Blanks: The method blank had a detect below the LOQ for 1,2-dichlorobenzene; however, the sample detect for 1,2-dichlorobenzene exceeded five times the method blank concentration and required no qualification. The method blank also had a detect above the LOQ of 50 µg/Kg for bis(2-ethylhexyl)phthalate at 90 µg/Kg. As the method blank was non-compliant, sample 075SD-0002-0001-SD was re-extracted, with an acceptable result. The laboratory reported both the original and re-extraction analyses for all target compounds except bis(2-ethylhexyl)phthalate, which was reported only from the re-extraction analysis; therefore, the results for all compounds in 075SD-0002-0001-SDRE, except bis(2-ethylhexyl)phthalate, were rejected, "R," in favor of the original results. The method blanks associated with the validated sample had no other target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no other common laboratory contaminants detected above the LOQ.

- Laboratory Control Samples: All LCS recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the LCS.

- Surrogate Recovery: All surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 075SD-0002-0001-SD. The MS and MSD had recoveries of 5% and 0% for 3,3-dichlorobenzidine; therefore, the nondetected parent sample result was rejected, "R." Recoveries for 4-nitroaniline were below the control limits of 35-115%, at 30% and 25%. The nondetected result for 4-nitroaniline was qualified as estimated, "UJ." The qualified results were coded with a "Q" qualification code. Remaining recoveries affecting parent sample results were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the MS/MSD. RPDs were within the control limit of ≤30% listed in DoD QSM Table F-4**.**

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the sample validated at Level IV. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at Level IV. The sample had a 2-ml final extract volume, resulting in an effective 2× dilution. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in samples 075SD-0002-0001-SD. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8270C results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were rejected, "R," as duplicate data and coded with a "D" qualification code. The 8270C result for nitrobenzene was retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the samples, and for calibration and QC data associated with the sample data, primarily due to peaks

missed or incorrectly chosen by the data system, split peaks, or poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

  - Field Duplicate Samples: One field duplicate sample was collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
075SD0002-0001-SD	075SD-0003-0001-SD	Benzo(b)fluoranthene	63%	N/A
		Chrysene	155%	N/A
		Phenanthrene	67%	N/A
		1,2-Dichlorobenzene	60%	N/A
		Anthracene	N/A	No
		Fluorene	N/A	No

7.2.5 Volatile Organic Compounds (VOCs)

A single soil sample and one field duplicate sample were analyzed by TA-North Canton for volatile compounds by USEPA Method 8260B. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met, with exceptions noted below.

  - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.

  - All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

- All second source initial calibration verification standard recoveries were within the control limit of ±20%.

- Continuing calibration %Ds affecting validated sample data were within the control limit of ≤20%

- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ, with one exception affecting sample data. Styrene was detected in the method blank at 0.15 µg/Kg. Styrene detected in 075SD-0002-0001-SD between the LOD and LOQ was qualified as nondetected, "U," at the LOQ. The qualified result was coded with a "B" qualification code.

- Laboratory Control Samples: LCS recoveries were within the control limits listed in DoD QSM Table G-4.

- Surrogate Recovery: Surrogate recoveries affecting sample data were within the control limits listed in DoD QSM Table G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 075SD-0002-0001-SD. Recoveries affecting sample data were within the control limits listed in DoD QSM Table G-4 and RPDs were within the control limit listed in DoD QSM Table F-4, of ≤30%.

- Internal Standards Performance: The internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were not performed for the validated sample or for associated calibration and QC samples.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Trip Blanks: The trip blank associated with the validated sample in this SDG had no reportable detects above the DL.

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

7.2.6 Metals

Eight primary soil samples and two field duplicate samples were analyzed by TA-North Canton for various metals by USEPA Methods 6020 and 7471. One primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: All calibration criteria were met.

    - As per DoD QSM Table F-8, the mass calibrations were ≤0.1 amu of the true values and the resolutions were <0.9 amu at full width at 10% peak height. The %RSDs were within the control limit listed in the DoD QSM Table F-8 of ≤5%.

    - Initial calibration: The mercury linear regression correlation coefficient was within the control limit listed in the DoD QSM Table F-7 of ≥0.995. The remaining analytes used a single point calibration.

    - The ICPMS ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-8 of 90-110%. The mercury ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110% and 80-120%, respectively.

    - CRI/MRL recoveries affecting sample results were within the control limits listed in DoD QSM Tables F-7 and F-8 of 80-120%.

- Blanks: The method blanks had no applicable detects above the control limits listed in DoD QSM Tables F-7 and F-8 of one-half the LOQ or greater than one-tenth the amount measured in any sample. CCBs had no applicable detects above the control limit listed in DoD QSM Tables F-7 and F-8 of greater than the LOD.

- Interference Check Samples: ICPMS interference check sample A (ICSA) and AB (ICSAB) recoveries were within the control limits listed in DoD QSM Table F-8 of 80-120%. There were several analytes detected in the ICSA, but not at sufficient concentration to warrant qualification of the site sample.

- Laboratory Control Samples: The recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

- Laboratory Duplicates: A laboratory duplicate analysis was performed on 075SD-0002-0001-SD. The RPDs for aluminum (26%), chromium (21%), sodium (32%), vanadium (24%), and potassium (42%) exceeded the control limit; therefore, detects for these analytes in 075SD-0002-0001-SD were qualified as estimated, "J," and coded with an "E" qualification code. The remaining RPDs were within the control limits listed in DoD QSM Tables F-7 and F-8 of ≤20%. The control limit was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied.

- Matrix Spike/Matrix Spike Duplicate: A matrix spike analysis was performed on 075SD-0002-0001-SD. The recoveries for arsenic (76%), barium (57%), chromium (73%), magnesium (69%), nickel (77%), antimony (25%), vanadium (66%), potassium (56%), mercury (60%), and selenium (74%) were below the control limit; therefore, the results for these analytes, all detects, were qualified as estimated with a potential low bias, "J-." The qualified results were coded with a "Q" qualification code. The remaining recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. Matrix spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more.

  All post digestion spike recoveries were within the control limits listed in DoD QSM Table F-8 of 75-125%.

- Serial Dilution: A serial dilution analysis was performed on 075SD-0002-0001-SD for the 6020 analytes. The %Ds were within the control limits listed in DoD QSM Table F-8 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

- Internal Standards: As per the DOD QSM Table F-8, the ICPMS sample internal standards intensities were within 30-120% of those in the ICV.

- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data.

Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

- Manual Integrations: No manual integrations were noted in the mercury analyses.
- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:
    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.
    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

Metals field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
075SD0002-0001-SD	075SD-0003-0001-SD	Beryllium	63%	N/A
		Calcium	155%	N/A
		Magnesium	67%	N/A
		Manganese	60%	N/A
		Sodium	N/A	No
		Mercury	N/A	No

7.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

One data point was rejected for poor MS/MSD recoveries. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These data points do not affect data quality or usability and are not included in the table below. Data with LODs/DLs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 25. Analytical completeness for RVAAP-75 validated primary data

			Number of Results					
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	**Percent Complete**
Explosives*	1	16	15	0	0/0	3	0	100%
Nitroguanidine	1	1	1	0	0/0	1	0	100%
Nitrocellulose	1	1	1	0	0/0	0	0	100%
PCBs	1	7	7	0	0/0	0	0	100%
SVOCs*	1	66	64	1	0/0	8	3	98.4%
VOCs	1	36	36	0	0/0	1	2	100%
Metals	1	23	23	0	0/0	12	1	100%
		Totals	**147**	**1**	**0/0**	**25**	**6**	**99.3%**

*Results rejected as duplicate data do not appear in the Total Analyte count.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

7.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in reasonable agreement as only 7.2% of the field duplicate pair results were above the FWQAPP control limit of 50% for soils or +/- the LOQ for results below 5× the LOQ. There were six outliers in the metals and SVOCs. The metals results for 075SD-0003-0001-SD were larger than those for 075SD-0002-0001-SO, while the SVOC result were generally larger in 075SD0002-0001-SO. All comparison results are presented in Appendix C.

Table 26. RVAAP-75 primary/field duplicate sample comparison summary

Method	**Primary/Field Duplicate Pairs**	**Number of Analytes**	**Total Analytes**	**Results within control limits**	**Results above control limit**
Explosives*	1	16	15	15	0
Nitroguanidine	1	1	1	1	0
Nitrocellulose	1	1	1	1	0
PCBs	1	7	7	7	0
Pesticides	1	21	21	21	0
SVOCs*	1	65	62	56	6
VOCs	1	36	36	36	0
Metals	2	23 or 1	24	18	6

*Results rejected as duplicate data do not appear in the Total Analyte count.

7.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends the laboratory be requested to alter the IPC-MS and mercury instrument set up in order to report mercury and ICP-MS raw absorbances and ICP-MS ICV, CCV, ICSAB, and MRL concentrations.

8 BUILDING 1037, LAUNDRY WASTE WATER SUMP, RVAAP-77

8.1 Current Investigation

ECC completed an SI at Building 1037 Laundry Waste Water Sump (RVAAP-77). The SI for RVAAP-77 was conducted in accordance with the USEPA *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992). The HRR identified historic uses and potential environmental concerns at this site with respect to possible HTRW and/or MEC issues (SAIC 2011).

The HHR (SAIC 2011) identified RVAAP-77 as a candidate for further investigation due to a waste water sump that received discharge water from the former laundry operation that may have resulted in a release of contaminants. The data validated in this report are part of the initial intrusive SI at RVAAP-77 conducted to assess the potential presence of contamination. The total sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 27. Total sample count for RVAAP-77

Matrix	Primary Samples	Field Duplicates	Split Samples	Explosives	Propellants	PCBs	Pesticides	SVOCs	VOCs	Metals
Soil	9	1	0	9	9	1	1	1	1	1

Table 28. RVAAP-77 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	PCBs	Pesticides	SVOCs	VOCs	Metals
077SS-0001M-0001-SO	240-17525-1	Soil	11/11/2012	x	x	x	x	x	x	x

Table 29. RVAAP-77 field duplicate samples

Duplicate Sample ID	Parent Sample
077SS-0002M-0001-SO	077SS-0001M-0001-SO

8.1.1 Sample Collection

According to the laboratory Sample Receipt Form, custody seals were not utilized; however, in reviewing the relinquish and receipt times, it appeared the samples were transferred to the laboratory by courier. Other than listed below, no sample collection issues were noted.

- Some corrections made to the chains-of-custody were initialed but not dated and some were neither initialed nor dated.

- Some corrections were made by overwriting the original entry.

8.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

8.1.3 Preservation and Holding Time Requirements

The sample coolers were received within control limit of 4 ±2^{o}C. All other preservation requirements were met. All holding times, as listed in Table 4, were met.

8.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. No LODs or DLs exceeded criteria.

8.2 RVAAP-77 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

8.2.1 Explosives

Nine primary soil samples and one field duplicate sample were analyzed by TA-West Sacramento for explosives by USEPA SW-846 Method 8330B. One primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column initial calibration average %RSDs for RDX and 2-nitrotoluene exceeded the control limit at 20% and 16%, respectively; therefore, the nondetected results for these compounds were qualified as estimated, “UJ,” in 077SS-0001M-0001-SO. The qualified results were coded with a “C” qualification code. The remaining initial calibration average %RSDs were within the control limits listed in DoD QSM Table F-3 of ≤15%, or the linear regression r^2 values were ≥0.990.
    - The second source initial calibration verification standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.
    - The CCV standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. Low-level MRL standards were analyzed in association with the validated samples and the results were within the reasonable control limits of 70-130%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the LOQ.

- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%).

- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, surrogate recoveries were assessed against the reasonable laboratory-established control limits of 78-118%. Recoveries were within the control limits.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 077SS-0001M-0001-SO. The recoveries were within the control limits listed in DoD QSM Table s G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (76-116%) and PETN (76-116%). The RPDs were within the control limit listed in DoD QSM Table F-3 of ≤20%.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: As no target compounds were detected in the sample validated at Level IV, compound quantification was verified for a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Confirmation analyses were performed; however, no compounds were confirmed.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in sample 077SS-0001M-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8330B result for nitrobenzene was rejected, "R," as duplicate data and coded with a "D" qualification code. The 8330B results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations and low-level CCVs. All manual integrations were performed in order to report

incompletely resolved peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

    - Field Duplicates: One field duplicate sample was collected and analyzed for explosive compounds. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.2 Propellants

Nine primary soil samples and one field duplicate sample were analyzed by TA-West Sacramento for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory SOP WS-WC-0050. One primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration:

    - The nitroguanidine initial calibration average percent %RSD was within the control limit listed in DoD QSM Table F-2 of ≤20%. Nitrocellulose linear regression r values were within the control limit listed in the DoD QSM Table F-11 of ≥0.995.

    - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

    - The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.

    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.

- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.

- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. All nitroguanidine recoveries were within the control limits of 72-121% for soils. The nitrocellulose recoveries were within the laboratory-established control limits of 34-115% for soils.

- Surrogate Recovery: A surrogate was not required for the analysis of nitroguanidine or nitrocellulose.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 070SB-0006M-0001-SO for both propellants. The recoveries were within the laboratory-established control limits of 72-121% for nitroguanidine and 34-115% for nitrocellulose. Both RPDs were ≤20%.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at a Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

- Field Duplicates: One field duplicate sample was collected and analyzed for propellants. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.3 Polychlorinated Biphenyls (PCBs)

One primary soil sample and one field duplicate sample were analyzed by TA-North Canton for PCBs by USEPA SW-846 Method 8082. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.
  - Initial calibration average %RSDs were within the control limit of ≤20%.
  - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.
  - The CCV recoveries were within the control limit of ±20%.
  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.
- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.
- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.
- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 077SS-0001M-0001-SO. Recoveries were within the control limits listed in DoD QSM Table G-17 and RPDs for both Aroclors were within the control limit listed in the DoD QSM Table F-2 of ≤30%.
- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.
- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial

calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily to correct baseline integration and/or separate coeluting peaks. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for PCBs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.4 Pesticides

One primary soil sample and one field duplicate sample were analyzed by TA-North Canton for pesticides by USEPA SW-846 Method 8081. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met, with one exception noted below.

    - Initial calibration average %RSDs were within the control limit of ≤20%.

    - The performance evaluation mixture (PEM) %breakdown results were within the control limit of ≤15%.

    - Both columns had individual toxaphene peaks with %Ds exceeding the control limit. Column CLP-1 had two outliers at -20.9% and 53.7%, and column CLP-2 had two outliers at -34.0% and 88.2%. The nondetected result for toxaphene in sample

077SS-0001M-0001-SO was qualified as estimated, "UJ." The remaining second source ICV recoveries were within the control limit of ±20%.

- The CCV standard recoveries were within the control limit of ±20%.
- Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.
- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Table G-15. Toxaphene was not spiked in the LCS sample.
- Surrogate Recovery: Due to dilution of sample 077SS-0001M-0001-SO, the surrogate spike was considered diluted out and recoveries were not evaluated.
- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 077SS-0001M-0001-SO; however, due to dilution, the spike was considered diluted out and recoveries and RPDs were not evaluated. Toxaphene was not spiked in the MS/MSD samples.
- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.
- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD. According to the case narrative, sample 077SS-0001M-0001-SO was analyzed at a 10× dilution due to the nature of the sample matrix.
- System Performance: Review of the raw data indicated no problems with system performance.
- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data, primarily due to poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.
- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

- Field Duplicate Samples: One field duplicate sample was collected and analyzed for pesticide compounds. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.5 Semivolatile Organic Compounds (SVOCs)

One primary soil sample and one field duplicate sample were analyzed by TA-North Canton for SVOCs by USEPA Method 8270C. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.

- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the text below.

  - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050 for SPCCs. All initial calibration %RSDs were within the control limits of ≤30% for CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

  - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%, with the exception of the recovery of 79.9% for 3,3'-dichlorobenzidine. The nondetected result for 3,3'-dichlorobenzidine in sample 077SS-0001M-0001-SO was qualified as estimated, "UJ," and coded with a "C" qualification code.

  - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%, with the exception of no recovery of n-nitrosodiphenylamine in the closing MRL. The nondetected result for n-nitrosodiphenylamine in sample 077SS-0001M-0001-SO was rejected, "R," and coded with a "C" qualification code.

- Blanks: The method blank had a detect below the LOQ for bis(2-ethylhexyl)phthalate at 31(J) µg/Kg; however, bis(2-ethylhexyl)phthalate was not detected in the validated

sample. The method blank had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no common laboratory contaminants detected above the LOQ.

- Laboratory Control Samples: All LCS recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the LCS.

- Surrogate Recovery: All surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 077SS-0001M-0001-SO. Benzoic acid was not recovered in the MS or MSD; therefore, the nondetected parent sample result was rejected, "R." The qualified result was coded with a "Q" qualification code. Remaining recoveries affecting parent sample results were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7. The reviewer noted hexachlorocyclopentadiene was not spiked in the MS/MSD. RPDs were within the control limit of ≤30% listed in DoD QSM Table F-4**.**

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the sample validated at Level IV. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at Level IV. The sample had a 2-ml final extract volume, resulting in an effective 2× dilution. The sample was analyzed at an additional 4× dilution for high concentrations of target compounds. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in sample 077SS-0001M-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs. The 8270C results for 2,4-dinitrotoluene and 2,6-dinitrotoluene were rejected, "R," as duplicate data and coded with a "D" qualification code. The 8270C result for nitrobenzene was retained.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the samples, and for calibration and QC data associated with the sample data, primarily due to peaks missed or incorrectly chosen by the data system, split peaks, or poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank and equipment rinsate had no target compound detects.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.6 Volatile Organic Compounds (VOCs)

One primary soil sample and one field duplicate sample were analyzed by TA-North Canton for volatile compounds by USEPA Method 8260B. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met.

    - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.

    - All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.

    - All second source initial calibration verification standard recoveries were within the control limit of ±20%.

    - Continuing calibration %Ds affecting validated sample data were within the control limit of ≤20%

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ.

- Laboratory Control Samples: LCS recoveries were within the control limits listed in DoD QSM Table G-4.

- Surrogate Recovery: Surrogate recoveries affecting sample data were within the control limits listed in DoD QSM Table G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 077SS-0001M-0001-SO. Recoveries affecting sample data were within the control limits listed in DoD QSM Table G-4. RPDs are calculated based on amounts recovered, rather than percent recoveries, and due to the difference in sample amounts of the MS and MSD, 26 of 34 RPDs marginally exceeded the control limit listed in DoD QSM Table F-4, of ≤30%. When the difference in sample amounts was accounted for, all RPDs were within the control limit.

- Internal Standards Performance: The internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were not performed for the validated sample or for associated calibration and QC samples.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

- Trip Blanks: The trip blank associated with the validated sample in this SDG had no reportable detects above the DL.

- Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. The field blank had detects below the LOQ for acetone, bromodichloromethane, toluene, dibromochloromethane, 2-butanone, and chloroform, and the equipment rinsate also had a detect below the LOQ for chloroform; however, none of the field QC contaminants were present in the site sample.

- Field Duplicate Samples: One field duplicate sample was collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.2.7 Metals

A total of 1 primary soil sample and 1 field duplicate sample were analyzed by TA-North Canton for metals by USEPA Methods 6020 and 7471A. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Except as noted below, calibration criteria were met.

  - As per DoD QSM Table F-8, the mass calibrations were ≤0.1 amu of the true values and the resolutions were <0.9 amu at full width at 10% peak height. With one exception, the %RSDs were within the control limit listed in the DoD QSM Table F-8 of ≤5%. The ^{137}barium %RSD was 15.47%; therefore, barium detected in 077SS-0001M-0001-SO was qualified as estimated, "J," and coded with an "M" qualification code.

  - Initial calibration: Linear regression correlation coefficients were within the control limit listed in the DoD QSM Tables F-7 and F-8 of ≥0.995.

  - The ICPMS ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-8 of 90-110%. The mercury ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110% and 80-120%, respectively.

  - CRI/MRL recoveries affecting sample results were within the control limits listed in DoD QSM Tables F-7 and F-8 of 80-120%.

- Blanks: Method blanks had no applicable detects above the control limits listed in DoD QSM Tables F-7 and F-8 of one-half the LOQ or greater than one-tenth the amount measured in any sample. CCBs had no detects above the control limit listed in DoD QSM Tables F-7 and F-8 of greater than the LOD.

- Interference Check Samples: ICPMS ICSA and ICSAB recoveries were within the control limits listed in DoD QSM Table F-8 of 80-120%. Except as noted below, there were no analytes affecting sample results detected in the ICSA above the control limit listed in DoD QSM Table F-8 of >LOD.

  When the interferents were present in the samples at similar concentration to the ICSA, the samples were further reviewed for possible matrix interference, based on detects for unspiked compounds in the ICSA. If the unspiked compounds were present in the samples at concentrations within 10× of the ICSA detect, the results were qualified. Results listed in the table below, all detects, were qualified as estimated, "J," and coded with an "I" qualification code. When no other qualifications with conflicting bias were assigned, the results were qualified as estimated with a potential positive bias, "J+."

Samples qualified for ICSA contamination		
Analyte	**Detect (µg/L)**	**Qualified sample**
Antimony	0.259	077SS-0001M-0001-SO
Cadmium	0.249	
Silver	0.095	

- Laboratory Control Samples: The recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

- Laboratory Duplicates: Laboratory duplicate analyses were performed on 069SS-0001M-0001-S0 and 077SS-0001M-0001-SO for all analytes. The results were only assessed for common detects ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as listed below, RPDs were within the control limits listed in DoD QSM Tables F-7 and F-8 of ≤20%. Results listed below were qualified as estimated, "J," for detected and, "UJ," for nondetects. The qualified results were coded with an "E" qualification code.

Samples qualified for laboratory duplicate outliers			
Parent sample	**Analyte**	**RPD**	**Qualified sample**
077SS-0001M-0001-SO	Calcium	21%	077SS-0001M-0001-SO
	Sodium	N/A, >±LOQ	

- Matrix Spike/Matrix Spike Duplicate: Matrix spike analyses were performed on 077SS-0001M-0001-SO for all analytes. Except as noted below, recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. Matrix spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more.

The results listed in the table below, all detects, were qualified as estimated, "J," and coded with a "Q" qualification code. When no other qualifications with conflicting bias were assigned to a result, detected results with low recoveries were assigned a negative bias, "J-," and detected results with high recoveries were assigned a positive bias, "J+."

Samples qualified for matrix spike recovery outliers			
Parent Sample	**Analyte**	**%R**	**Sample qualified**
077SS-0001M-0001-SO	Arsenic	78%	077SS-0001M-0001-SO
	Cadmium	79%	
	Copper	317%	
	Magnesium	132%	
	Antimony	21%	
	Potassium	122%	
	Selenium	72%	

Post digestion spike recoveries for ICPMS metals were all within the control limits listed in DoD QSM Table F-8 of 75-125%.

- Serial Dilution: Except as noted below, serial dilution %Ds were within the control limits listed in DoD QSM Table F-8 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

  Results listed in the table below were qualified as estimated, "J." The qualified results were coded with an "A" qualification code.

Samples qualified for serial dilution %D outliers			
Parent Sample	**Analyte**	**%Ds**	**Qualified Samples**
077SS-0001M-0001-SO	calcium	12%	077SS-0001M-0001-SO

- Internal Standards: All ICPMS sample internal standards intensities were within 30-120% of those in the ICV, as per the DOD QSM Table F-8. Yttrium (^{89}Y) was spiked into the QC samples but not the site samples.

- Sample Result Verification: For Level IV validation, calculations were verified and the sample result reported on the sample result summary was verified against the raw data. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

- Manual Integrations: No manual integrations were noted in the mercury analyses.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: Sample 070-0057-0001-Source Water was identified as the field blank and sample 076-0067-0001-ER was the equipment rinsate associated with the validated site sample. Sodium was detected at 1600 µg/L in sample 070-0057-0001-Source Water; therefore, sodium detected in 077SS-0001M-0001-SO was qualified as nondetected, "U," at the level of contamination. The qualified result was coded with an "F" qualification code. There were other detects in the field QC samples, but none at sufficient concentration to qualify the site sample.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

8.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

Two data points were rejected for poor MS/MSD and calibration standard recoveries. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These data points do not affect data quality or usability and are not included in the table below. Data with LODs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 30. Analytical completeness for RVAAP-77 validated primary data

			Number of Results					Percent Complete
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	
Explosives*	1	16	15	0	0/0	2	0	100%
Nitroguanidine	1	1	1	0	0/0	0	0	100%
Nitrocellulose	1	1	1	0	0/0	0	0	100%
PCBs	1	7	7	0	0/0	0	0	100%
Pesticides	1	21	21	0	0/0	1	0	100%

			Number of Results					Percent Complete
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	
SVOCs	1	66	64	2	0/0	1	2	96.9%
VOCs	1	36	36	0	0/0	0	0	100%
Metals	1	23	23	0	0/0	11	0	100%
		Totals	**168**	**2**	**0/0**	**15**	**2**	**98.8%**

* Total analyte counts affected by rejected data.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

8.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in good agreement as all results were within the control limits listed in the FWQAPP control limit of 50% for soils or +/- the LOQ for results below 5× the LOQ. All comparison results are presented in Appendix C.

Table 31. RVAAP-77 primary/field duplicate sample comparison summary

Method	Primary/Field Duplicate Pairs	Number of Analytes	Total Analytes	Results within control limits	Results above control limit
Explosives*	1	16	15	16	0
Nitroguanidine	1	1	1	1	0
Nitrocellulose*	1	1	1	1	0
PCBs	1	7	7	7	0
Pesticides	1	21	21	21	0
SVOCs*	1	66	62	62	0
VOCs	1	36	36	36	0
Metals	1	23	23	23	0

*Total analyte counts affected by rejected data.

8.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends the laboratory be requested to alter the IPC-MS and mercury instrument set up in order to report mercury and ICP-MS raw absorbances and ICP-MS ICV, CCV, ICSAB, and MRL concentrations.

9 FORMER BUILDINGS 1031 AND 1039, RVAAP-83

9.1 Current Investigation

ECC completed an SI at Former Buildings 1031 and 1039. The SI for was conducted in accordance with the *Final Site Inspection/Remedial Investigation Work Plan Addendum for CC RVAAP-71 and CC RVAAP-83* (ECC 2013) and the USEPA *Interim Final Guidance for Performing Site Inspections Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (USEPA 1992).

CC RVAAP-83 is comprised of the Former Building 1031 (Hospital) and the Former Building 1039 (Laboratory). Former Building 1031 received a No Further Action; therefore, no additional investigation activities were required. Former Laboratory Building 1039 (RVAAP-83) was identified as a candidate for further investigation in the HHR due to historical practices. The HHR evaluation determined there were no historic uses or potential environmental concerns at this site with respect to possible HTRW and/or MEC issues (ECC 2012).

The data validated in this report are part of the initial intrusive SI at RVAAP-83 conducted to assess the potential presence of contamination specifically related to the former sump and drainage area identified at Former Laboratory Building 1039. The total sample counts, samples selected for data validation, and the field duplicates are presented in the tables below.

Table 32. Total sample count for RVAAP-83

Matrix	Primary Samples	Field Duplicates	Split Samples	Explosives	Propellants	PCBs	Pesticides	SVOCs	VOCs	Metals
Soil	12	1	2	12	12	1	1	12	12	12

Table 33. RVAAP-83 validated samples and methods

Sample ID	SDG	Matrix	Collected	Explosives	Propellants	PCBs	SVOCs	VOCs	Metals
083SB-0002M-0001-SO	99211	Soil	8/12/2013					x	
083SB-0005M-0001-SO	99211	Soil	8/12/2013	x	x		x	x	x
083SB-0012M-0001-SO	99211	Soil	8/12/2013			x			

Table 34. RVAAP-83 field duplicate samples

Duplicate Sample ID	Parent Sample
083SB-0006-0001SO	083SB-0005-0001-SO

9.1.1 Sample Collection

The chains-of-custody were appropriately signed and dated by field and laboratory personnel. Custody seals were intact. Other than listed below, no sample collection issues were noted.

- A correction was made to the chain-of-custody by overwriting the original entry. The correction was neither initialed nor dated.
- Sample 083SB-0002M-0001-SO was listed on the chain-of-custody twice. One listing requested only VOCs, the other requested the remaining analyses.

9.1.2 Data Completeness

Data completeness for the project described in this report was found to be generally acceptable as no deliverables were missing from the SDGs reviewed.

9.1.3 Preservation and Holding Time Requirements

A portion of the sample coolers were received at temperatures nominally below the 4 ±2°C control limit; however, as the samples were not noted to be frozen or damaged, no qualifications were required. All remaining method preservation requirements were met.

All holding times, as listed in Table 4, were met.

9.1.4 Detection Limit Requirements

LODs and DLs for nondetected analytes were compared against the most stringent CUGs listed in Tables 5-8, 5-9, and 5-10 of *Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant* (2010) or the RSLs if no CUG was listed. The table below lists the number of LODs and DLs that exceeded criteria.

Table 35. RVAAP-83 LOD/DL exceedances

Method	LOD	DL
Explosives	0	0
Propellants	0	0
PCBs	0	0
SVOCs	1	0
VOCs	0	0
Metals	0	0

The results with the LOD exceeding project criteria may be usable for their intended purposes; however, it is dependent on the final data user to make this determination on a case-by-case basis.

9.2 RVAAP-83 Data Quality Evaluation

This section summarizes the data quality of validated samples for each analytical method evaluated.

9.2.1 Explosives

A total of 12 primary soil samples and 1 field duplicate sample were analyzed by CT for explosives by USEPA SW-846 Method 8330B. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The primary column correlation coefficients were within the control limit listed in DoD QSM Table F-3 of ≥0.990.
    - The second source initial calibration verification standard recoveries were within the control limit listed in DoD QSM Table F-3 of ±20%.
    - The CCV standard %Ds were within the control limits listed in DoD QSM Table F-3 of ±20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. The recoveries for 4-amino-2,6-dinitrotoluene (68% and 60%) and 2-nitrotoluene (57%) were below the control limit; therefore the results for these analytes, both nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code. The remaining recoveries were within the reasonable control limits of 70-130%.

      The laboratory also ran two DL standards. 3,5-dinitroaniline was not detected in one of the DL standards; therefore, nondetected 3,5-dinitroaniline in the sample was rejected, "R," and coded with a "C" qualification code. All other analytes were detected in the DL standards.
- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in DoD QSM Table F-3 of one-half the LOQ.
- Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 and G-13 and within the reasonable laboratory control limits for nitroglycerin (66-130%) and PETN (65-132%).
- Surrogate Recovery: As no surrogate control limit was listed in the DoD QSM, the surrogate recovery was assessed against the laboratory-established control limits of 50-150%. The recovery was within the control limits.
- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.

- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: As no target compounds were detected in the sample validated at Level IV, compound quantification was verified for a portion of the LCS results. The LOQs were supported by the low point of the initial calibration and the DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

  As no compounds were detected on the primary column, confirmation analysis was not necessary.

  Target compounds 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitrobenzene were reported by both Method 8330B and 8270C in sample 071SB-0017M-0001-SO. As there were no detects for these compounds; the reviewer chose to report the results with the lowest LODs from the 8270C analysis. The 8330B results for all three target compounds were rejected, "R," as duplicate data and coded with a "D" qualification code.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for the initial calibrations and low-level CCVs. All manual integrations were performed in order to report incompletely resolved peaks or to account for baseline anomalies and were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

  - Field Duplicates: One field duplicate sample was collected and analyzed for explosive compounds. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples and was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

9.2.2 Propellants

A total of 12 primary soil samples and 1 field duplicate sample were analyzed by CT for nitroguanidine by USEPA SW-846 Method 8330 and for nitrocellulose by laboratory SOP WS-WC-0050. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- Calibration:
    - The nitroguanidine and nitrocellulose linear regression correlation coefficients were within the control limit listed in the DoD QSM Tables F-2 and F-11 of ≥0.995.
    - The nitroguanidine second source ICV recovery was within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose ICV recovery was within the control limits listed in DoD QSM Table F-11 of 90-110%.
    - The nitroguanidine CCV recoveries were within the control limits listed in DoD QSM Table F-2 of 85-115%. The nitrocellulose CCV recoveries were within the control limits listed in DoD QSM Table F-11 of 90-110%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL recoveries associated with the sample were within the reasonable control limits of 70-130%.
- Blanks: The method blanks had no target compound detects above the control limits listed in DoD QSM Tables F-2 and F-11 of one-half the LOQ.
- Laboratory Control Samples: No nitroguanidine or nitrocellulose LCS control limits are listed in the DoD QSM; therefore, the laboratory control limits were used to assess the results. All nitroguanidine recoveries were within the control limits of 37-134%. The nitrocellulose recoveries were within the laboratory-established control limits of 63-130% for soils.
- Surrogate Recovery: The nitroguanidine surrogate recovery was within the laboratory control limits of 74-134%. A surrogate was not required for the analysis of nitrocellulose.
- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the validated sample. Method accuracy was evaluated based on LCS results.
- Compound Identification: Compound identification was verified for the sample validated at a Level IV. Review of the sample chromatograms and retention times indicated no problems with target compound identification.
- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at a Level IV. The LOQs were supported by the low

point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

Nitroguanidine was not detected in the validated sample; therefore, confirmation analysis was not required.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some manual integrations were performed for nitroguanidine. The manual integrations were performed to correct baseline integration. The manual integrations were deemed acceptable by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicates: One field duplicate sample was collected and analyzed for nitroguanidine and nitrocellulose. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples and Table 3-2 of ≤30% for aqueous samples was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

9.2.3 Polychlorinated Biphenyls (PCBs)

One primary soil sample and one field duplicate sample were analyzed by CT for PCBs by USEPA SW-846 Method 8082. The primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria listed in the DoD QSM Table F-2 were met.

    - Initial calibration average %RSDs were within the control limit of ≤20%.

    - The second source ICV recoveries were within the control limit of ±20% for all applicable Aroclors.

    - The CCV recoveries were within the control limit of ±20%.

  - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%.

- Blanks: The method blank associated with the validated sample had no target compound detects above the control limit listed in the DoD QSM Table F-2, of one-half the LOQ.

- Laboratory Control Samples: Recoveries for Aroclor 1016 and Aroclor 1260 were within the control limits listed in DoD QSM Table G-17.

- Surrogate Recovery: Recoveries were within the control limits listed in DoD QSM Table G-3 of 60-125%.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on validated sample 083SB-0012M-0001-SO. Recoveries were within the control limits listed in DoD QSM Table G-17 and RPDs for both Aroclors were within the control limit listed in the DoD QSM Table F-2 of ≤30%.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the calibration and QC data associated with the sample data, primarily to correct baseline integration and/or separate coeluting peaks. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

  - Field Duplicate Samples: One field duplicate sample was collected and analyzed for PCBs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were

<5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

9.2.4 Semivolatile Organic Compounds (SVOCs)

A total of 12 primary soil samples and 1 field duplicate sample were analyzed by TA-North Canton for SVOCs by USEPA Method 8270C. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.
- GC/MS Tuning: The DFTPP tunes met the method abundance criteria. The samples were analyzed within 12 hours of the DFTPP injection time.
- Calibration: Calibration criteria listed in the DoD QSM Table F-4 were met, with exceptions affecting sample results noted in the text below.
    - Initial calibration average RRFs and ICV and CCV RRFs were within method control limits of ≥0.050 for SPCCs. All initial calibration %RSDs were within the control limits of ≤30% for CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990, with the exception of %RSDs for benzyl alcohol at 15.2%, benzoic acid at 17.7%, and hexachlorocyclopentadiene at 15.5%. Retained results for the %RSD outliers, all nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code.
    - All second source ICV standard recoveries affecting sample data were within the control limit of ±20%.
    - Continuing calibration %Ds affecting sample data were within the control limit of ≤20%.
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries were within the reasonable control limit of ±30%, with the exception of no recoveries of benzyl alcohol in the beginning and closing MRLs, and a recovery of 69% for hexachlorocyclopentadiene in the closing MRL. The nondetected result for benzyl alcohol was rejected, "R," and the result for hexachlorocyclopentadiene was qualified as estimated, "UJ," in sample 083SB-0005M-0001-SO. Both results were coded with a "C" qualification code.
- Blanks: The method blank had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ for target compounds, and no common laboratory contaminants detected above the LOQ.
- Laboratory Control Samples: All LCS recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-7.

- Surrogate Recovery: All surrogate recoveries were within the control limits listed in the DoD QSM Tables G-2 (poor performers) or G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on the validated sample of this SDG. Evaluation of method accuracy was based on the LCS results.

- Internal Standards Performance: The internal standard area counts and retention times were within the DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the sample validated at Level IV. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the sample validated at Level IV. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual Integrations: Some routine manual integrations were performed for the samples, and for calibration and QC data associated with the sample data, primarily due to incorrectly split peaks, or poor baseline integration. All manual integrations reviewed were deemed appropriate by the reviewer.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.

    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for SVOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. Except as noted below, the results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

SVOC field duplicate outliers				
Primary Sample	**Field Duplicate**	**Analyte**	**RPD**	**W/In LOQ**
083SB-0005M-0001-SD	083SB-0006M-0001-SD	Anthracene	N/A	No
		Benzo(a)anthracene	N/A	No
		Benzo(a)pyrene	N/A	No
		Benzo(b)fluoranthene	N/A	No
		Benzo(g,h,i)perylene	N/A	No
		Fluoranthene	N/A	No
		Indeno(1,2,3-cd)pyrene	N/A	No
		Pyrene	N/A	No

9.2.5 Volatile Organic Compounds (VOCs)

A total of 12 primary soil samples and 1 field duplicate sample were analyzed by CT for volatile compounds by USEPA Method 8260B. Two primary soil samples were validated at Level IV.

- MDL studies were not evaluated as part of this project.
- GC/MS Tuning: The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.
- Calibration: Calibration criteria listed in DoD QSM Table F-4 were met, with the exception noted below.
    - Initial calibration average RRFs and ICV and CCV RRFs were within the control limits of ≥0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, and ≥0.10 for chloromethane, bromoform, and 1,1-dichloroethane.
    - All initial calibration %RSDs were within the method control limits of ≤30% for the CCCs and ≤15% for remaining compounds, or linear regression r^2 values ≥0.990.
    - All second source initial calibration verification standard recoveries were within the control limit of ±20%.
    - Continuing calibration %Ds affecting validated sample data were within the control limit of ≤20%
    - Although not required by the DoD QSM, a standard of 3× the DL is required by the FWQAPP. MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%, with the exception of the recovery of 65% for chloroethane in the closing MRL standard. The nondetected result for chloroethane in sample 083SB-0005M-0001-SO was qualified as estimated, "UJ," and coded with a "C" qualification code.
- Blanks: The method blank associated with the validated sample had no target compound detects above the control limits listed in DoD QSM Table F-4 of one-half the LOQ, and no common laboratory contaminants detected above the LOQ. Methylene chloride was detected in the method blank at 5.7(J) µg/L. The methylene chloride result for sample

083SB-0005M-0001-SO, 6.0(J) µg/L, which was above the LOD, was qualified as a nondetect, at the level of contamination.

- Laboratory Control Samples: LCS recoveries affecting sample results were within the control limits listed in DoD QSM Table G-4.

- Surrogate Recovery: Surrogate recoveries affecting sample data were within the control limits listed in DoD QSM Table G-3.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on the validated sample of this SDG.

- Internal Standards Performance: The internal standard area counts and retention times were within DoD QSM Table F-4 control limits established by the midpoint initial calibration standard: ±30 seconds for retention times and -50% / +100% for internal standard areas.

- Compound Identification: Compound identification was verified for the validated sample. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

  The laboratory reported isomers o-xylene and m,p-xylenes as well as total xylenes. The isomers o-xylene and m,p-xylenes were rejected, "R," as duplicate data. The result for total xylenes was retained to maintain consistency with data reported from other laboratories.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated sample. The LOQs were supported by the low point of the initial calibration and the laboratory DLs. Any result reported between the DL and the LOQ was qualified as estimated, "J," by the laboratory. Reported nondetects are valid to the LOD.

- System Performance: Review of the raw data indicated no problems with system performance.

- Manual integrations: Manual integrations were not performed for the validated sample or for associated calibration and QC samples.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Trip Blanks: The trip blanks associated with the validated samples in this SDG had no reportable detects above the DL.

- Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated samples.

- Field Duplicate Samples: One field duplicate sample was collected and analyzed for VOCs. The RPD criterion in FWQAPP Table 3-1 of ≤50% was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

9.2.6 Metals

A total of 12 primary soil samples and 1 field duplicate sample were analyzed by CT for various metals by USEPA Methods 6010C and 7471B. A single primary soil sample was validated at Level IV.

- MDL studies were not evaluated as part of this project.

- Calibration: Calibration criteria were met.

  - Initial calibration: Linear regression r values were within the control limit listed in the DoD QSM Table F-7 of ≥0.995.

  - The ICP ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110%. The mercury ICV and CCV recoveries were within the control limits listed in DoD QSM Table F-7 of 90-110% and 80-120%, respectively.

  - CRI/MRL recoveries affecting sample results were within the control limits listed in DoD QSM Table F-7 of 80-120%. When sample results exceeded more than 10× the LOQ, it was the reviewer's professional opinion the CCV results were more indicative of instrument performance; therefore, qualifications were not applied based on MRL results for these analytes.

- Blanks: Thallium was detected in the method blank associated with sample 083SB-0005M-0001-SO at 0.30 µg/L; therefore, thallium detected in the sample was qualified as nondetected, "U," at the LOD. Method blanks had no other applicable detects above the control limits listed in DoD QSM Table F-7 of one-half the LOQ or greater than one-tenth the amount measured in any sample. CCBs had no detects above the control limit listed in DoD QSM Table F-7 of greater than the LOD.

- Interference Check Samples: ICP ICSA and ICSAB recoveries were within the control limits listed in DoD QSM Table F-7 of 80-120%. There were no analytes affecting sample results detected in the ICSA above the control limit listed in DoD QSM Table F-7 of >LOD.

- Laboratory Control Samples: All recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%.

- Laboratory Duplicates: Laboratory duplicate analyses were performed on 083SB-0004M-0001-SO for all analytes. The results were only assessed for common detects ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. The RPDs were within the control limit listed in DoD QSM Table F-7 of ≤20% or the results were within ±LOQ.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on sample 083SB-0004M-0001-SO. Except as noted below, recoveries were within the control limits listed in DoD QSM Table G-19 of 80-120%. Matrix spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more.

  Results listed in the table below, all detects, were qualified as estimated, "J," and coded with a "Q" qualification code. When no other qualifications with conflicting bias were assigned to a result, detected results with low recoveries were assigned a negative bias, "J-," and detected results with high recoveries were assigned a positive bias, "J+." Nondetects with low recoveries were qualified as estimated, "UJ."

Samples qualified for matrix spike recovery outliers				
Parent Sample	**Analyte**	**%R**	**RPD**	**Qualified sample**
083SB-0004M-0001-SO	Arsenic	72%, 65%	acceptable	083SB-0005M-0001-SO
	Barium	74%, 56%	27%	
	Beryllium	75%, 64%	acceptable	
	Chromium	64%, 47%	31%	
	Cobalt	68%, 59%	acceptable	
	Copper	77%, 65%	acceptable	
	Lead	61%, 55%	acceptable	
	Magnesium	78%, 54%	36%	
	Nickel	71%, 57%	22%	
	Vanadium	66%, 57%	acceptable	
	Zinc	73%, 56%	26%	
	Antimony	27%, 5%	137%	
	Selenium	400%, 79%	134%	
	Silver	431%, acceptable	134%	
	Cadmium	62%, 59%	acceptable	
	Thallium	68%, 53%	25%	
	Mercury	123%, acceptable	acceptable	

The laboratory calculated RPDs based on the recovery amounts and the spike amounts were different. Recovery outliers listed in the table above were calculated based on recoveries. The qualified results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The qualified results were coded with an "*III" qualification code.

- Post Digestion Spike: Except as noted below, recoveries were within the control limits listed in DoD QSM Table F-7 of 75-125%. Spike control limits were not applied when the native sample concentration exceeded the spiked amount by a factor of four or more.

  When no other qualifications with conflicting bias were assigned to a result, detected results with low recoveries were assigned a negative bias, "J-," and detected results with high recoveries were assigned a positive bias, "J+." Nondetects with low recoveries were qualified as estimated, "UJ." All qualified results were coded with a "P" qualification code.

Samples qualified for post digestion spike recovery outliers			
Parent Sample	**Analyte**	**%R**	**Qualified sample**
083SB-0004M-0001-SO	Barium	66%	083SB-0005M-0001-SO
	Beryllium	71%	
	Calcium	0%	
	Chromium	55%	
	Cobalt	70%	
	Lead	64%	
	Magnesium	0%	
	Nickel	72%	
	Vanadium	67%	
	Zinc	68%	
	Cadmium	68%	
	Thallium	61%	

- Serial Dilution: A serial dilution analysis was performed on 083SB-0004M-0001-SO. Except as noted below, serial dilution %Ds were within the control limits listed in DoD QSM Table F-7 of ≤10%. The serial dilution control limit is only applicable when the original sample concentration is minimally ≥50× the LOQ.

  Results listed in the table below were qualified as estimated, "J." The qualified results were coded with an "A" qualification code.

Samples qualified for serial dilution %D outliers			
Parent Sample	**Analyte**	**%Ds**	**Qualified Sample**
083SB-0004M-0001-SO	Barium	13%	083SB-0005M-0001-SO
	Magnesium	40%	

- Sample Result Verification: For Level IV validation, calculations were verified and the sample results reported on the sample result summary were verified against the raw data. All analytes except mercury, potassium, sodium, antimony, selenium, and silver were reported from 5× dilutions. Any result reported between the DL and the LOQ was qualified as estimated, "J." Reported nondetects are valid to the LOD.

Due to instrument limitations, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

During verification of raw sample concentrations, the reviewer noted that selenium and silver were detected in 083SB-0005M-0001-SO at -9.18 and -4.60 µg/L, respectively. Because the absolute value of these concentrations would result in detects greater than the LOD, the LOD was raised to the respective concentrations: 0.24 mg/kg for selenium and 0.12 mg/kg for silver. These analytes were qualified as estimated, "UJ," and coded with a "$" qualification code.

- Manual Integrations: No manual integrations were noted in the mercury analyses.
- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:
    - Field Blanks and Equipment Rinsates: No field blank or equipment rinsate samples were associated with the validated sample.
    - Field Duplicate Samples: One field duplicate sample was collected and analyzed for metals. The RPD criterion in FWQAPP Table 3-1 of ≤50% for soil samples was only applied when results for common detects were ≥5× the LOQ. In cases where results were <5× the LOQ, the reasonable control limit of ± the LOQ was applied. All results were within the control limits. See Appendix C for a complete comparison of all primary and field duplicate results.

9.3 Data Usability

According to the Draft Site Inspection Report prepared by ECC, the field completeness was 100%.

Two data points were rejected for poor calibration check standard recoveries. In instances where a data point had multiple results, the reviewer chose the most technically sound result to report and rejected the remaining data points. These data points do not affect data quality or usability and are not included in the table below. Data with LODs that exceeded the established criteria and data estimated for quality control outliers or for detects between the DL and the LOQ were included in the table below for informational purposes only.

Table 36. Analytical completeness for RVAAP-83 validated primary data

			Number of Results					
Analysis	**Samples Analyzed**	**Analytes per Sample**	**Total**	**Rejected**	**LODs/DLs Exceeding Criteria**	**Estimated for QC Outliers**	**Estimated for Detects <LOQ**	**Percent Complete**
Explosives*	1	17	14	1	0/0	2	0	92.8%
Nitroguanidine	1	1	1	0	0/0	0	0	100%
Nitrocellulose	1	1	1	0	0/0	0	0	100%
PCBs	1	9	9	0	0/0	0	0	100%
SVOCs	1	65	65	1	1/0	2	3	98.5%
VOCs	1	43	41	0	0/0	2	0	100%
Metals	1	23	23	0	0/0	18	2	100%
		Totals	**140**	**1**	**1/0**	**22**	**5**	**99.3%**

*Total analyte counts affected by rejected data.

The analytical completeness goal for the project established in the FWQAPP was 90% for each method. The completeness goal was met for all analyses.

9.4 Primary and Field Duplicate Comparison Summary

Primary and field duplicate sample comparisons were considered to be in reasonable agreement as only 5% of the field duplicate pair results were above the FWQAPP control limit of 50% for soils or +/- the LOQ for results below 5× the LOQ. The outliers were all SVOCs. All field duplicate comparison results are presented in Appendix C.

Table 37. RVAAP-83 primary/field duplicate sample comparison summary

Method	**Primary/Field Duplicate Pairs**	**Number of Analytes**	**Total Analytes**	**Results within control limits**	**Results above control limit**
Explosives*	1	17	13	13	0
Nitroguanidine	1	1	1	1	0
Nitrocellulose	1	1	1	1	0
SVOCs	1	65	64	56	8
VOCs	1	37	37	37	0
Metals	1	23	23	23	0

*Total analyte counts affected by rejected data.

9.5 Specific Data Concerns

Specific concerns regarding the data are noted below:

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data.

Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends the laboratory be requested to alter the IPC-MS and mercury instrument set up in order to report mercury and ICP-MS raw absorbances and ICP-MS ICV, CCV, ICSAB, and MRL concentrations.

10 CONCLUSIONS

10.1 Data Qualification Summary

A summary of the qualifications applied to the data can be found in Appendix B.

10.2 Primary and Field Duplicate Summary

Site-specific comparison summaries can be found in Sections 4 through 9. A summary of the results can be found in Appendix C.

10.3 Data Usability

Site-specific data usability summaries can be found in Sections 4 through 9.

11 RECOMMENDATIONS

Specific concerns regarding the data are noted below:

- Hexavalent chromium was reported utilizing the method of standard additions (MSA), which is recommended for matrices expected to have interference. Results from MSA are best when the MSA linear regression slope is nearly equivalent to the initial calibration slope; however the slopes for most site samples were more than a factor of 10 less than the initial calibration slope, indicating a nominal change in absorbance is observed in the MSA analyses for a relatively significant change in concentration.

- Due to instrument limitations, the mercury raw data did not list the sample absorbances; therefore, the reviewer was not able to calculate the sample results from the raw data. Additionally, the ICP-MS raw data did not list absorbances for the ICV, CCV, ICSAB, and MRL samples, and the %R was listed instead of the sample concentrations.

In order to avoid repetition of the issues noted above, the following actions should be taken:

- MEC^X recommends requesting the laboratory, TA-North Canton, to analyze one MRL standard and one matrix spike by MSA in order to confirm the laboratory's accuracy in reporting hexavalent chromium by MSA.

- MEC^X recommends the laboratory be requested to alter the IPC-MS and mercury instrument set up in order to report mercury and ICP-MS raw absorbances and ICP-MS ICV, CCV, ICSAB, and MRL concentrations.

12 REFERENCES

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Final Site Inspection and Remedial Investigation Work Plan at Compliance Restoration Sites, CC. October 2012

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APPENDIX A

Qualified Sample Result Forms

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient was noncompliant.
R	Calibration RRF was noncompliant.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Control Sample/Control Sample Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tuning was noncompliant
T	Presumed contamination as indicated by the trip blank results.	Not applicable
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
*II, *III	A deficiency was found that has been described in the "Sample Management," section (*II) or the "Method Analyses" section (*III).	A deficiency was found that has been described in the "Sample Management," section (*II) or the "Method Analyses" section (*III).

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-70 East Classification Yard

Sample Delivery Group: 240-17230-1

Analysis Method E353.2

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
Nitrocellulose	9004-70-0	1	5	1.8	0.78	mg/kg	J	J	

Sample Delivery Group: 240-17230-1

Analysis Method SW6020

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
Aluminum	7429-90-5	9800	9.3	3.7	2.3	mg/kg	J	J	
Antimony	7440-36-0	1.5	0.19	0.14	0.057	mg/kg	J	J-	Q
Arsenic	7440-38-2	18	0.46	0.14	0.048	mg/kg			
Barium	7440-39-3	71	0.46	0.28	0.12	mg/kg			
Beryllium	7440-41-7	0.75	0.093	0.009	0.0032	mg/kg			
Cadmium	7440-43-9	0.46	0.19	0.009	0.0029	mg/kg		J	E
Calcium	7440-70-2	7000	190	93	37	mg/kg	J	J	
Chromium	7440-47-3	35	0.46	0.42	0.15	mg/kg		J-	E, Q
Cobalt	7440-48-4	8.6	0.093	0.014	0.0042	mg/kg			
Copper	7440-50-8	23	0.37	0.28	0.1	mg/kg		J-	A
Iron	7439-89-6	23000	46	28	10	mg/kg	J	J	
Lead	7439-92-1	62	0.28	0.19	0.065	mg/kg		J	A, E
Magnesium	7439-95-4	2800	93	23	8.2	mg/kg			
Manganese	7439-96-5	520	2.3	1.9	0.74	mg/kg	D,J	J	
Nickel	7440-02-0	30	0.46	0.23	0.08	mg/kg		J	A
Potassium	7440-09-7	940	93	9.3	3.5	mg/kg	J	J+	Q
Selenium	7782-49-2	0.99	0.46	0.056	0.019	mg/kg		J-	Q, M
Silver	7440-22-4	0.034	0.093	0.046	0.015	mg/kg	J	J	
Sodium	7440-23-5	55	93	37	13	mg/kg	J	U	F
Thallium	7440-28-0	0.24	0.19	0.14	0.052	mg/kg			
Vanadium	7440-62-2	16	0.46	0.093	0.04	mg/kg	J	J+	Q
Zinc	7440-66-6	110	3.7	1.9	0.93	mg/kg			

Analysis Method SW7471

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.05	0.091	0.03	0.013	mg/kg	J	J	

Sample Delivery Group: 240-17230-1

Analysis Method SW8015

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20		23	17	9.3	9.3	mg/kg			
C20-C34		110	17	9.3	9.3	mg/kg	M		

Analysis Method SW8082

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
Aroclor-1016	12674-11-2	100	320	120	100	ug/kg	U,J	U	
Aroclor-1221	11104-28-2	80	250	120	80	ug/kg	U	U	
Aroclor-1232	11141-16-5	70	220	120	70	ug/kg	U	U	
Aroclor-1242	53469-21-9	380	200	120	65	ug/kg	D	J	Q, *III
Aroclor-1248	12672-29-6	85	270	120	85	ug/kg	U	U	
Aroclor-1254	11097-69-1	85	270	120	85	ug/kg	U	U	
Aroclor-1260	11096-82-5	85	270	120	85	ug/kg	U	U	

Sample Delivery Group: 240-17230-1

Analysis Method SW8151

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
2,4,5-T		3.7	20	8.3	3.7	ug/kg	U	U	
2,4-D		19	80	33	19	ug/kg	U	U	
2,4-DB		21	80	33	21	ug/kg	U	U	
Dalapon		7.8	40	17	7.8	ug/kg	U	U	
Dicamba		8.1	40	17	8.1	ug/kg	U,J	UJ	Q
Dichlorprop		37	80	67	37	ug/kg	U,J	UJ	Q
Dinoseb		10	12	10	10	ug/kg	U	U	
MCPA		1600	8000	3300	1600	ug/kg	U	UJ	C
MCPP		1500	8000	3300	1500	ug/kg	U	UJ	C
Pentachlorophenol		4.3	10	8.3	4.3	ug/kg	U	U	
Silvex (2,4,5-TP)		4.1	20	8.3	4.1	ug/kg	U,J	U	

Sample Delivery Group: 240-17230-1

Analysis Method SW8260

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-Trichloroethane	71-55-6	0.97	8.7	1.7	0.97	ug/kg	U	UJ	S
1,1,2,2-Tetrachloroethane	79-34-5	0.59	8.7	0.87	0.59	ug/kg	U,J	UJ	S
1,1,2-Trichloroethane	79-00-5	0.68	8.7	0.87	0.68	ug/kg	U,J	UJ	S
1,1-Dichloroethane	75-34-3	0.62	8.7	0.87	0.62	ug/kg	U	UJ	S
1,1-Dichloroethene	75-35-4	0.9	8.7	1.7	0.9	ug/kg	U	UJ	S
1,2-Dibromoethane	106-93-4	0.87	8.7	1.7	0.87	ug/kg	U,J	UJ	S
1,2-Dichloroethane	107-06-2	0.59	8.7	0.87	0.59	ug/kg	U	UJ	S
1,2-Dichloroethene, Total	540-59-0	1.3	17	1.7	1.3	ug/kg	U	UJ	S
1,2-Dichloropropane	78-87-5	1.2	8.7	1.7	1.2	ug/kg	U	UJ	S
2-Butanone (MEK)	78-93-3	2.4	35	3.5	2.4	ug/kg	U	UJ	S
2-Hexanone	591-78-6	1.1	35	1.7	1.1	ug/kg	U,J	UJ	S
4-Methyl-2-pentanone (MIBK)	108-10-1	0.94	35	1.7	0.94	ug/kg	U	UJ	S
Acetone	67-64-1	11	35	11	11	ug/kg	U	UJ	C, S
Benzene	71-43-2	0.4	8.7	0.87	0.4	ug/kg	U	UJ	S
Bromochloromethane	74-97-5	1.2	8.7	1.7	1.2	ug/kg	U	UJ	S
Bromodichloromethane	75-27-4	0.49	8.7	0.87	0.49	ug/kg	U,J	UJ	S
Bromoform	75-25-2	0.57	8.7	0.87	0.57	ug/kg	U,J	UJ	S
Bromomethane	74-83-9	0.94	8.7	1.7	0.94	ug/kg	U	UJ	S
Carbon disulfide	75-15-0	0.76	8.7	0.87	0.76	ug/kg	U	UJ	S
Carbon tetrachloride	56-23-5	0.64	8.7	0.87	0.64	ug/kg	U	UJ	S
Chlorobenzene	108-90-7	0.57	8.7	0.87	0.57	ug/kg	U,J	UJ	S
Chloroethane	75-00-3	1.5	8.7	1.7	1.5	ug/kg	U	UJ	S
Chloroform	67-66-3	0.5	8.7	0.87	0.5	ug/kg	U	UJ	S
Chloromethane	74-87-3	0.71	8.7	0.87	0.71	ug/kg	U	UJ	S
cis-1,3-Dichloropropene	10061-01-5	0.59	8.7	0.87	0.59	ug/kg	U	UJ	S
Dibromochloromethane	124-48-1	0.95	8.7	1.7	0.95	ug/kg	U,J	UJ	S
Ethylbenzene	100-41-4	0.45	8.7	0.87	0.45	ug/kg	U,J	UJ	S
Methyl tert-butyl ether	1634-04-4	0.75	8.7	0.87	0.75	ug/kg	U	UJ	S

Sample Delivery Group: 240-17230-1

Methylene Chloride	75-09-2	1.2	8.7	1.7	1.2	ug/kg	U,J	UJ	S
Styrene	100-42-5	0.26	8.7	0.87	0.26	ug/kg	U,J	UJ	S
Tetrachloroethene	127-18-4	0.9	8.7	1.7	0.9	ug/kg	U,J	UJ	S
Toluene	108-88-3	0.47	8.7	0.87	0.47	ug/kg	U,J	UJ	S
trans-1,3-Dichloropropene	10061-02-6	0.94	8.7	1.7	0.94	ug/kg	U,J	UJ	S
Trichloroethene	79-01-6	0.73	8.7	0.87	0.73	ug/kg	U	UJ	S
Vinyl chloride	75-01-4	0.68	8.7	0.87	0.68	ug/kg	U	UJ	S
Xylenes, Total		1.2	17	2.6	1.2	ug/kg	U,J	UJ	S

Sample Delivery Group: 240-17230-1

Analysis Method SW8270

Sample Name 070SS-0003M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-Trichlorobenzene	120-82-1	270	510	270	270	ug/kg	U	U	
1,2-Dichlorobenzene	95-50-1	98	510	270	98	ug/kg	U	U	
1,3-Dichlorobenzene	541-73-1	110	510	270	110	ug/kg	U	U	
1,4-Dichlorobenzene	106-46-7	200	510	270	200	ug/kg	U	U	
2,4,5-Trichlorophenol	95-95-4	250	1500	270	250	ug/kg	U	U	
2,4,6-Trichlorophenol	88-06-2	810	1500	810	810	ug/kg	U	U	
2,4-Dichlorophenol	120-83-2	200	1500	270	200	ug/kg	U	U	
2,4-Dimethylphenol	105-67-9	200	1500	810	200	ug/kg	U	U	
2,4-Dinitrophenol	51-28-5	810	3300	810	810	ug/kg	U	UJ	C
2,4-Dinitrotoluene	121-14-2	270	2000	270	270	ug/kg	U	U	
2,6-Dinitrotoluene	606-20-2	210	2000	270	210	ug/kg	U	U	
2-Chloronaphthalene	91-58-7	33	510	33	33	ug/kg	U	U	
2-Chlorophenol	95-57-8	270	510	270	270	ug/kg	U	U	
2-Methylnaphthalene	91-57-6	540	67	33	33	ug/kg	D		
2-Methylphenol	95-48-7	810	2000	810	810	ug/kg	U	U	
2-Nitroaniline	88-74-4	92	2000	270	92	ug/kg	U	U	
2-Nitrophenol	88-75-5	270	510	270	270	ug/kg	U	U	
3 & 4 Methylphenol		200	4000	810	200	ug/kg	U	U	
3,3'-Dichlorobenzidine	91-94-1	180	1000	810	180	ug/kg	U	UJ	C
3-Nitroaniline	99-09-2	160	2000	810	160	ug/kg	U	U	
4,6-Dinitro-2-methylphenol	534-52-1	810	1500	810	810	ug/kg	U	UJ	C
4-Bromophenyl phenyl ether	101-55-3	130	510	270	130	ug/kg	U	U	
4-Chloro-3-methylphenol	59-50-7	210	1500	270	210	ug/kg	U	U	
4-Chloroaniline	106-47-8	170	1500	270	170	ug/kg	U	U	
4-Chlorophenyl phenyl ether	7005-72-3	130	510	270	130	ug/kg	U	U	
4-Nitroaniline	100-01-6	260	2000	270	260	ug/kg	U	U	
4-Nitrophenol	100-02-7	810	3300	810	810	ug/kg	U	U	
Acenaphthene	83-32-9	550	67	33	33	ug/kg	D		

Acenaphthylene	208-96-8	47	67	33	33	ug/kg	J,D	J
Anthracene	120-12-7	2500	67	33	33	ug/kg	D	
Benzo[a]anthracene	56-55-3	3200	67	33	33	ug/kg	D	
Benzo[a]pyrene	50-32-8	1900	67	33	33	ug/kg	D	
Benzo[b]fluoranthene	205-99-2	3100	67	33	33	ug/kg	D,M	
Benzo[g,h,i]perylene	191-24-2	1100	67	33	33	ug/kg	D	
Benzo[k]fluoranthene	207-08-9	980	67	33	33	ug/kg	D,M	
Benzoic acid	65-85-0	3400	6700	3400	3400	ug/kg	U	U
Benzyl alcohol	100-51-6	210	3300	270	210	ug/kg	U	U
bis (2-chloroisopropyl) ether	108-60-1	96	1000	270	96	ug/kg	U	U
Bis(2-chloroethoxy)methane	111-91-1	220	1000	270	220	ug/kg	U	U
Bis(2-chloroethyl)ether	111-44-4	20	1000	33	20	ug/kg	U	U
Bis(2-ethylhexyl) phthalate	117-81-7	190	510	270	190	ug/kg	U	U
Butyl benzyl phthalate	85-68-7	100	510	270	100	ug/kg	U	U
Carbazole	86-74-8	340	510	270	270	ug/kg	J,D	J
Chrysene	218-01-9	3300	67	33	11	ug/kg	D	
Dibenz(a,h)anthracene	53-70-3	33	67	33	33	ug/kg	U	U
Dibenzofuran	132-64-9	420	510	33	33	ug/kg	J,D	J
Diethyl phthalate	84-66-2	160	510	270	160	ug/kg	U	U
Dimethyl phthalate	131-11-3	170	510	270	170	ug/kg	U	U
Di-n-butyl phthalate	84-74-2	150	510	270	150	ug/kg	U	U
Di-n-octyl phthalate	117-84-0	270	510	270	270	ug/kg	U	U
Fluoranthene	206-44-0	8400	67	33	33	ug/kg	D	
Fluorene	86-73-7	710	67	33	33	ug/kg	D	
Hexachlorobenzene	118-74-1	21	67	33	21	ug/kg	U	U
Hexachlorobutadiene	87-68-3	270	510	270	270	ug/kg	U	U
Hexachlorocyclopentadiene	77-47-4	270	3300	270	270	ug/kg	U	U
Hexachloroethane	67-72-1	91	510	270	91	ug/kg	U	U
Indeno[1,2,3-cd]pyrene	193-39-5	1000	67	33	33	ug/kg	D	
Isophorone	78-59-1	130	510	270	130	ug/kg	U	U
Naphthalene	91-20-3	480	67	33	33	ug/kg	D	
Nitrobenzene	98-95-3	22	1000	33	22	ug/kg	U	U
N-Nitrosodi-n-propylamine	621-64-7	270	510	270	270	ug/kg	U	U

N-Nitrosodiphenylamine	86-30-6	210	510	270	210	ug/kg	U	U	
Pentachlorophenol	87-86-5	810	1500	810	810	ug/kg	U	U	
Phenanthrene	85-01-8	5900	67	33	33	ug/kg	D		
Phenol	108-95-2	270	510	270	270	ug/kg	U	U	
Pyrene	129-00-0	5700	67	33	33	ug/kg	D		

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-Trichlorobenzene	120-82-1	130	250	130	130	ug/kg	U	U	
1,2-Dichlorobenzene	95-50-1	48	250	130	48	ug/kg	U	U	
1,3-Dichlorobenzene	541-73-1	54	250	130	54	ug/kg	U	U	
1,4-Dichlorobenzene	106-46-7	99	250	130	99	ug/kg	U	U	
2,4,5-Trichlorophenol	95-95-4	120	740	130	120	ug/kg	U	U	
2,4,6-Trichlorophenol	88-06-2	390	740	390	390	ug/kg	U	U	
2,4-Dichlorophenol	120-83-2	99	740	130	99	ug/kg	U	U	
2,4-Dimethylphenol	105-67-9	99	740	390	99	ug/kg	U	U	
2,4-Dinitrophenol	51-28-5	390	1600	390	390	ug/kg	U	UJ	C
2,4-Dinitrotoluene	121-14-2	130	990	130	130	ug/kg	U	R	D
2,6-Dinitrotoluene	606-20-2	100	990	130	100	ug/kg	U	R	D
2-Chloronaphthalene	91-58-7	16	250	16	16	ug/kg	U	U	
2-Chlorophenol	95-57-8	130	250	130	130	ug/kg	U	U	
2-Methylnaphthalene	91-57-6	280	33	16	16	ug/kg	D		
2-Methylphenol	95-48-7	390	990	390	390	ug/kg	U	U	
2-Nitroaniline	88-74-4	45	990	130	45	ug/kg	U	U	
2-Nitrophenol	88-75-5	130	250	130	130	ug/kg	U	U	
3 & 4 Methylphenol		99	2000	390	99	ug/kg	U	U	
3,3'-Dichlorobenzidine	91-94-1	89	490	390	89	ug/kg	U,J	R	Q
3-Nitroaniline	99-09-2	79	990	390	79	ug/kg	U,J	UJ	Q
4,6-Dinitro-2-methylphenol	534-52-1	390	740	390	390	ug/kg	U,J	UJ	C, Q
4-Bromophenyl phenyl ether	101-55-3	64	250	130	64	ug/kg	U	U	
4-Chloro-3-methylphenol	59-50-7	100	740	130	100	ug/kg	U	U	
4-Chloroaniline	106-47-8	84	740	130	84	ug/kg	U,J	R	Q

Sample Delivery Group: 240-17230-1

4-Chlorophenyl phenyl ether	7005-72-3	64	250	130	64	ug/kg	U	U	
4-Nitroaniline	100-01-6	130	990	130	130	ug/kg	U,J	UJ	Q
4-Nitrophenol	100-02-7	390	1600	390	390	ug/kg	U	U	
Acenaphthene	83-32-9	40	33	16	16	ug/kg	D		
Acenaphthylene	208-96-8	16	33	16	16	ug/kg	U	U	
Anthracene	120-12-7	79	33	16	16	ug/kg	D		
Benzo[a]anthracene	56-55-3	160	33	16	16	ug/kg	D		
Benzo[a]pyrene	50-32-8	130	33	16	16	ug/kg	D		
Benzo[b]fluoranthene	205-99-2	200	33	16	16	ug/kg	D,M		
Benzo[g,h,i]perylene	191-24-2	130	33	16	16	ug/kg	D,M		
Benzo[k]fluoranthene	207-08-9	91	33	16	16	ug/kg	D,M		
Benzoic acid	65-85-0	1600	3300	1600	1600	ug/kg	U	U	
Benzyl alcohol	100-51-6	100	1600	130	100	ug/kg	U	U	
bis (2-chloroisopropyl) ether	108-60-1	47	490	130	47	ug/kg	U	U	
Bis(2-chloroethoxy)methane	111-91-1	110	490	130	110	ug/kg	U	U	
Bis(2-chloroethyl)ether	111-44-4	9.9	490	16	9.9	ug/kg	U	U	
Bis(2-ethylhexyl) phthalate	117-81-7	94	250	130	94	ug/kg	U	U	
Butyl benzyl phthalate	85-68-7	49	250	130	49	ug/kg	U	U	
Carbazole	86-74-8	130	250	130	130	ug/kg	U	U	
Chrysene	218-01-9	200	33	16	5.4	ug/kg	D		
Dibenz(a,h)anthracene	53-70-3	16	33	16	16	ug/kg	U	U	
Dibenzofuran	132-64-9	88	250	16	16	ug/kg	J,D	J	
Diethyl phthalate	84-66-2	79	250	130	79	ug/kg	U	U	
Dimethyl phthalate	131-11-3	84	250	130	84	ug/kg	U	U	
Di-n-butyl phthalate	84-74-2	74	250	130	74	ug/kg	U	U	
Di-n-octyl phthalate	117-84-0	130	250	130	130	ug/kg	U	U	
Fluoranthene	206-44-0	370	33	16	16	ug/kg	J,D	J	
Fluorene	86-73-7	38	33	16	16	ug/kg	D		
Hexachlorobenzene	118-74-1	10	33	16	10	ug/kg	U	U	
Hexachlorobutadiene	87-68-3	130	250	130	130	ug/kg	U	U	
Hexachlorocyclopentadiene	77-47-4	130	1600	130	130	ug/kg	U	U	
Hexachloroethane	67-72-1	44	250	130	44	ug/kg	U	U	
Indeno[1,2,3-cd]pyrene	193-39-5	90	33	16	16	ug/kg	D		

Sample Delivery Group: 240-17230-1

Isophorone	78-59-1	64	250	130	64	ug/kg	U	U	
Naphthalene	91-20-3	220	33	16	16	ug/kg	D		
Nitrobenzene	98-95-3	11	490	16	11	ug/kg	U	U	
N-Nitrosodi-n-propylamine	621-64-7	130	250	130	130	ug/kg	U	U	
N-Nitrosodiphenylamine	86-30-6	100	250	130	100	ug/kg	U	U	
Pentachlorophenol	87-86-5	390	740	390	390	ug/kg	U	R	D
Phenanthrene	85-01-8	420	33	16	16	ug/kg	J,D	J	
Phenol	108-95-2	130	250	130	130	ug/kg	U	U	
Pyrene	129-00-0	280	33	16	16	ug/kg	D		

Analysis Method SW8330

Sample Name 070SS-0006M-0001-SO **AnalysisType:**

Lab Sample Name: 240-17230-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-Trinitrobenzene	99-35-4	0.01	0.25	0.05	0.01	mg/kg	U	U	
1,3-Dinitrobenzene	99-65-0	0.0042	0.25	0.05	0.0042	mg/kg	U	U	
2,4,6-Trinitrotoluene	118-96-7	0.019	0.25	0.05	0.019	mg/kg	U	U	
2,4-Dinitrotoluene	121-14-2	0.0053	0.25	0.05	0.0053	mg/kg	U	U	
2,6-Dinitrotoluene	606-20-2	0.0073	0.25	0.05	0.0073	mg/kg	U	U	
2-Amino-4,6-dinitrotoluene	35572-78-2	0.012	0.25	0.05	0.012	mg/kg	U	U	
2-Nitrotoluene	88-72-2	0.013	0.25	0.05	0.013	mg/kg	U	UJ	C
3-Nitrotoluene	99-08-1	0.015	0.25	0.05	0.015	mg/kg	U	U	
4-Amino-2,6-dinitrotoluene	35572-78-2	0.01	0.25	0.05	0.01	mg/kg	U,J	U	
4-Nitrotoluene	99-99-0	0.018	0.25	0.05	0.018	mg/kg	U	U	
HMX	2691-41-0	0.012	0.25	0.05	0.012	mg/kg	U	U	
Nitrobenzene	98-95-3	0.018	0.25	0.05	0.018	mg/kg	U	R	D
Nitroglycerin	55-63-0	0.015	0.5	0.25	0.015	mg/kg	U	UJ	Q
Nitroguanidine	556-88-7	0.019	0.24	0.039	0.019	mg/kg	U	U	
PETN	78-11-5	0.025	0.5	0.25	0.025	mg/kg	U	U	
RDX	121-82-4	0.012	0.25	0.05	0.012	mg/kg	U	UJ	C
Tetryl	479-45-8	0.01	0.25	0.05	0.01	mg/kg	U	U	

Sample Delivery Group: 240-17317-1

Analysis Method M8015V

Sample Name 070SS-0006M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17317-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		58.0	92	46	42	UG/KG	J	J	C, Q

Sample Delivery Group: 240-18581-1

Analysis Method M8015D

Sample Name 070SB-0042M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C20-C34 PETROLEUM HYDROCA		430.0	210	110	110	MG/KG	D M		
PHCC10C20		370.0	210	110	110	MG/KG	D		

Sample Delivery Group: 240-18581-1

Analysis Method SW6020

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	10000.0	2.9	0.59	0.28	MG/KG			
ANTIMONY	7440-36-0	0.098	0.20	0.098	0.045	MG/KG	U	U	
ARSENIC	7440-38-2	7.7	0.098	0.049	0.018	MG/KG			
BARIUM	7440-39-3	64.0	0.98	0.020	0.010	MG/KG	Q	J	M
BERYLLIUM	7440-41-7	0.68	0.098	0.009	0.0074	MG/KG			
CADMIUM	7440-43-9	0.19	0.098	0.029	0.013	MG/KG			
CALCIUM	7440-70-2	7000.0	9.8	2.5	1.3	MG/KG			
CHROMIUM	7440-47-3	14.0	0.20	0.039	0.022	MG/KG			
COBALT	7440-48-4	8.2	0.049	0.009	0.0024	MG/KG	Q		
COPPER	7440-50-8	15.0	0.20	0.059	0.032	MG/KG	Q		
IRON	7439-89-6	20000.0	4.9	2.0	1.1	MG/KG	B		
LEAD	7439-92-1	12.0	0.098	0.029	0.015	MG/KG			
MAGNESIUM	7439-95-4	3400.0	9.8	2.0	1.1	MG/KG			
MANGANESE	7439-96-5	340.0	0.49	0.029	0.016	MG/KG			
NICKEL	7440-02-0	19.0	0.098	0.029	0.011	MG/KG			
POTASSIUM	7440-09-7	800.0	9.8	5.9	3.1	MG/KG			
SELENIUM	7782-49-2	0.47	0.49	0.098	0.050	MG/KG	J Q	J+	I
SILVER	7440-22-4	0.023	0.098	0.029	0.011	MG/KG	J	J	
SODIUM	7440-23-5	89.0	9.8	4.9	2.6	MG/KG			
THALLIUM	7440-28-0	0.13	0.098	0.020	0.010	MG/KG			
VANADIUM	7440-62-2	14.0	0.098	0.059	0.029	MG/KG			
ZINC	7440-66-6	44.0	0.49	0.20	0.064	MG/KG	Q		

Analysis Method SW7471A

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.017	0.11	0.037	0.016	MG/KG	J	J	

Sample Delivery Group: 240-18581-1

Analysis Method SW8082

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	24	64	24	21	UG/KG	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	24	49	24	16	UG/KG	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	24	44	24	14	UG/KG	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	24	39	24	13	UG/KG	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	24	54	24	17	UG/KG	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	24	54	24	17	UG/KG	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	24	54	24	17	UG/KG	U	U	

Analysis Method SW8151A

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
2,4 DB		33	80	33	21	UG/KG	U	U	
2,4,5-T (TRICHLOROPHENOXYAC		8.3	20	8.3	3.7	UG/KG	U	U	
2,4-D (DICHLOROPHENOXYACET		33	80	33	19	UG/KG	U	U	
DALAPON		17	40	17	7.8	UG/KG	U	U	
DICAMBA		17	40	17	8.1	UG/KG	U	U	
DICHLOROPROP		66	80	66	37	UG/KG	U	U	
DINOSEB		10	12	10	10	UG/KG	U	U	
MCPA		3300	8000	3300	1600	UG/KG	U	UJ	C
MCPP		3300	8000	3300	1500	UG/KG	U	UJ	C
PENTACHLOROPHENOL		8.3	10	8.3	4.3	UG/KG	U	U	
SILVEX (2,4,5-TP)		8.3	20	8.3	4.1	UG/KG	U	U	

Sample Delivery Group: 240-18581-1

Analysis Method SW8260B

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	1.1	5.7	1.1	0.64	UG/KG	U	UJ	S
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.57	5.7	0.57	0.39	UG/KG	U J	UJ	Q, S
1,1,2-TRICHLOROETHANE	79-00-5	0.57	5.7	0.57	0.44	UG/KG	U	UJ	S
1,1-DICHLOROETHANE	75-34-3	0.57	5.7	0.57	0.41	UG/KG	U	UJ	S
1,1-DICHLOROETHENE	75-35-4	1.1	5.7	1.1	0.59	UG/KG	U	UJ	S
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	1.1	5.7	1.1	0.57	UG/KG	U	UJ	S
1,2-DICHLOROETHANE	107-06-2	0.57	5.7	0.57	0.39	UG/KG	U	UJ	S
1,2-DICHLOROPROPANE	78-87-5	1.1	5.7	1.1	0.78	UG/KG	U	UJ	S
2-HEXANONE	591-78-6	1.8	23	1.1	0.72	UG/KG	J	UJ	B, C, S
ACETONE	67-64-1	41.0	23	7.2	7.2	UG/KG		J	S
BENZENE	71-43-2	1.3	5.7	0.57	0.26	UG/KG	J	J	S
BROMOCHLOROMETHANE	74-97-5	1.1	5.7	1.1	0.81	UG/KG	U	UJ	S
BROMODICHLOROMETHANE	75-27-4	0.57	5.7	0.57	0.32	UG/KG	U	UJ	S
BROMOFORM	75-25-2	0.57	5.7	0.57	0.37	UG/KG	U	UJ	S
BROMOMETHANE	74-83-9	1.1	5.7	1.1	0.61	UG/KG	U	UJ	S
CARBON DISULFIDE	75-15-0	0.57	5.7	0.57	0.50	UG/KG	U	UJ	S
CARBON TETRACHLORIDE	56-23-5	0.57	5.7	0.57	0.42	UG/KG	U	UJ	S
CHLOROBENZENE	108-90-7	0.57	5.7	0.57	0.37	UG/KG	U	UJ	S
CHLOROETHANE	75-00-3	1.1	5.7	1.1	0.98	UG/KG	U	UJ	S
CHLOROFORM	67-66-3	0.57	5.7	0.57	0.33	UG/KG	U	UJ	S
CHLOROMETHANE	74-87-3	0.57	5.7	0.57	0.47	UG/KG	U	UJ	S
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.57	5.7	0.57	0.39	UG/KG	U	UJ	S
DIBROMOCHLOROMETHANE	124-48-1	1.1	5.7	1.1	0.62	UG/KG	U	UJ	S
ETHYLBENZENE	100-41-4	1.8	5.7	0.57	0.30	UG/KG	J	J	S
METHYL ETHYL KETONE (2-BUT	78-93-3	12.0	23	2.3	1.6	UG/KG	J	J	S
METHYL ISOBUTYL KETONE (4-	108-10-1	1.3	23	1.1	0.61	UG/KG	J	UJ	B, S
METHYLENE CHLORIDE	75-09-2	1.1	5.7	1.1	0.76	UG/KG	U	UJ	S
STYRENE	100-42-5	0.57	5.7	0.57	0.17	UG/KG	U	UJ	S

Sample Delivery Group: 240-18581-1

TERT-BUTYL METHYL ETHER	1634-04-4	0.57	5.7	0.57	0.49	UG/KG	U	UJ	S
TETRACHLOROETHYLENE(PCE)	127-18-4	1.1	5.7	1.1	0.59	UG/KG	U	UJ	S
TOLUENE	108-88-3	3.3	5.7	0.57	0.31	UG/KG	J	J	S
TOTAL 1,2-DICHLOROETHENE	540-59-0	1.1	11	1.1	0.87	UG/KG	U	UJ	S
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.1	5.7	1.1	0.61	UG/KG	U	UJ	S
TRICHLOROETHYLENE (TCE)	79-01-6	0.57	5.7	0.57	0.48	UG/KG	U	UJ	S
VINYL CHLORIDE	75-01-4	0.57	5.7	0.57	0.44	UG/KG	U	UJ	S
XYLENES, TOTAL		1.7	11	1.7	0.76	UG/KG	U	UJ	S

Sample Delivery Group: 240-18581-1

Analysis Method SW8270D

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	270	510	270	270	UG/KG	U J	U	
1,2-DICHLOROBENZENE	95-50-1	270	510	270	98	UG/KG	U J	U	
1,3-DICHLOROBENZENE	541-73-1	270	510	270	110	UG/KG	U	U	
1,4-DICHLOROBENZENE	106-46-7	270	510	270	200	UG/KG	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	270	1500	270	250	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	810	1500	810	810	UG/KG	U	U	
2,4-DICHLOROPHENOL	120-83-2	270	1500	270	200	UG/KG	U	U	
2,4-DIMETHYLPHENOL	105-67-9	810	1500	810	200	UG/KG	U	U	
2,4-DINITROPHENOL	51-28-5	810	3300	810	810	UG/KG	U	UJ	C
2,4-DINITROTOLUENE	121-14-2	270	2000	270	270	UG/KG	U	R	D
2,6-DINITROTOLUENE	606-20-2	270	2000	270	210	UG/KG	U	R	D
2-CHLORONAPHTHALENE	91-58-7	33	510	33	33	UG/KG	U	U	
2-CHLOROPHENOL	95-57-8	270	510	270	270	UG/KG	U	U	
2-METHYLNAPHTHALENE	91-57-6	33	67	33	33	UG/KG	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	810	2000	810	810	UG/KG	U	U	
2-NITROANILINE	88-74-4	270	2000	270	92	UG/KG	U	U	
2-NITROPHENOL	88-75-5	270	510	270	270	UG/KG	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	810	1000	810	180	UG/KG	U J	U	
3-NITROANILINE	99-09-2	810	2000	810	160	UG/KG	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	810	1500	810	810	UG/KG	U	U	
4-BROMOPHENYL PHENYL ETHE	101-55-3	270	510	270	130	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	270	1500	270	210	UG/KG	U	U	
4-CHLOROANILINE	106-47-8	270	1500	270	170	UG/KG	U J	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	270	510	270	130	UG/KG	U	U	
4-NITROANILINE	100-01-6	270	2000	270	260	UG/KG	U	U	
4-NITROPHENOL	100-02-7	810	3300	810	810	UG/KG	U	U	
ACENAPHTHENE	83-32-9	33	67	33	33	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	33	67	33	33	UG/KG	U	U	

Sample Delivery Group: 240-18581-1

ANTHRACENE	120-12-7	33	67	33	33	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	33	67	33	33	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	33	67	33	33	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	33	67	33	33	UG/KG	U	U	
BENZO(G,H,I)PERYLENE	191-24-2	33	67	33	33	UG/KG	U J	UJ	C
BENZO(K)FLUORANTHENE	207-08-9	33	67	33	33	UG/KG	U	U	
BENZOIC ACID	65-85-0	3400	6700	3400	3400	UG/KG	U	U	
BENZYL ALCOHOL	100-51-6	270	3300	270	210	UG/KG	U	U	
BENZYL BUTYL PHTHALATE	85-68-7	270	510	270	100	UG/KG	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	270	1000	270	220	UG/KG	U J	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	33	1000	33	20	UG/KG	U	U	
BIS(2-CHLOROISOPROPYL) ETHE	108-60-1	270	1000	270	96	UG/KG	U	U	
BIS(2-ETHYLHEXYL) PHTHALAT	117-81-7	270	510	270	190	UG/KG	U	U	
CARBAZOLE	86-74-8	270	510	270	270	UG/KG	U	U	
CHRYSENE	218-01-9	33	67	33	11	UG/KG	U	U	
CRESOLS, M & P		810	4000	810	200	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	33	67	33	33	UG/KG	U J	U	
DIBENZOFURAN	132-64-9	33	510	33	33	UG/KG	U	U	
DIETHYL PHTHALATE	84-66-2	270	510	270	160	UG/KG	U	U	
DIMETHYL PHTHALATE	131-11-3	270	510	270	170	UG/KG	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	270	510	270	150	UG/KG	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	270	510	270	270	UG/KG	U	U	
FLUORANTHENE	206-44-0	33	67	33	33	UG/KG	U	U	
FLUORENE	86-73-7	33	67	33	33	UG/KG	U	U	
HEXACHLOROBENZENE	118-74-1	33	67	33	21	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	270	510	270	270	UG/KG	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	270	3300	270	270	UG/KG	U	U	
HEXACHLOROETHANE	67-72-1	270	510	270	91	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	33	67	33	33	UG/KG	U J	U	
ISOPHORONE	78-59-1	270	510	270	130	UG/KG	U	U	
NAPHTHALENE	91-20-3	33	67	33	33	UG/KG	U	U	
NITROBENZENE	98-95-3	33	1000	33	22	UG/KG	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	270	510	270	270	UG/KG	U	U	

N-NITROSODIPHENYLAMINE	86-30-6	270	510	270	210	UG/KG	U	R	C
PENTACHLOROPHENOL	87-86-5	810	1500	810	810	UG/KG	U	R	D
PHENANTHRENE	85-01-8	33	67	33	33	UG/KG	U	U	
PHENOL	108-95-2	270	510	270	270	UG/KG	U	U	
PYRENE	129-00-0	33	67	33	33	UG/KG	U	U	

Sample Name 070SB-046M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	270	500	270	270	UG/KG	U	U	
1,2-DICHLOROBENZENE	95-50-1	270	500	270	97	UG/KG	U	U	
1,3-DICHLOROBENZENE	541-73-1	270	500	270	110	UG/KG	U	U	
1,4-DICHLOROBENZENE	106-46-7	270	500	270	200	UG/KG	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	270	1500	270	250	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	800	1500	800	800	UG/KG	U	U	
2,4-DICHLOROPHENOL	120-83-2	270	1500	270	200	UG/KG	U	U	
2,4-DIMETHYLPHENOL	105-67-9	800	1500	800	200	UG/KG	U	U	
2,4-DINITROPHENOL	51-28-5	800	3300	800	800	UG/KG	U	UJ	C
2,4-DINITROTOLUENE	121-14-2	270	2000	270	270	UG/KG	U	U	
2,6-DINITROTOLUENE	606-20-2	270	2000	270	210	UG/KG	U	U	
2-CHLORONAPHTHALENE	91-58-7	33	500	33	33	UG/KG	U	U	
2-CHLOROPHENOL	95-57-8	270	500	270	270	UG/KG	U	U	
2-METHYLNAPHTHALENE	91-57-6	33	67	33	33	UG/KG	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	800	2000	800	800	UG/KG	U	U	
2-NITROANILINE	88-74-4	270	2000	270	91	UG/KG	U	U	
2-NITROPHENOL	88-75-5	270	500	270	270	UG/KG	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	800	1000	800	180	UG/KG	U	U	
3-NITROANILINE	99-09-2	800	2000	800	160	UG/KG	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	800	1500	800	800	UG/KG	U	U	
4-BROMOPHENYL PHENYL ETHE	101-55-3	270	500	270	130	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	270	1500	270	210	UG/KG	U	U	
4-CHLOROANILINE	106-47-8	270	1500	270	170	UG/KG	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	270	500	270	130	UG/KG	U	U	

Sample Delivery Group: 240-18581-1

4-NITROANILINE	100-01-6	270	2000	270	260	UG/KG	U	U	
4-NITROPHENOL	100-02-7	800	3300	800	800	UG/KG	U	U	
ACENAPHTHENE	83-32-9	33	67	33	33	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	33	67	33	33	UG/KG	U	U	
ANTHRACENE	120-12-7	33	67	33	33	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	33	67	33	33	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	33	67	33	33	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	33	67	33	33	UG/KG	U	U	
BENZO(G,H,I)PERYLENE	191-24-2	33	67	33	33	UG/KG	U	UJ	C
BENZO(K)FLUORANTHENE	207-08-9	33	67	33	33	UG/KG	U	U	
BENZOIC ACID	65-85-0	3300	6600	3300	3300	UG/KG	U	U	
BENZYL ALCOHOL	100-51-6	270	3300	270	210	UG/KG	U	U	
BENZYL BUTYL PHTHALATE	85-68-7	270	500	270	100	UG/KG	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	270	1000	270	220	UG/KG	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	33	1000	33	20	UG/KG	U	U	
BIS(2-CHLOROISOPROPYL) ETHE	108-60-1	270	1000	270	95	UG/KG	U	U	
BIS(2-ETHYLHEXYL) PHTHALAT	117-81-7	270	500	270	190	UG/KG	U	U	
CARBAZOLE	86-74-8	270	500	270	270	UG/KG	U	U	
CHRYSENE	218-01-9	33	67	33	11	UG/KG	U	U	
CRESOLS, M & P		800	4000	800	200	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	33	67	33	33	UG/KG	U	U	
DIBENZOFURAN	132-64-9	33	500	33	33	UG/KG	U	U	
DIETHYL PHTHALATE	84-66-2	270	500	270	160	UG/KG	U	U	
DIMETHYL PHTHALATE	131-11-3	270	500	270	170	UG/KG	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	270	500	270	150	UG/KG	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	270	500	270	270	UG/KG	U	U	
FLUORANTHENE	206-44-0	33	67	33	33	UG/KG	U	U	
FLUORENE	86-73-7	33	67	33	33	UG/KG	U	U	
HEXACHLOROBENZENE	118-74-1	33	67	33	21	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	270	500	270	270	UG/KG	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	270	3300	270	270	UG/KG	U	U	
HEXACHLOROETHANE	67-72-1	270	500	270	90	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	33	67	33	33	UG/KG	U	U	

Sample Delivery Group: 240-18581-1

ISOPHORONE	78-59-1	270	500	270	130	UG/KG	U	U	
NAPHTHALENE	91-20-3	33	67	33	33	UG/KG	U	U	
NITROBENZENE	98-95-3	33	1000	33	22	UG/KG	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	270	500	270	270	UG/KG	U	U	
N-NITROSODIPHENYLAMINE	86-30-6	270	500	270	210	UG/KG	U	R	C
PENTACHLOROPHENOL	87-86-5	800	1500	800	800	UG/KG	U	U	
PHENANTHRENE	85-01-8	33	67	33	33	UG/KG	U	U	
PHENOL	108-95-2	270	500	270	270	UG/KG	U	U	
PYRENE	129-00-0	33	67	33	33	UG/KG	U	U	

Analysis Method SW8330

Sample Name 070SB-044M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18581-3 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.048	0.24	0.048	0.0096	MG/KG	U	U	
1,3-DINITROBENZENE	99-65-0	0.048	0.24	0.048	0.0040	MG/KG	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.048	0.24	0.048	0.019	MG/KG	U	U	
2,4-DINITROTOLUENE	121-14-2	0.048	0.24	0.048	0.0051	MG/KG	U	U	
2,6-DINITROTOLUENE	606-20-2	0.048	0.24	0.048	0.0070	MG/KG	U	U	
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.048	0.24	0.048	0.012	MG/KG	U	U	
2-NITROTOLUENE	88-72-2	0.048	0.24	0.048	0.012	MG/KG	U	UJ	C
3-NITROTOLUENE	99-08-1	0.048	0.24	0.048	0.015	MG/KG	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.048	0.24	0.048	0.0096	MG/KG	U	U	
4-NITROTOLUENE	99-99-0	0.048	0.24	0.048	0.017	MG/KG	U	U	
HEXAHYDRO-1,3,5-TRINITRO-1,3,	121-82-4	0.048	0.24	0.048	0.012	MG/KG	U	UJ	C
NITROBENZENE	98-95-3	0.048	0.24	0.048	0.017	MG/KG	U	R	D
NITROGLYCERIN	55-63-0	0.24	0.48	0.24	0.014	MG/KG	U	U	
OCTAHYDRO-1,3,5,7-TETRANITR	2691-41-0	0.048	0.24	0.048	0.012	MG/KG	U	U	
PENTAERYTHRITOL TETRANITR	78-11-5	0.24	0.48	0.24	0.024	MG/KG	U	U	
TETRYL	479-45-8	0.048	0.24	0.048	0.0096	MG/KG	U	U	

Sample Delivery Group: 240-18735-1

Analysis Method M8015V

Sample Name 070SB-0042M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18735-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		49	98	49	45	UG/KG	U	U	

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-71 Barn No. 5 Petroleum Release

Sample Delivery Group: 99236_71_0813

Analysis Method BNASIM

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338377 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
2-METHYLNAPHTHALENE	91-57-6	2.9	1.5	0.82	0.23	ug/kg			
ACENAPHTHENE	83-32-9	1	1.5	0.82	0.34	ug/kg	J	J	
ACENAPHTHYLENE	208-96-8	0.82	1.5	0.82	0.25	ug/kg	U	U	
ANTHRACENE	120-12-7	0.82	1.5	0.82	0.32	ug/kg	U	U	
BENZO(A)ANTHRACENE	56-55-3	0.90	1.5	0.82	0.33	ug/kg	JB	U	B
BENZO(A)PYRENE	50-32-8	0.29	1.5	0.82	0.29	ug/kg	J	J	
BENZO(B)FLUORANTHENE	205-99-2	2.3	1.5	0.82	0.41	ug/kg			
BENZO(G,H,I)PERYLENE	191-24-2	1.8	1.5	0.82	0.4	ug/kg			
BENZO(K)FLUORANTHENE	207-08-9	0.82	1.5	0.82	0.38	ug/kg	U	U	
CHRYSENE	218-01-9	4.3	1.5	0.82	0.36	ug/kg			
DIBENZ(A,H)ANTHRACENE	53-70-3	0.82	1.5	0.82	0.36	ug/kg	U	U	
FLUORANTHENE	206-44-0	1	1.5	0.82	0.37	ug/kg	J	J	
FLUORENE	86-73-7	0.93	1.5	0.82	0.37	ug/kg	J	J	
INDENO(1,2,3-C,D)PYRENE	193-39-5	0.52	1.5	0.82	0.37	ug/kg	J	J	
NAPHTHALENE	91-20-3	3.7	1.5	0.82	0.28	ug/kg			
PHENANTHRENE	85-01-8	4.0	1.5	0.8	0.46	ug/kg	B	U	B
PYRENE	129-00-0	1.2	1.5	0.82	0.42	ug/kg	J	J	

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338379 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
2-METHYLNAPHTHALENE	91-57-6	3	1.5	0.82	0.23	ug/kg			
ACENAPHTHENE	83-32-9	0.62	1.5	0.82	0.34	ug/kg	J	J	
ACENAPHTHYLENE	208-96-8	0.82	1.5	0.82	0.25	ug/kg	U	U	

Sample Delivery Group: 99236_71_0813

ANTHRACENE	120-12-7	0.82	1.5	0.82	0.32	ug/kg	U	U	
BENZO(A)ANTHRACENE	56-55-3	1.2	1.5	0.82	0.33	ug/kg	JB	U	B
BENZO(A)PYRENE	50-32-8	0.42	1.5	0.82	0.29	ug/kg	J	J	
BENZO(B)FLUORANTHENE	205-99-2	2.9	1.5	0.82	0.41	ug/kg			
BENZO(G,H,I)PERYLENE	191-24-2	1.5	1.5	0.82	0.4	ug/kg			
BENZO(K)FLUORANTHENE	207-08-9	0.82	1.5	0.82	0.38	ug/kg	U	U	
CHRYSENE	218-01-9	4.8	1.5	0.82	0.36	ug/kg			
DIBENZ(A,H)ANTHRACENE	53-70-3	0.82	1.5	0.82	0.36	ug/kg	U	U	
FLUORANTHENE	206-44-0	1.4	1.5	0.82	0.37	ug/kg	J	J	
FLUORENE	86-73-7	1.1	1.5	0.82	0.37	ug/kg	J	J	
INDENO(1,2,3-C,D)PYRENE	193-39-5	0.61	1.5	0.82	0.37	ug/kg	J	J	
NAPHTHALENE	91-20-3	0.82	1.5	0.82	0.28	ug/kg	JB	U	B
PHENANTHRENE	85-01-8	4.7	1.5	0.82	0.46	ug/kg	B	U	B
PYRENE	129-00-0	1.4	1.5	0.82	0.42	ug/kg	J	J	

Analysis Method E353.2

Sample Name 071SB-0017M-0001-SO **AnalysisType:** N

Lab Sample Name: 338375 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROCELLULOSE	9004-70-0	100	200	100	33	mg/kg	U	U	

Analysis Method ORTPHG

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338378 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
GASOLINE COMPONENTS		2.6	5.3	2.6	1.1	mg/kg	U	U	

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338380 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
GASOLINE COMPONENTS		2.6	5.3	2.6	1.1	mg/kg	U	U	

Sample Delivery Group: 99236_71_0813

Analysis Method SW6010C

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338377 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
LEAD	7439-92-1	9	1.3	0.64	0.21	mg/kg		J-	P, Q

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338379 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
LEAD	7439-92-1	8.8	1.2	0.62	0.2	mg/kg		J-	P, Q

Analysis Method SW8015

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338377 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
DIESEL COMPONENTS		20	41	15	5.1	mg/kg	J	J	

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338379 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
DIESEL COMPONENTS		19	41	15	5.1	mg/kg	J	J	

Sample Delivery Group: 99236_71_0813

Analysis Method SW8082

Sample Name 071SB-0017M-0001-SO **AnalysisType:** N

Lab Sample Name: 338375 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	20	31	20	5.1	ug/kg	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	20	31	20	7.2	ug/kg	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	20	31	20	9.2	ug/kg	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	20	31	20	7.2	ug/kg	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	20	31	20	7.2	ug/kg	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	20	31	20	9.2	ug/kg	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	20	31	20	6.1	ug/kg	U	U	
PCB-1262 (AROCHLOR 1262)	37324-23-5	20	31	20	7.2	ug/kg	U	U	
PCB-1268 (AROCHLOR 1268)	11100-14-4	20	31	20	5.1	ug/kg	U	U	

Sample Delivery Group: 99236_71_0813

Analysis Method SW8260C

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338378 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.93	1.9	0.93	0.28	ug/kg	U	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.93	1.9	0.93	0.47	ug/kg	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.93	1.9	0.93	0.37	ug/kg	U	U	
1,1-DICHLOROETHANE	75-34-3	0.93	1.9	0.93	0.37	ug/kg	U	U	
1,1-DICHLOROETHENE	75-35-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
1,2-DICHLOROETHANE	107-06-2	0.93	1.9	0.93	0.47	ug/kg	U	U	
1,2-DICHLOROPROPANE	78-87-5	0.93	1.9	0.93	0.37	ug/kg	U	U	
2-HEXANONE	591-78-6	19	37	19	10	ug/kg	U	U	
ACETONE	67-64-1	9.3	19	9.3	9.3	ug/kg	U	U	
BENZENE	71-43-2	0.93	1.9	0.93	0.28	ug/kg	U	U	
BROMOCHLOROMETHANE	74-97-5	0.93	1.9	0.93	0.37	ug/kg	U	U	
BROMODICHLOROMETHANE	75-27-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
BROMOFORM	75-25-2	0.93	1.9	0.93	0.37	ug/kg	U	U	
BROMOMETHANE	74-83-9	0.93	1.9	0.93	0.65	ug/kg	U	UJ	C
CARBON DISULFIDE	75-15-0	1.9	3.7	1.9	0.84	ug/kg	U	U	
CARBON TETRACHLORIDE	56-23-5	0.93	1.9	0.93	0.28	ug/kg	U	U	
CHLOROBENZENE	108-90-7	0.93	1.9	0.93	0.37	ug/kg	U	U	
CHLOROETHANE	75-00-3	0.93	1.9	0.93	0.47	ug/kg	U	U	
CHLOROFORM	67-66-3	0.93	1.9	0.93	0.37	ug/kg	U	U	
CHLOROMETHANE	74-87-3	0.93	1.9	0.93	0.37	ug/kg	U	U	
CIS-1,2-DICHLOROETHYLENE	156-59-2	0.93	1.9	0.93	0.37	ug/kg	U	U	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.93	1.9	0.93	0.28	ug/kg	U	U	
DIBROMOCHLOROMETHANE	124-48-1	0.93	1.9	0.93	0.37	ug/kg	U	U	
ETHYLBENZENE	100-41-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
M,P-XYLENE (SUM OF ISOMERS)		1.9	3.7	1.9	0.65	ug/kg	U	R	D
METHYL ETHYL KETONE (2-BUT	78-93-3	9.3	19	9.3	9.3	ug/kg	U	U	
METHYL ISOBUTYL KETONE (4-	108-10-1	9.3	19	9.3	9.3	ug/kg	U	U	

METHYLENE CHLORIDE	75-09-2	9.9	9.9	1.9	1.6	ug/kg	Z	UJ	B, C
O-XYLENE (1,2-DIMETHYLBENZ	95-47-6	0.93	1.9	0.93	0.37	ug/kg	U	R	D
STYRENE	100-42-5	0.93	1.9	0.93	0.28	ug/kg	U	U	
TERT-BUTYL METHYL ETHER	1634-04-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
TETRACHLOROETHYLENE(PCE)	127-18-4	0.93	1.9	0.93	0.37	ug/kg	U	U	
TOLUENE	108-88-3	0.93	1.9	0.93	0.37	ug/kg	U	U	
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.93	1.9	0.93	0.37	ug/kg	U	U	
TRANS-1,2-DICHLOROETHENE	156-60-5	0.93	1.9	0.93	0.37	ug/kg	U	U	
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.93	1.9	0.93	0.37	ug/kg	U	U	
TRICHLOROETHYLENE (TCE)	79-01-6	0.93	1.9	0.93	0.28	ug/kg	U	U	
VINYL CHLORIDE	75-01-4	0.93	1.9	0.93	0.47	ug/kg	U	U	
XYLENES, TOTAL		1.9	3.7	1.9	0.65	ug/kg	U	U	

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338380 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.86	1.7	0.86	0.26	ug/kg	U	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.86	1.7	0.86	0.43	ug/kg	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.86	1.7	0.86	0.35	ug/kg	U	U	
1,1-DICHLOROETHANE	75-34-3	0.86	1.7	0.86	0.35	ug/kg	U	U	
1,1-DICHLOROETHENE	75-35-4	0.86	1.7	0.86	0.35	ug/kg	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	0.86	1.7	0.86	0.35	ug/kg	U	U	
1,2-DICHLOROETHANE	107-06-2	0.86	1.7	0.86	0.43	ug/kg	U	U	
1,2-DICHLOROPROPANE	78-87-5	0.86	1.7	0.86	0.35	ug/kg	U	U	
2-HEXANONE	591-78-6	17	35	17	9.5	ug/kg	U	U	
ACETONE	67-64-1	8.6	17	8.6	8.6	ug/kg	U	U	
BENZENE	71-43-2	0.86	1.7	0.86	0.26	ug/kg	U	U	
BROMOCHLOROMETHANE	74-97-5	0.86	1.7	0.86	0.35	ug/kg	U	U	
BROMODICHLOROMETHANE	75-27-4	0.86	1.7	0.86	0.35	ug/kg	U	U	
BROMOFORM	75-25-2	0.86	1.7	0.86	0.35	ug/kg	U	U	
BROMOMETHANE	74-83-9	0.86	1.7	0.86	0.6	ug/kg	U	UJ	C
CARBON DISULFIDE	75-15-0	1.7	3.5	1.7	0.78	ug/kg	U	U	
CARBON TETRACHLORIDE	56-23-5	0.86	1.7	0.86	0.26	ug/kg	U	U	

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CHLOROBENZENE	108-90-7	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
CHLOROETHANE	75-00-3	0.86	1.7	0.86	0.43	ug/kg	U	**U**	
CHLOROFORM	67-66-3	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
CHLOROMETHANE	74-87-3	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
CIS-1,2-DICHLOROETHYLENE	156-59-2	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.86	1.7	0.86	0.26	ug/kg	U	**U**	
DIBROMOCHLOROMETHANE	124-48-1	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
ETHYLBENZENE	100-41-4	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
M,P-XYLENE (SUM OF ISOMERS)		1.7	3.5	1.7	0.6	ug/kg	U	**R**	**D**
METHYL ETHYL KETONE (2-BUT	78-93-3	8.6	17	8.6	8.6	ug/kg	U	**U**	
METHYL ISOBUTYL KETONE (4-	108-10-1	8.6	17	8.6	8.6	ug/kg	U	**U**	
METHYLENE CHLORIDE	75-09-2	6.3	8.6	1.7	1.5	ug/kg	J	**UJ**	**B, C**
O-XYLENE (1,2-DIMETHYLBENZ	95-47-6	0.86	1.7	0.86	0.35	ug/kg	U	**R**	**D**
STYRENE	100-42-5	0.86	1.7	0.86	0.26	ug/kg	U	**U**	
TERT-BUTYL METHYL ETHER	1634-04-4	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TETRACHLOROETHYLENE(PCE)	127-18-4	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TOLUENE	108-88-3	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TRANS-1,2-DICHLOROETHENE	156-60-5	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.86	1.7	0.86	0.35	ug/kg	U	**U**	
TRICHLOROETHYLENE (TCE)	79-01-6	0.86	1.7	0.86	0.26	ug/kg	U	**U**	
VINYL CHLORIDE	75-01-4	0.86	1.7	0.86	0.43	ug/kg	U	**U**	
XYLENES, TOTAL		1.7	3.5	1.7	0.6	ug/kg	U	**U**	

Sample Delivery Group: 99236_71_0813

Analysis Method SW8270D

Sample Name 071SB-0013M-0001-SO **AnalysisType:** N

Lab Sample Name: 338377 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	62	120	62	22	ug/kg	U	U	
1,2-DICHLOROBENZENE	95-50-1	62	120	62	25	ug/kg	U	U	
1,3-DICHLOROBENZENE	541-73-1	62	120	62	21	ug/kg	U	U	
1,4-DICHLOROBENZENE	106-46-7	62	120	62	20	ug/kg	U	U	
2,2'-OXYBIS(1-CHLORO)PROPAN	108-60-1	62	120	62	31	ug/kg	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	310	620	310	130	ug/kg	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	310	620	310	130	ug/kg	U	U	
2,4-DICHLOROPHENOL	120-83-2	310	620	310	120	ug/kg	U	U	
2,4-DIMETHYLPHENOL	105-67-9	310	620	310	100	ug/kg	U	U	
2,4-DINITROPHENOL	51-28-5	310	1000	310	280	ug/kg	U	U	
2,4-DINITROTOLUENE	121-14-2	62	120	62	25	ug/kg	U	U	
2,6-DINITROTOLUENE	606-20-2	62	120	62	25	ug/kg	U	U	
2-CHLORONAPHTHALENE	91-58-7	62	120	62	24	ug/kg	U	U	
2-CHLOROPHENOL	95-57-8	620	2100	620	350	ug/kg	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	620	2100	620	430	ug/kg	U	U	
2-NITROANILINE	88-74-4	62	120	62	24	ug/kg	U	U	
2-NITROPHENOL	88-75-5	310	1000	310	290	ug/kg	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	150	510	150	150	ug/kg	U	U	
3-NITROANILINE	99-09-2	62	120	62	23	ug/kg	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	310	1000	310	280	ug/kg	U	UJ	C
4-BROMOPHENYL PHENYL ETHE	101-55-3	62	120	62	26	ug/kg	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	620	2100	620	390	ug/kg	U	U	
4-CHLOROANILINE	106-47-8	62	210	62	40	ug/kg	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	62	120	62	27	ug/kg	U	U	
4-NITROANILINE	100-01-6	62	120	62	31	ug/kg	U	U	
4-NITROPHENOL	100-02-7	620	2100	620	410	ug/kg	U	U	
BENZOIC ACID	65-85-0	1500	3100	1500	300	ug/kg	U	UJ	C
BENZYL ALCOHOL	100-51-6	120	410	120	85	ug/kg	U	R	C

BENZYL BUTYL PHTHALATE	85-68-7	120	410	120	75	ug/kg	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	62	120	62	24	ug/kg	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	62	120	62	26	ug/kg	U	U	
CARBAZOLE	86-74-8	62	120	62	29	ug/kg	U	U	
CRESOLS, M & P		1100	3700	1100	670	ug/kg	U	U	
DIBENZOFURAN	132-64-9	62	120	62	25	ug/kg	U	U	
DIETHYL PHTHALATE	84-66-2	120	410	120	66	ug/kg	U	U	
DIMETHYL PHTHALATE	131-11-3	120	410	120	65	ug/kg	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	120	410	120	81	ug/kg	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	62	210	62	61	ug/kg	U	U	
HEXACHLOROBENZENE	118-74-1	62	120	62	29	ug/kg	U	U	
HEXACHLOROBUTADIENE	87-68-3	120	410	120	64	ug/kg	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	62	210	62	53	ug/kg	U	UJ	C
HEXACHLOROETHANE	67-72-1	62	120	62	34	ug/kg	U	U	
ISOPHORONE	78-59-1	62	210	62	51	ug/kg	U	U	
NITROBENZENE	98-95-3	62	210	62	61	ug/kg	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	120	410	120	72	ug/kg	U	U	
N-NITROSODIPHENYLAMINE	86-30-6	120	250	120	51	ug/kg	U	U	
PENTACHLOROPHENOL	87-86-5	310	1000	310	250	ug/kg	U	U	
PHENOL	108-95-2	310	620	310	160	ug/kg	U	U	

Sample Name 071SB-0018M-0001-SO **AnalysisType:** N

Lab Sample Name: 338379 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	61	120	61	21	ug/kg	U	U	
1,2-DICHLOROBENZENE	95-50-1	61	120	61	25	ug/kg	U	U	
1,3-DICHLOROBENZENE	541-73-1	61	120	61	20	ug/kg	U	U	
1,4-DICHLOROBENZENE	106-46-7	61	120	61	19	ug/kg	U	U	
2,2'-OXYBIS(1-CHLORO)PROPAN	108-60-1	61	120	61	31	ug/kg	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	310	610	310	130	ug/kg	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	310	610	310	130	ug/kg	U	U	
2,4-DICHLOROPHENOL	120-83-2	310	610	310	120	ug/kg	U	U	
2,4-DIMETHYLPHENOL	105-67-9	310	610	310	100	ug/kg	U	U	

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2,4-DINITROPHENOL	51-28-5	310	1000	310	280	ug/kg	U	U	
2,4-DINITROTOLUENE	121-14-2	61	120	61	25	ug/kg	U	U	
2,6-DINITROTOLUENE	606-20-2	61	120	61	25	ug/kg	U	U	
2-CHLORONAPHTHALENE	91-58-7	61	120	61	23	ug/kg	U	U	
2-CHLOROPHENOL	95-57-8	610	2000	610	350	ug/kg	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	610	2000	610	430	ug/kg	U	U	
2-NITROANILINE	88-74-4	61	120	61	23	ug/kg	U	U	
2-NITROPHENOL	88-75-5	310	1000	310	290	ug/kg	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	150	510	150	150	ug/kg	U	U	
3-NITROANILINE	99-09-2	61	120	61	22	ug/kg	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	310	1000	310	280	ug/kg	U	UJ	C
4-BROMOPHENYL PHENYL ETHE	101-55-3	61	120	61	26	ug/kg	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	610	2000	610	390	ug/kg	U	U	
4-CHLOROANILINE	106-47-8	61	200	61	40	ug/kg	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	61	120	61	27	ug/kg	U	U	
4-NITROANILINE	100-01-6	61	120	61	31	ug/kg	U	U	
4-NITROPHENOL	100-02-7	610	2000	610	410	ug/kg	U	U	
BENZOIC ACID	65-85-0	1500	3100	1500	300	ug/kg	U	UJ	C
BENZYL ALCOHOL	100-51-6	120	410	120	85	ug/kg	U	R	C
BENZYL BUTYL PHTHALATE	85-68-7	120	410	120	75	ug/kg	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	61	120	61	23	ug/kg	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	61	120	61	26	ug/kg	U	U	
CARBAZOLE	86-74-8	61	120	61	29	ug/kg	U	U	
CRESOLS, M & P		1100	3700	1100	660	ug/kg	U	U	
DIBENZOFURAN	132-64-9	61	120	61	25	ug/kg	U	U	
DIETHYL PHTHALATE	84-66-2	120	410	120	65	ug/kg	U	U	
DIMETHYL PHTHALATE	131-11-3	120	410	120	64	ug/kg	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	120	410	120	81	ug/kg	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	61	200	61	60	ug/kg	U	U	
HEXACHLOROBENZENE	118-74-1	61	120	61	29	ug/kg	U	U	
HEXACHLOROBUTADIENE	87-68-3	120	410	120	63	ug/kg	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	61	200	61	53	ug/kg	U	UJ	C
HEXACHLOROETHANE	67-72-1	61	120	61	34	ug/kg	U	U	

Sample Delivery Group: 99236_71_0813

ISOPHORONE	78-59-1	61	200	61	51	ug/kg	U	U
NITROBENZENE	98-95-3	61	200	61	60	ug/kg	U	U
N-NITROSODI-N-PROPYLAMINE	621-64-7	120	410	120	72	ug/kg	U	U
N-NITROSODIPHENYLAMINE	86-30-6	120	250	120	51	ug/kg	U	U
PENTACHLOROPHENOL	87-86-5	310	1000	310	250	ug/kg	U	U
PHENOL	108-95-2	310	610	310	160	ug/kg	U	U

Analysis Method SW8330

Sample Name 071SB-0017M-0001-SO **AnalysisType:** N

Lab Sample Name: 338375 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROGUANIDINE	556-88-7	0.12	0.25	0.12	0.06	mg/kg	U	U	

Sample Delivery Group: 99236_71_0813

Analysis Method SW8330B

Sample Name 071SB-0017M-0001-SO **AnalysisType:** N

Lab Sample Name: 338375 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.3	0.5	0.3	0.13	mg/kg	U	U	
1,3-DINITROBENZENE	99-65-0	0.2	0.3	0.2	0.08	mg/kg	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.2	0.5	0.2	0.09	mg/kg	U	U	
2,4-DINITROTOLUENE	121-14-2	0.2	0.3	0.2	0.08	mg/kg	U	U	
2,6-DINITROTOLUENE	606-20-2	0.2	0.3	0.2	0.07	mg/kg	U	U	
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.2	0.3	0.2	0.09	mg/kg	U	U	
2-NITROTOLUENE	88-72-2	0.2	0.3	0.2	0.09	mg/kg	U	UJ	C
3,5-DINITROANILINE	618-87-1	0.2	0.3	0.2	0.09	mg/kg	U	U	
3-NITROTOLUENE	99-08-1	0.3	0.5	0.3	0.11	mg/kg	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.2	0.3	0.2	0.08	mg/kg	U	UJ	C
4-NITROTOLUENE	99-99-0	0.2	0.5	0.2	0.1	mg/kg	U	U	
HMX	2691-41-0	0.3	0.5	0.3	0.12	mg/kg	U	U	
NITROBENZENE	98-95-3	0.2	0.5	0.2	0.1	mg/kg	U	U	
NITROGLYCERIN	55-63-0	1.2	2	1.2	0.5	mg/kg	U	U	
PETN	78-11-5	1.2	2	1.2	0.6	mg/kg	U	U	
RDX	121-82-4	0.3	0.5	0.3	0.14	mg/kg	U	U	
TETRYL	479-45-8	0.2	0.3	0.2	0.09	mg/kg	U	U	

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-72 Facility-Wide USTs

Sample Delivery Group: 240-18297-1

Analysis Method E353.2

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROCELLULOSE	9004-70-0	20	54	20	8.5	MG/KG	U J	U	

Analysis Method M8015D

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	

Sample Delivery Group: 240-18297-1

Analysis Method M8015V

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		320.0	110	55	50	UG/KG		J	Q

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		47	93	47	43	UG/KG	U	U	

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		46	92	46	42	UG/KG	U	U	

Sample Delivery Group: 240-18297-1

Analysis Method SW6020

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	12000.0	3.1	0.62	0.29	MG/KG	J	J	
ANTIMONY	7440-36-0	0.075	0.21	0.10	0.047	MG/KG	J	J-	Q
ARSENIC	7440-38-2	14.0	0.10	0.051	0.019	MG/KG		J-	Q
BARIUM	7440-39-3	36.0	1.0	0.021	0.011	MG/KG	Q	J+	Q
BERYLLIUM	7440-41-7	0.65	0.10	0.010	0.0077	MG/KG		J-	Q
CADMIUM	7440-43-9	0.15	0.10	0.031	0.014	MG/KG	Q	J-	Q
CALCIUM	7440-70-2	2900.0	10	2.6	1.4	MG/KG	J	J+	E, Q
CHROMIUM	7440-47-3	18.0	0.21	0.041	0.023	MG/KG			
COBALT	7440-48-4	12.0	0.051	0.010	0.0025	MG/KG	Q		
COPPER	7440-50-8	16.0	0.21	0.062	0.034	MG/KG	Q		
IRON	7439-89-6	28000.0	5.1	2.1	1.1	MG/KG	J	J	
LEAD	7439-92-1	11.0	0.10	0.031	0.016	MG/KG			
MAGNESIUM	7439-95-4	6000.0	10	2.1	1.1	MG/KG			
MANGANESE	7439-96-5	190.0	0.51	0.031	0.016	MG/KG	Q J	J	
NICKEL	7440-02-0	29.0	0.10	0.031	0.012	MG/KG	Q	J-	Q
POTASSIUM	7440-09-7	1900.0	10	6.2	3.2	MG/KG	J	J-	Q
SELENIUM	7782-49-2	0.9	0.51	0.10	0.052	MG/KG		J-	Q
SILVER	7440-22-4	0.033	0.10	0.031	0.012	MG/KG	J	J	
SODIUM	7440-23-5	85.0	10	5.1	2.7	MG/KG			
THALLIUM	7440-28-0	0.18	0.10	0.021	0.010	MG/KG			
VANADIUM	7440-62-2	17.0	0.10	0.062	0.031	MG/KG			
ZINC	7440-66-6	59.0	0.51	0.21	0.067	MG/KG	Q		

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	8500.0	3.2	0.64	0.30	MG/KG	J	J	
ANTIMONY	7440-36-0	0.2	0.21	0.11	0.049	MG/KG	J	J-	Q

ARSENIC	7440-38-2	5.6	0.11	0.053	0.019	MG/KG		J	E
BARIUM	7440-39-3	55.0	1.1	0.021	0.011	MG/KG	Q		
BERYLLIUM	7440-41-7	0.88	0.11	0.011	0.0080	MG/KG		J-	Q
CADMIUM	7440-43-9	0.2	0.11	0.032	0.014	MG/KG	Q		
CALCIUM	7440-70-2	400.0	11	2.7	1.4	MG/KG			
CHROMIUM	7440-47-3	18.0	0.21	0.042	0.024	MG/KG			
COBALT	7440-48-4	18.0	0.053	0.011	0.0025	MG/KG	Q		
COPPER	7440-50-8	31.0	0.21	0.064	0.035	MG/KG	Q	J+	Q
IRON	7439-89-6	37000.0	5.3	2.1	1.1	MG/KG	J	J	
LEAD	7439-92-1	20.0	0.11	0.032	0.016	MG/KG		J+	Q
MAGNESIUM	7439-95-4	4000.0	11	2.1	1.1	MG/KG			
MANGANESE	7439-96-5	910.0	0.53	0.032	0.017	MG/KG	Q J	J	
NICKEL	7440-02-0	31.0	0.11	0.032	0.012	MG/KG	Q		
POTASSIUM	7440-09-7	1000.0	11	6.4	3.4	MG/KG		J-	Q
SELENIUM	7782-49-2	1.0	0.53	0.11	0.054	MG/KG		J-	Q
SILVER	7440-22-4	0.032	0.11	0.032	0.012	MG/KG	J	J	
SODIUM	7440-23-5	60.0	11	5.3	2.8	MG/KG			
THALLIUM	7440-28-0	0.14	0.11	0.021	0.011	MG/KG			
VANADIUM	7440-62-2	17.0	0.11	0.064	0.032	MG/KG			
ZINC	7440-66-6	69.0	0.53	0.21	0.069	MG/KG	Q		

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	9500.0	3.0	0.60	0.28	MG/KG			
ANTIMONY	7440-36-0	0.13	0.20	0.10	0.046	MG/KG	J	J-	Q
ARSENIC	7440-38-2	5.6	0.10	0.050	0.018	MG/KG		J-	E, Q
BARIUM	7440-39-3	61.0	1.0	0.020	0.011	MG/KG	Q	J+	Q
BERYLLIUM	7440-41-7	0.91	0.10	0.010	0.0075	MG/KG		J-	Q
CADMIUM	7440-43-9	0.26	0.10	0.030	0.013	MG/KG	Q	J-	Q
CALCIUM	7440-70-2	430.0	10	2.5	1.3	MG/KG		J+	E, Q
CHROMIUM	7440-47-3	19.0	0.20	0.040	0.022	MG/KG			
COBALT	7440-48-4	17.0	0.050	0.010	0.0024	MG/KG	Q		

Sample Delivery Group: 240-18297-1

COPPER	7440-50-8	34.0	0.20	0.060	0.033	MG/KG	Q	J+	Q
IRON	7439-89-6	40000.0	5.0	2.0	1.1	MG/KG			
LEAD	7439-92-1	23.0	0.10	0.030	0.015	MG/KG		J+	Q
MAGNESIUM	7439-95-4	4200.0	10	2.0	1.1	MG/KG			
MANGANESE	7439-96-5	840.0	0.50	0.030	0.016	MG/KG	Q		
NICKEL	7440-02-0	34.0	0.10	0.030	0.011	MG/KG	Q	J-	Q
POTASSIUM	7440-09-7	1200.0	10	6.0	3.1	MG/KG		J-	Q
SELENIUM	7782-49-2	1.1	0.50	0.10	0.051	MG/KG		J-	Q
SILVER	7440-22-4	0.036	0.10	0.030	0.011	MG/KG	J	J	
SODIUM	7440-23-5	61.0	10	5.0	2.7	MG/KG			
THALLIUM	7440-28-0	0.12	0.10	0.020	0.010	MG/KG			
VANADIUM	7440-62-2	19.0	0.10	0.060	0.030	MG/KG			
ZINC	7440-66-6	87.0	0.50	0.20	0.065	MG/KG	Q		

Analysis Method SW7471A

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.039	0.12	0.039	0.016	MG/KG	U	U	

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.04	0.10	0.034	0.014	MG/KG	J	J	

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.027	0.098	0.032	0.014	MG/KG	J	J	

Sample Delivery Group: 240-18297-1

Analysis Method SW8081

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALDRIN	309-00-2	1.5	4.6	1.5	1.4	UG/KG	U	U	
ALPHA BHC (ALPHA HEXACHLO	319-84-6	1.5	2.9	1.5	0.83	UG/KG	U J	UJ	Q
ALPHA ENDOSULFAN	959-98-8	0.77	1.9	0.77	0.59	UG/KG	U J	UJ	Q
ALPHA-CHLORDANE	5103-71-9	1.5	3.4	1.5	1.1	UG/KG	U J	UJ	Q
BETA BHC (BETA HEXACHLORO	319-85-7	1.5	4.0	1.5	1.3	UG/KG	U J	UJ	Q
BETA ENDOSULFAN	33213-65-9	1.5	2.9	1.5	0.94	UG/KG	U J	UJ	Q
DELTA BHC (DELTA HEXACHLO	319-86-8	1.5	4.6	1.5	1.4	UG/KG	U J	UJ	Q
DIELDRIN	60-57-1	0.77	1.9	0.77	0.54	UG/KG	U J	UJ	Q
ENDOSULFAN SULFATE	1031-07-8	1.5	3.4	1.5	0.99	UG/KG	U J	UJ	Q
ENDRIN	72-20-8	0.77	1.9	0.77	0.57	UG/KG	U J	UJ	Q
ENDRIN ALDEHYDE	7421-93-4	1.5	3.4	1.5	1.1	UG/KG	U J	UJ	Q
ENDRIN KETONE	53494-70-5	0.77	2.3	0.77	0.72	UG/KG	U J	UJ	Q
GAMMA BHC (LINDANE)	58-89-9	1.5	2.9	1.5	0.85	UG/KG	U J	UJ	Q
GAMMA-CHLORDANE	5566-34-7	0.77	1.9	0.77	0.48	UG/KG	U J	UJ	Q
HEPTACHLOR	76-44-8	1.5	4.0	1.5	1.3	UG/KG	U J	U	
HEPTACHLOR EPOXIDE	1024-57-3	1.5	2.9	1.5	0.91	UG/KG	U J	UJ	Q
METHOXYCHLOR	72-43-5	3.8	5.7	3.8	1.7	UG/KG	U J	UJ	Q
P,P'-DDD	72-54-8	0.77	2.3	0.77	0.71	UG/KG	U J	UJ	Q
P,P'-DDE	72-55-9	0.77	1.9	0.77	0.45	UG/KG	U J	UJ	Q
P,P'-DDT	50-29-3	0.77	2.3	0.77	0.72	UG/KG	U J	U	
TOXAPHENE	8001-35-2	23	77	23	22	UG/KG	U	UJ	C

Sample Delivery Group: 240-18297-1

Analysis Method SW8082

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	28	74	28	24	UG/KG	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	28	57	28	18	UG/KG	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	28	51	28	16	UG/KG	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	28	46	28	15	UG/KG	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	28	63	28	19	UG/KG	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	28	63	28	19	UG/KG	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	28	63	28	19	UG/KG	U	U	

Sample Delivery Group: 240-18297-1

Analysis Method SW8260B

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	25	250	25	12	UG/KG	U J	UJ	S
ETHYLBENZENE	100-41-4	9.9	250	9.9	5.4	UG/KG	U J	UJ	S
TOLUENE	108-88-3	25	250	25	17	UG/KG	U J	UJ	S
XYLENES, TOTAL		30	500	30	8.0	UG/KG	U J	UJ	S

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.47	4.7	0.47	0.22	UG/KG	U	UJ	S
ETHYLBENZENE	100-41-4	0.47	4.7	0.47	0.24	UG/KG	U	UJ	S
TOLUENE	108-88-3	0.47	4.7	0.47	0.25	UG/KG	U	UJ	S
XYLENES, TOTAL		1.4	9.4	1.4	0.63	UG/KG	U	UJ	S

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.88	4.4	0.88	0.49	UG/KG	U	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.44	4.4	0.44	0.30	UG/KG	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.44	4.4	0.44	0.34	UG/KG	U	U	
1,1-DICHLOROETHANE	75-34-3	0.44	4.4	0.44	0.32	UG/KG	U	U	
1,1-DICHLOROETHENE	75-35-4	0.88	4.4	0.88	0.46	UG/KG	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	0.88	4.4	0.88	0.44	UG/KG	U	U	
1,2-DICHLOROETHANE	107-06-2	0.44	4.4	0.44	0.30	UG/KG	U	U	
1,2-DICHLOROPROPANE	78-87-5	0.88	4.4	0.88	0.60	UG/KG	U	U	
2-HEXANONE	591-78-6	0.88	18	0.88	0.55	UG/KG	U	UJ	C
ACETONE	67-64-1	5.5	18	5.5	5.5	UG/KG	U	UJ	C
BENZENE	71-43-2	0.44	4.4	0.44	0.20	UG/KG	U	U	
BROMOCHLOROMETHANE	74-97-5	0.88	4.4	0.88	0.62	UG/KG	U	U	
BROMODICHLOROMETHANE	75-27-4	0.44	4.4	0.44	0.25	UG/KG	U	U	

Sample Delivery Group: 240-18297-1

BROMOFORM	75-25-2	0.44	4.4	0.44	0.29	UG/KG	U	U
BROMOMETHANE	74-83-9	0.88	4.4	0.88	0.47	UG/KG	U	U
CARBON DISULFIDE	75-15-0	0.44	4.4	0.44	0.39	UG/KG	U	U
CARBON TETRACHLORIDE	56-23-5	0.44	4.4	0.44	0.32	UG/KG	U	U
CHLOROBENZENE	108-90-7	0.44	4.4	0.44	0.29	UG/KG	U	U
CHLOROETHANE	75-00-3	0.88	4.4	0.88	0.75	UG/KG	U	U
CHLOROFORM	67-66-3	0.44	4.4	0.44	0.25	UG/KG	U	U
CHLOROMETHANE	74-87-3	0.44	4.4	0.44	0.36	UG/KG	U	U
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.44	4.4	0.44	0.30	UG/KG	U	U
DIBROMOCHLOROMETHANE	124-48-1	0.88	4.4	0.88	0.48	UG/KG	U	U
ETHYLBENZENE	100-41-4	0.44	4.4	0.44	0.23	UG/KG	U	U
METHYL ETHYL KETONE (2-BUT	78-93-3	1.8	18	1.8	1.2	UG/KG	U	U
METHYL ISOBUTYL KETONE (4-	108-10-1	0.88	18	0.88	0.47	UG/KG	U	U
METHYLENE CHLORIDE	75-09-2	0.88	4.4	0.88	0.59	UG/KG	U	U
STYRENE	100-42-5	0.44	4.4	0.44	0.13	UG/KG	U	U
TERT-BUTYL METHYL ETHER	1634-04-4	0.44	4.4	0.44	0.38	UG/KG	U	U
TETRACHLOROETHYLENE(PCE)	127-18-4	0.88	4.4	0.88	0.46	UG/KG	U	U
TOLUENE	108-88-3	0.44	4.4	0.44	0.24	UG/KG	U	U
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.88	8.8	0.88	0.67	UG/KG	U	U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.88	4.4	0.88	0.47	UG/KG	U	U
TRICHLOROETHYLENE (TCE)	79-01-6	0.44	4.4	0.44	0.37	UG/KG	U	U
VINYL CHLORIDE	75-01-4	0.44	4.4	0.44	0.34	UG/KG	U	U
XYLENES, TOTAL		1.3	8.8	1.3	0.59	UG/KG	U	U

Sample Delivery Group: 240-18297-1

Analysis Method SW8270D

Sample Name 072SB-0001-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ACENAPHTHENE	83-32-9	4.0	8.0	4.0	4.0	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
ANTHRACENE	120-12-7	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(G,H,I)PERYLENE	191-24-2	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(K)FLUORANTHENE	207-08-9	4.0	8.0	4.0	4.0	UG/KG	U	U	
CHRYSENE	218-01-9	4.0	8.0	4.0	1.3	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	4.0	8.0	4.0	4.0	UG/KG	U	U	
FLUORANTHENE	206-44-0	4.0	8.0	4.0	4.0	UG/KG	U	U	
FLUORENE	86-73-7	4.0	8.0	4.0	4.0	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	4.0	8.0	4.0	4.0	UG/KG	U	U	
NAPHTHALENE	91-20-3	8.9	8.0	4.0	4.0	UG/KG			
PHENANTHRENE	85-01-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
PYRENE	129-00-0	4.0	8.0	4.0	4.0	UG/KG	U	U	

Sample Name 072SB-0012-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ACENAPHTHENE	83-32-9	3.8	7.6	3.8	3.8	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	3.8	7.6	3.8	3.8	UG/KG	U	U	
ANTHRACENE	120-12-7	3.8	7.6	3.8	3.8	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	3.8	7.6	3.8	3.8	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	3.8	7.6	3.8	3.8	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	3.8	7.6	3.8	3.8	UG/KG	U	U	
BENZO(G,H,I)PERYLENE	191-24-2	3.8	7.6	3.8	3.8	UG/KG	U	U	
BENZO(K)FLUORANTHENE	207-08-9	3.8	7.6	3.8	3.8	UG/KG	U	U	

CHRYSENE	218-01-9	3.8	7.6	3.8	1.3	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	3.8	7.6	3.8	3.8	UG/KG	U	U	
FLUORANTHENE	206-44-0	3.7	7.6	3.8	3.8	UG/KG	U	U	
FLUORENE	86-73-7	3.8	7.6	3.8	3.8	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	3.8	7.6	3.8	3.8	UG/KG	U	U	
NAPHTHALENE	91-20-3	3.8	7.6	3.8	3.8	UG/KG	U	U	
PHENANTHRENE	85-01-8	3.8	7.6	3.8	3.8	UG/KG	U	U	
PYRENE	129-00-0	3.8	7.6	3.8	3.8	UG/KG	U	U	

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	30	56	30	30	UG/KG	U	U	
1,2-DICHLOROBENZENE	95-50-1	30	56	30	11	UG/KG	U	U	
1,3-DICHLOROBENZENE	541-73-1	30	56	30	12	UG/KG	U	U	
1,4-DICHLOROBENZENE	106-46-7	30	56	30	23	UG/KG	U	U	
2,2'-DICHLORODIISOPROPYL ET	39638-32-9	3.7	110	3.7	2.3	UG/KG	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	30	170	30	28	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	90	170	90	90	UG/KG	U	U	
2,4-DICHLOROPHENOL	120-83-2	30	170	30	23	UG/KG	U	U	
2,4-DIMETHYLPHENOL	105-67-9	90	170	90	23	UG/KG	U	U	
2,4-DINITROPHENOL	51-28-5	90	370	90	90	UG/KG	U	UJ	C
2,4-DINITROTOLUENE	121-14-2	30	230	30	30	UG/KG	U	R	D
2,6-DINITROTOLUENE	606-20-2	30	230	30	24	UG/KG	U	R	D
2-CHLORONAPHTHALENE	91-58-7	3.7	56	3.7	3.7	UG/KG	U	U	
2-CHLOROPHENOL	95-57-8	30	56	30	30	UG/KG	U	U	
2-METHYLNAPHTHALENE	91-57-6	3.7	7.5	3.7	3.7	UG/KG	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	90	230	90	90	UG/KG	U	U	
2-NITROANILINE	88-74-4	30	230	30	10	UG/KG	U	U	
2-NITROPHENOL	88-75-5	30	56	30	30	UG/KG	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	90	110	90	20	UG/KG	U	UJ	C
3-NITROANILINE	99-09-2	90	230	90	18	UG/KG	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	90	170	90	90	UG/KG	U	UJ	C

Sample Delivery Group: 240-18297-1

4-BROMOPHENYL PHENYL ETHE	101-55-3	30	56	30	15	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	30	170	30	24	UG/KG	U	U	
4-CHLOROANILINE	106-47-8	30	170	30	19	UG/KG	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	30	56	30	15	UG/KG	U	U	
4-NITROANILINE	100-01-6	30	230	30	29	UG/KG	U	R	C
4-NITROPHENOL	100-02-7	90	370	90	90	UG/KG	U	U	
ACENAPHTHENE	83-32-9	3.7	7.5	3.7	3.7	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	3.7	7.5	3.7	3.7	UG/KG	U	U	
ANTHRACENE	120-12-7	3.7	7.5	3.7	3.7	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	3.7	7.5	3.7	3.7	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	3.7	7.5	3.7	3.7	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	6.7	7.5	3.7	3.7	UG/KG	J M	J	
BENZO(G,H,I)PERYLENE	191-24-2	3.7	7.5	3.7	3.7	UG/KG	U	U	
BENZO(K)FLUORANTHENE	207-08-9	3.7	7.5	3.7	3.7	UG/KG	U	U	
BENZOIC ACID	65-85-0	380	750	380	380	UG/KG	U	U	
BENZYL ALCOHOL	100-51-6	30	370	30	24	UG/KG	U	U	
BENZYL BUTYL PHTHALATE	85-68-7	30	56	30	11	UG/KG	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	30	110	30	25	UG/KG	U	U	
BIS(2-CHLOROISOPROPYL) ETHE	108-60-1	30	110	30	11	UG/KG	U	U	
BIS(2-ETHYLHEXYL) PHTHALAT	117-81-7	56	56	30	21	UG/KG	J	U	B, result from 22
CARBAZOLE	86-74-8	30	56	30	30	UG/KG	U	U	
CHRYSENE	218-01-9	3.7	7.5	3.7	1.2	UG/KG	U	U	
CRESOLS, M & P		90	450	90	23	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	3.7	7.5	3.7	3.7	UG/KG	U	U	
DIBENZOFURAN	132-64-9	3.7	56	3.7	3.7	UG/KG	U	U	
DIETHYL PHTHALATE	84-66-2	30	56	30	18	UG/KG	U	U	
DIMETHYL PHTHALATE	131-11-3	30	56	30	19	UG/KG	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	30	56	30	17	UG/KG	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	30	56	30	30	UG/KG	U	U	
FLUORANTHENE	206-44-0	3.7	7.5	3.7	3.7	UG/KG	U	U	
FLUORENE	86-73-7	3.7	7.5	3.7	3.7	UG/KG	U	U	
HEXACHLOROBENZENE	118-74-1	3.7	7.5	3.7	2.4	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	30	56	30	30	UG/KG	U	U	

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HEXACHLOROCYCLOPENTADIE	77-47-4	30	370	30	30	UG/KG	U	U
HEXACHLOROETHANE	67-72-1	30	56	30	10	UG/KG	U	U
INDENO(1,2,3-C,D)PYRENE	193-39-5	3.7	7.5	3.7	3.7	UG/KG	U	U
ISOPHORONE	78-59-1	30	56	30	15	UG/KG	U	U
NAPHTHALENE	91-20-3	5.4	7.5	3.7	3.7	UG/KG	J	J
NITROBENZENE	98-95-3	3.7	110	3.7	2.5	UG/KG	U	U
N-NITROSODI-N-PROPYLAMINE	621-64-7	30	56	30	30	UG/KG	U	U
N-NITROSODIPHENYLAMINE	86-30-6	30	56	30	24	UG/KG	U	U
PENTACHLOROPHENOL	87-86-5	90	170	90	90	UG/KG	U	U
PHENANTHRENE	85-01-8	3.7	7.5	3.7	3.7	UG/KG	U	U
PHENOL	108-95-2	30	56	30	30	UG/KG	U	U
PYRENE	129-00-0	3.7	7.5	3.7	3.7	UG/KG	U	U

Sample Delivery Group: 240-18297-1

Analysis Method SW8330

Sample Name 072SB-0014-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18297-17 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.049	0.25	0.049	0.0099	MG/KG	U	U	
1,3-DINITROBENZENE	99-65-0	0.049	0.25	0.049	0.0042	MG/KG	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.049	0.25	0.049	0.019	MG/KG	U	U	
2,4-DINITROTOLUENE	121-14-2	0.049	0.25	0.049	0.0052	MG/KG	U	U	
2,6-DINITROTOLUENE	606-20-2	0.049	0.25	0.049	0.0072	MG/KG	U	U	
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.049	0.25	0.049	0.012	MG/KG	U	U	
2-NITROTOLUENE	88-72-2	0.049	0.25	0.049	0.013	MG/KG	U	UJ	C
3-NITROTOLUENE	99-08-1	0.049	0.25	0.049	0.015	MG/KG	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.049	0.25	0.049	0.0099	MG/KG	U	U	
4-NITROTOLUENE	99-99-0	0.049	0.25	0.049	0.018	MG/KG	U	U	
HMX	2691-41-0	0.049	0.25	0.049	0.012	MG/KG	U	U	
NITROBENZENE	98-95-3	0.049	0.25	0.049	0.017	MG/KG	U	R	D
NITROGLYCERIN	55-63-0	0.25	0.49	0.25	0.015	MG/KG	U	U	
NITROGUANIDINE	2691-41-0	0.04	0.25	0.040	0.020	MG/KG	U	U	
PETN	78-11-5	0.25	0.49	0.25	0.025	MG/KG	U	U	
RDX	121-82-4	0.049	0.25	0.049	0.012	MG/KG	U	UJ	C
TETRYL	479-45-8	0.049	0.25	0.049	0.0099	MG/KG	U	U	

Sample Delivery Group: 240-18441-1

Analysis Method M8015D

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		9.6	17	9.6	9.6	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		9.6	17	9.6	9.6	MG/KG	U	U	

Sample Name 072SB-0030-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		9.7	17	9.7	9.7	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		9.7	17	9.7	9.7	MG/KG	U	U	

Analysis Method M8015V

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		40	80	40	37	UG/KG	U	U	

Sample Name 072SB-0030-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		42	84	42	39	UG/KG	U	U	

Sample Delivery Group: 240-18441-1

Analysis Method SW6020

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	6000.0	3.0	0.60	0.29	MG/KG	J	J	
ANTIMONY	7440-36-0	0.10	0.20	0.10	0.046	MG/KG	U J	R	Q
ARSENIC	7440-38-2	0.51	0.10	0.050	0.018	MG/KG		J-	Q
BARIUM	7440-39-3	31.0	1.0	0.020	0.011	MG/KG	Q	J	M
BERYLLIUM	7440-41-7	0.69	0.10	0.010	0.0075	MG/KG			
CADMIUM	7440-43-9	0.19	0.10	0.030	0.013	MG/KG	Q	J+	I
CALCIUM	7440-70-2	750.0	10	2.5	1.3	MG/KG		J-	Q
CHROMIUM	7440-47-3	13.0	0.20	0.040	0.022	MG/KG			
COBALT	7440-48-4	5.5	0.050	0.010	0.0024	MG/KG	Q		
COPPER	7440-50-8	17.0	0.20	0.060	0.033	MG/KG	Q	J-	Q
IRON	7439-89-6	11000.0	5.0	2.0	1.1	MG/KG			
LEAD	7439-92-1	8.7	0.10	0.030	0.015	MG/KG			
MAGNESIUM	7439-95-4	2300.0	10	2.0	1.1	MG/KG			
MANGANESE	7439-96-5	210.0	0.50	0.030	0.016	MG/KG	Q J	J	
NICKEL	7440-02-0	16.0	0.10	0.030	0.011	MG/KG	Q		
POTASSIUM	7440-09-7	1300.0	10	6.0	3.2	MG/KG			
SELENIUM	7782-49-2	0.74	0.50	0.10	0.051	MG/KG		J-	Q
SILVER	7440-22-4	0.03	0.10	0.030	0.011	MG/KG	J	J+	I
SODIUM	7440-23-5	71.0	10	5.0	2.7	MG/KG			
THALLIUM	7440-28-0	0.12	0.10	0.020	0.010	MG/KG	J	J-	Q
VANADIUM	7440-62-2	8.9	0.10	0.060	0.030	MG/KG			
ZINC	7440-66-6	45.0	0.50	0.20	0.065	MG/KG	Q	J	A

Analysis Method SW7471A

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.032	0.097	0.032	0.014	MG/KG	U	U	

Sample Delivery Group: 240-18441-1

Analysis Method SW8260B

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.51	5.1	0.51	0.24	UG/KG	U	UJ	S
ETHYLBENZENE	100-41-4	0.51	5.1	0.51	0.27	UG/KG	U	UJ	S
TOLUENE	108-88-3	0.51	5.1	0.51	0.28	UG/KG	U	UJ	S
XYLENES, TOTAL		1.5	10	1.5	0.69	UG/KG	U	UJ	S

Sample Name 072SB-0030-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.88	4.4	0.88	0.49	UG/KG	U	UJ	S
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.44	4.4	0.44	0.30	UG/KG	U	UJ	S, I
1,1,2-TRICHLOROETHANE	79-00-5	0.44	4.4	0.44	0.34	UG/KG	U	UJ	S
1,1-DICHLOROETHANE	75-34-3	0.44	4.4	0.44	0.32	UG/KG	U	UJ	S
1,1-DICHLOROETHENE	75-35-4	0.88	4.4	0.88	0.46	UG/KG	U	UJ	S
1,2-DIBROMOETHANE (ETHYLEN	06-93-4	0.88	4.4	0.88	0.44	UG/KG	U	UJ	S
1,2-DICHLOROETHANE	107-06-2	0.44	4.4	0.44	0.30	UG/KG	U	UJ	S
1,2-DICHLOROPROPANE	78-87-5	0.88	4.4	0.88	0.61	UG/KG	U	UJ	S
2-HEXANONE	591-78-6	0.88	18	0.88	0.55	UG/KG	U	UJ	C, S
ACETONE	67-64-1	5.5	18	5.5	5.5	UG/KG	U	UJ	C, S
BENZENE	71-43-2	0.44	4.4	0.44	0.20	UG/KG	U	UJ	S
BROMOCHLOROMETHANE	74-97-5	0.88	4.4	0.88	0.62	UG/KG	U	UJ	S
BROMODICHLOROMETHANE	75-27-4	0.44	4.4	0.44	0.25	UG/KG	U	UJ	S
BROMOFORM	75-25-2	0.44	4.4	0.44	0.29	UG/KG	U	UJ	S
BROMOMETHANE	74-83-9	0.88	4.4	0.88	0.47	UG/KG	U	UJ	S
CARBON DISULFIDE	75-15-0	0.44	4.4	0.44	0.39	UG/KG	U	UJ	S
CARBON TETRACHLORIDE	56-23-5	0.44	4.4	0.44	0.33	UG/KG	U	UJ	S
CHLOROBENZENE	108-90-7	0.44	4.4	0.44	0.29	UG/KG	U	UJ	S
CHLOROETHANE	75-00-3	0.88	4.4	0.88	0.76	UG/KG	U	UJ	S
CHLOROFORM	67-66-3	0.44	4.4	0.44	0.26	UG/KG	U	UJ	S

Sample Delivery Group: 240-18441-1

CHLOROMETHANE	74-87-3	0.44	4.4	0.44	0.36	UG/KG	U	UJ	S
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.44	4.4	0.44	0.30	UG/KG	U	UJ	S
DIBROMOCHLOROMETHANE	124-48-1	0.88	4.4	0.88	0.48	UG/KG	U	UJ	S
ETHYLBENZENE	100-41-4	0.44	4.4	0.44	0.23	UG/KG	U	UJ	S
METHYL ETHYL KETONE (2-BUT	78-93-3	1.8	18	1.8	1.2	UG/KG	U	UJ	S
METHYL ISOBUTYL KETONE (4-	108-10-1	0.88	18	0.88	0.47	UG/KG	U	UJ	S
METHYLENE CHLORIDE	75-09-2	0.88	4.4	0.88	0.59	UG/KG	U	UJ	S
STYRENE	100-42-5	0.44	4.4	0.44	0.13	UG/KG	U	UJ	S
TERT-BUTYL METHYL ETHER	1634-04-4	0.44	4.4	0.44	0.38	UG/KG	U	UJ	S
TETRACHLOROETHYLENE(PCE)	127-18-4	0.88	4.4	0.88	0.46	UG/KG	U	UJ	S
TOLUENE	108-88-3	0.44	4.4	0.44	0.24	UG/KG	U	UJ	S
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.88	8.8	0.88	0.68	UG/KG	U	UJ	S
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.88	4.4	0.88	0.47	UG/KG	U	UJ	S
TRICHLOROETHYLENE (TCE)	79-01-6	0.44	4.4	0.44	0.37	UG/KG	U	UJ	S
VINYL CHLORIDE	75-01-4	0.44	4.4	0.44	0.34	UG/KG	U	UJ	S
XYLENES, TOTAL		1.3	8.8	1.3	0.59	UG/KG	U	UJ	S

Sample Delivery Group: 240-18441-1

Analysis Method SW8270D

Sample Name 072SB-0026-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18441-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ACENAPHTHENE	83-32-9	3.4	6.9	3.4	3.4	UG/KG	U	UJ	S
ACENAPHTHENE	83-32-9	3.5	7.0	3.5	3.5	UG/KG	U H	R	D
ACENAPHTHYLENE	208-96-8	3.4	6.9	3.4	3.4	UG/KG	U	UJ	S
ACENAPHTHYLENE	208-96-8	3.5	7.0	3.5	3.5	UG/KG	U H	R	D
ANTHRACENE	120-12-7	3.4	6.9	3.4	3.4	UG/KG	U	UJ	S
ANTHRACENE	120-12-7	3.5	7.0	3.5	3.5	UG/KG	U H	R	D
BENZO(A)ANTHRACENE	56-55-3	15.0	6.9	3.4	3.4	UG/KG		J	S
BENZO(A)ANTHRACENE	56-55-3	3.5	7.0	3.5	3.5	UG/KG	U H	R	D
BENZO(A)PYRENE	50-32-8	18.0	7.0	3.5	3.5	UG/KG	H	R	D
BENZO(A)PYRENE	50-32-8	18.0	6.9	3.4	3.4	UG/KG		J	S
BENZO(B)FLUORANTHENE	205-99-2	12.0	7.0	3.5	3.5	UG/KG	H	R	D
BENZO(B)FLUORANTHENE	205-99-2	16.0	6.9	3.4	3.4	UG/KG		J	S
BENZO(G,H,I)PERYLENE	191-24-2	130.0	7.0	3.5	3.5	UG/KG	H	R	D
BENZO(G,H,I)PERYLENE	191-24-2	140.0	6.9	3.4	3.4	UG/KG		J	S
BENZO(K)FLUORANTHENE	207-08-9	3.5	7.0	3.5	3.5	UG/KG	U H	R	D
BENZO(K)FLUORANTHENE	207-08-9	5.8	6.9	3.4	3.4	UG/KG	J M	J	S
CHRYSENE	218-01-9	3.5	7.0	3.5	1.2	UG/KG	U H	R	D
CHRYSENE	218-01-9	9.1	6.9	3.4	1.1	UG/KG		J	S
DIBENZ(A,H)ANTHRACENE	53-70-3	3.4	6.9	3.4	3.4	UG/KG	U	UJ	S
DIBENZ(A,H)ANTHRACENE	53-70-3	7.1	7.0	3.5	3.5	UG/KG	H	R	D
FLUORANTHENE	206-44-0	12.0	6.9	3.4	3.4	UG/KG		J	S
FLUORANTHENE	206-44-0	9.5	7.0	3.5	3.5	UG/KG	H	R	D
FLUORENE	86-73-7	10.0	7.0	3.5	3.5	UG/KG	H	R	D
FLUORENE	86-73-7	8.4	6.9	3.4	3.4	UG/KG		J	S
INDENO(1,2,3-C,D)PYRENE	193-39-5	17.0	6.9	3.4	3.4	UG/KG		J	S
INDENO(1,2,3-C,D)PYRENE	193-39-5	18.0	7.0	3.5	3.5	UG/KG	H	R	D
NAPHTHALENE	91-20-3	29.0	6.9	3.4	3.4	UG/KG		J	S
NAPHTHALENE	91-20-3	30.0	7.0	3.5	3.5	UG/KG	H	R	D

Sample Delivery Group: 240-18441-1

PHENANTHRENE	85-01-8	47.0	7.0	3.5	3.5	UG/KG	H	R	D
PHENANTHRENE	85-01-8	50.0	6.9	3.4	3.4	UG/KG		J	S
PYRENE	129-00-0	15.0	7.0	3.5	3.5	UG/KG	H	R	D
PYRENE	129-00-0	16.0	6.9	3.4	3.4	UG/KG		J	S

Sample Delivery Group: 240-18449-1

Analysis Method M8015D

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	

Analysis Method M8015V

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		750.0	90	45	41	UG/KG			

Sample Delivery Group: 240-18449-1

Analysis Method SW6020

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	12000.0	3.3	0.67	0.32	MG/KG			
ANTIMONY	7440-36-0	0.11	0.22	0.11	0.051	MG/KG	U	R	Q
ARSENIC	7440-38-2	9.4	0.11	0.056	0.020	MG/KG		J-	Q
BARIUM	7440-39-3	50.0	1.1	0.022	0.012	MG/KG	Q	J-	Q, M
BERYLLIUM	7440-41-7	0.64	0.11	0.011	0.0084	MG/KG		J-	Q
CADMIUM	7440-43-9	0.19	0.11	0.033	0.015	MG/KG	Q	J+	I
CALCIUM	7440-70-2	20000.0	11	2.8	1.5	MG/KG			
CHROMIUM	7440-47-3	18.0	0.22	0.045	0.025	MG/KG		J-	Q
COBALT	7440-48-4	8.5	0.056	0.011	0.0027	MG/KG	Q		
COPPER	7440-50-8	18.0	0.22	0.067	0.037	MG/KG	Q		
IRON	7439-89-6	24000.0	5.6	2.2	1.2	MG/KG			
LEAD	7439-92-1	9.7	0.11	0.033	0.017	MG/KG		J+	Q
MAGNESIUM	7439-95-4	6000.0	11	2.2	1.2	MG/KG			
MANGANESE	7439-96-5	270.0	0.56	0.033	0.018	MG/KG	Q		
NICKEL	7440-02-0	24.0	0.11	0.033	0.013	MG/KG	Q	J-	Q
POTASSIUM	7440-09-7	2500.0	11	6.7	3.5	MG/KG		J-	E, Q
SELENIUM	7782-49-2	0.78	0.56	0.11	0.057	MG/KG		J-	Q
SILVER	7440-22-4	0.029	0.11	0.033	0.013	MG/KG	J	J+	I
SODIUM	7440-23-5	84.0	11	5.6	3.0	MG/KG			
THALLIUM	7440-28-0	0.14	0.11	0.022	0.011	MG/KG			
VANADIUM	7440-62-2	20.0	0.11	0.067	0.033	MG/KG		J-	Q
ZINC	7440-66-6	53.0	0.56	0.22	0.072	MG/KG	Q		

Analysis Method SW7471A

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.039	0.12	0.039	0.016	MG/KG	U	U	

Sample Delivery Group: 240-18449-1

Analysis Method SW8260B

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.98	4.9	0.98	0.55	UG/KG	U	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.49	4.9	0.49	0.33	UG/KG	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.49	4.9	0.49	0.38	UG/KG	U	U	
1,1-DICHLOROETHANE	75-34-3	0.49	4.9	0.49	0.35	UG/KG	U	U	
1,1-DICHLOROETHENE	75-35-4	0.98	4.9	0.98	0.51	UG/KG	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	0.98	4.9	0.98	0.49	UG/KG	U	U	
1,2-DICHLOROETHANE	107-06-2	0.49	4.9	0.49	0.33	UG/KG	U	U	
1,2-DICHLOROPROPANE	78-87-5	0.98	4.9	0.98	0.68	UG/KG	U	U	
2-HEXANONE	591-78-6	0.98	20	0.98	0.62	UG/KG	U	UJ	C
ACETONE	67-64-1	6.2	20	6.2	6.2	UG/KG	U	U	
BENZENE	71-43-2	0.49	4.9	0.49	0.23	UG/KG	U	U	
BROMOCHLOROMETHANE	74-97-5	0.98	4.9	0.98	0.69	UG/KG	U	U	
BROMODICHLOROMETHANE	75-27-4	0.49	4.9	0.49	0.27	UG/KG	U	U	
BROMOFORM	75-25-2	0.49	4.9	0.49	0.32	UG/KG	U	U	
BROMOMETHANE	74-83-9	0.98	4.9	0.98	0.53	UG/KG	U	U	
CARBON DISULFIDE	75-15-0	0.49	4.9	0.49	0.43	UG/KG	U	U	
CARBON TETRACHLORIDE	56-23-5	0.49	4.9	0.49	0.36	UG/KG	U	U	
CHLOROBENZENE	108-90-7	0.49	4.9	0.49	0.32	UG/KG	U	U	
CHLOROETHANE	75-00-3	0.98	4.9	0.98	0.84	UG/KG	U	U	
CHLOROFORM	67-66-3	0.49	4.9	0.49	0.28	UG/KG	U	U	
CHLOROMETHANE	74-87-3	0.49	4.9	0.49	0.40	UG/KG	U	U	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.49	4.9	0.49	0.33	UG/KG	U	U	
DIBROMOCHLOROMETHANE	124-48-1	0.98	4.9	0.98	0.54	UG/KG	U	U	
ETHYLBENZENE	100-41-4	0.49	4.9	0.49	0.25	UG/KG	U	U	
METHYL ETHYL KETONE (2-BUT	78-93-3	2.0	20	2.0	1.4	UG/KG	U	U	
METHYL ISOBUTYL KETONE (4-	108-10-1	0.98	20	0.98	0.53	UG/KG	U	U	
METHYLENE CHLORIDE	75-09-2	0.98	4.9	0.98	0.66	UG/KG	U	U	
STYRENE	100-42-5	0.49	4.9	0.49	0.15	UG/KG	U	U	

Sample Delivery Group: 240-18449-1

TERT-BUTYL METHYL ETHER	1634-04-4	0.49	4.9	0.49	0.42	UG/KG	U	U
TETRACHLOROETHYLENE(PCE)	127-18-4	0.98	4.9	0.98	0.51	UG/KG	U	U
TOLUENE	108-88-3	0.79	4.9	0.49	0.26	UG/KG	J	J
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.98	9.8	0.98	0.75	UG/KG	U	U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.98	4.9	0.98	0.53	UG/KG	U	U
TRICHLOROETHYLENE (TCE)	79-01-6	0.49	4.9	0.49	0.41	UG/KG	U	U
VINYL CHLORIDE	75-01-4	0.49	4.9	0.49	0.38	UG/KG	U	U
XYLENES, TOTAL		1.5	9.8	1.5	0.66	UG/KG	U	U

Analysis Method SW8270D

Sample Name 072SB-0039-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18449-6 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ACENAPHTHENE	83-32-9	4.0	8.0	4.0	4.0	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
ANTHRACENE	120-12-7	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	5.7	8.0	4.0	4.0	UG/KG	J M	J	
BENZO(A)PYRENE	50-32-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	4.3	8.0	4.0	4.0	UG/KG	J M	J	
BENZO(G,H,I)PERYLENE	191-24-2	4.0	8.0	4.0	4.0	UG/KG	U	U	
BENZO(K)FLUORANTHENE	207-08-9	4.0	8.0	4.0	4.0	UG/KG	U	U	
CHRYSENE	218-01-9	7.2	8.0	4.0	1.3	UG/KG	J M	J	
DIBENZ(A,H)ANTHRACENE	53-70-3	4.0	8.0	4.0	4.0	UG/KG	U	U	
FLUORANTHENE	206-44-0	4.0	8.0	4.0	4.0	UG/KG	U	U	
FLUORENE	86-73-7	4.0	8.0	4.0	4.0	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	4.0	8.0	4.0	4.0	UG/KG	U	U	
NAPHTHALENE	91-20-3	5.2	8.0	4.0	4.0	UG/KG	J	J	
PHENANTHRENE	85-01-8	4.0	8.0	4.0	4.0	UG/KG	U	U	
PYRENE	129-00-0	4.0	8.0	4.0	4.0	UG/KG	U	U	

Sample Delivery Group: 240-18544-1

Analysis Method M8015D

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		10	19	10	10	MG/KG	U	U	

Analysis Method M8015V

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		44	88	44	40	UG/KG	U	U	

Sample Delivery Group: 240-18544-1

Analysis Method SW6020

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	5400.0	3.1	0.62	0.29	MG/KG			
ANTIMONY	7440-36-0	0.069	0.21	0.10	0.047	MG/KG	J	J	I, Q
ARSENIC	7440-38-2	11.0	0.10	0.052	0.019	MG/KG		J-	Q
BARIUM	7440-39-3	21.0	1.0	0.021	0.011	MG/KG	Q	J	M
BERYLLIUM	7440-41-7	0.4	0.10	0.010	0.0078	MG/KG			
CADMIUM	7440-43-9	0.15	0.10	0.031	0.014	MG/KG	Q	J	I, Q
CALCIUM	7440-70-2	1200.0	10	2.6	1.4	MG/KG		J+	Q
CHROMIUM	7440-47-3	9.2	0.21	0.041	0.023	MG/KG		J-	Q
COBALT	7440-48-4	7.7	0.052	0.010	0.0025	MG/KG	Q	J-	Q
COPPER	7440-50-8	15.0	0.21	0.062	0.034	MG/KG	Q	J-	Q
IRON	7439-89-6	17000.0	5.2	2.1	1.1	MG/KG			
LEAD	7439-92-1	11.0	0.10	0.031	0.016	MG/KG			
MAGNESIUM	7439-95-4	1600.0	10	2.1	1.1	MG/KG			
MANGANESE	7439-96-5	270.0	0.52	0.031	0.016	MG/KG	Q	J	E
NICKEL	7440-02-0	16.0	0.10	0.031	0.012	MG/KG	Q		
POTASSIUM	7440-09-7	950.0	10	6.2	3.3	MG/KG		J-	Q
SELENIUM	7782-49-2	0.38	0.52	0.10	0.053	MG/KG	J	J	I, Q
SILVER	7440-22-4	0.024	0.10	0.031	0.012	MG/KG	J	J	I, Q
SODIUM	7440-23-5	32.0	10	5.2	2.7	MG/KG		J-	Q
THALLIUM	7440-28-0	0.12	0.10	0.021	0.011	MG/KG			
VANADIUM	7440-62-2	9.8	0.10	0.062	0.031	MG/KG			
ZINC	7440-66-6	59.0	0.52	0.21	0.067	MG/KG	Q		

Analysis Method SW7471A

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.017	0.12	0.041	0.017	MG/KG	J	J	

Sample Delivery Group: 240-18544-1

Analysis Method SW8260B

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.58	5.8	0.58	0.27	UG/KG	U J	U	
ETHYLBENZENE	100-41-4	0.58	5.8	0.58	0.30	UG/KG	U J	U	
TOLUENE	108-88-3	0.58	5.8	0.58	0.32	UG/KG	U J	U	
XYLENES, TOTAL		1.8	12	1.8	0.78	UG/KG	U J	U	

Analysis Method SW8270D

Sample Name 072SB-0063-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18544-1 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ACENAPHTHENE	83-32-9	3.7	7.6	3.7	3.7	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	3.7	7.6	3.7	3.7	UG/KG	U	U	
ANTHRACENE	120-12-7	3.7	7.6	3.7	3.7	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	3.7	7.6	3.7	3.7	UG/KG	U	U	
BENZO(A)PYRENE	50-32-8	3.7	7.6	3.7	3.7	UG/KG	U	U	
BENZO(B)FLUORANTHENE	205-99-2	3.7	7.6	3.7	3.7	UG/KG	U	U	
BENZO(G,H,I)PERYLENE	191-24-2	3.7	7.6	3.7	3.7	UG/KG	U	U	
BENZO(K)FLUORANTHENE	207-08-9	3.7	7.6	3.7	3.7	UG/KG	U	U	
CHRYSENE	218-01-9	3.7	7.6	3.7	1.2	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	3.7	7.6	3.7	3.7	UG/KG	U	U	
FLUORANTHENE	206-44-0	3.7	7.6	3.7	3.7	UG/KG	U	U	
FLUORENE	86-73-7	3.7	7.6	3.7	3.7	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	3.7	7.6	3.7	3.7	UG/KG	U	U	
NAPHTHALENE	91-20-3	3.7	7.6	3.7	3.7	UG/KG	U	U	
PHENANTHRENE	85-01-8	3.7	7.6	3.7	3.7	UG/KG	U	U	
PYRENE	129-00-0	3.7	7.6	3.7	3.7	UG/KG	U	U	

Sample Delivery Group: 240-18703-1

Analysis Method M8015D

Sample Name 072SB-0083-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		11	19	11	11	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		11	19	11	11	MG/KG	U	U	

Sample Name 072SB-0085-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
C10-C20 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	
C20-C34 PETROLEUM HYDROCA		11	20	11	11	MG/KG	U	U	

Analysis Method M8015V

Sample Name 072SB-0083-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		46	93	46	43	UG/KG	U	U	

Sample Name 072SB-0085-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PETROLEUM HYDROCARBONS C		63	130	63	58	UG/KG	U	U	

Sample Delivery Group: 240-18703-1

Analysis Method SW8260B

Sample Name 072SB-0083-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-9 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.47	4.7	0.47	0.22	UG/KG	U	U	
ETHYLBENZENE	100-41-4	0.47	4.7	0.47	0.24	UG/KG	U	U	
TOLUENE	108-88-3	2.7	4.7	0.47	0.25	UG/KG	J	J	
XYLENES, TOTAL		1.4	9.4	1.4	0.63	UG/KG	U	U	

Sample Name 072SB-0085-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18703-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.60	6.0	0.60	0.28	UG/KG	U	U	
ETHYLBENZENE	100-41-4	0.60	6.0	0.60	0.31	UG/KG	U	U	
TOLUENE	108-88-3	4.3	6.0	0.60	0.32	UG/KG	J	J	
XYLENES, TOTAL		1.8	12	1.8	0.80	UG/KG	U	U	

Sample Delivery Group: 240-18735-1

Analysis Method SW7196A

Sample Name 076SB-0119-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18735-8 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
CHROMIUM, HEXAVALENT	18540-29-9	0.91	0.91	0.91	0.31	MG/KG	U	UJ	H

Sample Name 076SB-0122-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18735-11 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
CHROMIUM, HEXAVALENT	18540-29-9	0.94	0.94	0.94	0.32	MG/KG	U	UJ	H

Sample Name 076SB-0126-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18735-15 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
CHROMIUM, HEXAVALENT	18540-29-9	0.31	0.89	0.89	0.30	MG/KG	J	J-	H

Sample Name 076SB-0130-0001-SO **AnalysisType:** N

Lab Sample Name: 240-18735-19 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
CHROMIUM, HEXAVALENT	18540-29-9	0.88	0.88	0.88	0.30	MG/KG	U	UJ	H

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-75
George Road Sewer Treatment Plant Mercury Spill

Sample Delivery Group: 240-17467-1

Analysis Method E353.2

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROCELLULOSE	9004-70-0	28	78	28	12	MG/KG	U	U	

Analysis Method SW7471A

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.47	0.15	0.050	0.021	MG/KG	J	J-	Q

Analysis Method SW8082

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	40	100	40	34	UG/KG	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	40	80	40	26	UG/KG	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	40	72	40	22	UG/KG	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	40	64	40	21	UG/KG	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	40	88	40	27	UG/KG	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	40	88	40	27	UG/KG	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	40	88	40	27	UG/KG	U	U	

Sample Delivery Group: 240-17467-1

Analysis Method SW8260B

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	1.5	7.6	1.5	0.86	UG/KG	U J	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.76	7.6	0.76	0.52	UG/KG	U J	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.76	7.6	0.76	0.60	UG/KG	U	U	
1,1-DICHLOROETHANE	75-34-3	0.76	7.6	0.76	0.55	UG/KG	U	U	
1,1-DICHLOROETHENE	75-35-4	1.5	7.6	1.5	0.80	UG/KG	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	1.5	7.6	1.5	0.76	UG/KG	U	U	
1,2-DICHLOROETHANE	107-06-2	0.76	7.6	0.76	0.52	UG/KG	U	U	
1,2-DICHLOROPROPANE	78-87-5	1.5	7.6	1.5	1.1	UG/KG	U	U	
2-HEXANONE	591-78-6	1.6	31	1.5	0.96	UG/KG	J	J	
ACETONE	67-64-1	9.6	31	9.6	9.6	UG/KG	U	U	
BENZENE	71-43-2	0.76	7.6	0.76	0.35	UG/KG	U	U	
BROMOCHLOROMETHANE	74-97-5	1.5	7.6	1.5	1.1	UG/KG	U	U	
BROMODICHLOROMETHANE	75-27-4	0.76	7.6	0.76	0.43	UG/KG	U J	U	
BROMOFORM	75-25-2	0.76	7.6	0.76	0.50	UG/KG	U	U	
BROMOMETHANE	74-83-9	1.5	7.6	1.5	0.83	UG/KG	U	U	
CARBON DISULFIDE	75-15-0	1.3	7.6	0.76	0.67	UG/KG	J	J	
CARBON TETRACHLORIDE	56-23-5	0.76	7.6	0.76	0.57	UG/KG	U	U	
CHLOROBENZENE	108-90-7	0.76	7.6	0.76	0.50	UG/KG	U J	U	
CHLOROETHANE	75-00-3	1.5	7.6	1.5	1.3	UG/KG	U J	U	
CHLOROFORM	67-66-3	0.76	7.6	0.76	0.44	UG/KG	U	U	
CHLOROMETHANE	74-87-3	0.76	7.6	0.76	0.63	UG/KG	U	U	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.76	7.6	0.76	0.52	UG/KG	U J	U	
DIBROMOCHLOROMETHANE	124-48-1	1.5	7.6	1.5	0.84	UG/KG	U	U	
ETHYLBENZENE	100-41-4	0.76	7.6	0.76	0.40	UG/KG	U J	U	
METHYL ETHYL KETONE (2-BUT	78-93-3	3.1	31	3.1	2.1	UG/KG	U	U	
METHYL ISOBUTYL KETONE (4-	108-10-1	1.5	31	1.5	0.83	UG/KG	U	U	
METHYLENE CHLORIDE	75-09-2	1.5	7.6	1.5	1.0	UG/KG	U J	U	
STYRENE	100-42-5	7.6	7.6	0.76	0.23	UG/KG	J	U	B, result from 0.31

Sample Delivery Group: 240-17467-1

TERT-BUTYL METHYL ETHER	1634-04-4	0.76	7.6	0.76	0.66	UG/KG	U	U
TETRACHLOROETHYLENE(PCE)	127-18-4	1.5	7.6	1.5	0.80	UG/KG	U J	U
TOLUENE	108-88-3	0.76	7.6	0.76	0.41	UG/KG	U J	U
TOTAL 1,2-DICHLOROETHENE	540-59-0	1.5	15	1.5	1.2	UG/KG	U J	U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.5	7.6	1.5	0.83	UG/KG	U	U
TRICHLOROETHYLENE (TCE)	79-01-6	0.76	7.6	0.76	0.64	UG/KG	U	U
VINYL CHLORIDE	75-01-4	0.76	7.6	0.76	0.60	UG/KG	U	U
XYLENES, TOTAL		2.3	15	2.3	1.0	UG/KG	U J	U

Sample Delivery Group: 240-17467-1

Analysis Method SW8270D

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	43	80	43	43	UG/KG	U	U	
1,2,4-TRICHLOROBENZENE	120-82-1	43	80	43	43	UG/KG	U H	R	D
1,2-DICHLOROBENZENE	95-50-1	140.0	80	43	15	UG/KG			
1,2-DICHLOROBENZENE	95-50-1	43	80	43	15	UG/KG	U H	R	D
1,3-DICHLOROBENZENE	541-73-1	43	80	43	18	UG/KG	U H	R	D
1,3-DICHLOROBENZENE	541-73-1	43	80	43	18	UG/KG	U	U	
1,4-DICHLOROBENZENE	106-46-7	43	80	43	32	UG/KG	U H	R	D
1,4-DICHLOROBENZENE	106-46-7	50.0	80	43	32	UG/KG	J	J	
2,2'-OXYBIS(1-CHLORO)PROPAN	108-60-1	43	160	43	15	UG/KG	U	U	
2,2'-OXYBIS(1-CHLORO)PROPAN	108-60-1	43	160	43	15	UG/KG	U H J	R	D
2,4,5-TRICHLOROPHENOL	95-95-4	43	240	43	40	UG/KG	U H	R	D
2,4,5-TRICHLOROPHENOL	95-95-4	43	240	43	40	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	130	240	130	130	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	130	240	130	130	UG/KG	U H	R	D
2,4-DICHLOROPHENOL	120-83-2	43	240	43	32	UG/KG	U	U	
2,4-DICHLOROPHENOL	120-83-2	43	240	43	32	UG/KG	U H	R	D
2,4-DIMETHYLPHENOL	105-67-9	130	240	130	32	UG/KG	U	U	
2,4-DIMETHYLPHENOL	105-67-9	130	240	130	32	UG/KG	U H	R	D
2,4-DINITROPHENOL	51-28-5	130	530	130	130	UG/KG	U H	UJ	C
2,4-DINITROPHENOL	51-28-5	130	530	130	130	UG/KG	U	UJ	C
2,4-DINITROTOLUENE	121-14-2	43	320	43	43	UG/KG	U H	R	D
2,4-DINITROTOLUENE	121-14-2	43	320	43	43	UG/KG	U	R	D
2,6-DINITROTOLUENE	606-20-2	43	320	43	33	UG/KG	U	R	D
2,6-DINITROTOLUENE	606-20-2	43	320	43	33	UG/KG	U H	R	D
2-CHLORONAPHTHALENE	91-58-7	5.3	80	5.3	5.3	UG/KG	U H	R	D
2-CHLORONAPHTHALENE	91-58-7	5.3	80	5.3	5.3	UG/KG	U	U	
2-CHLOROPHENOL	95-57-8	43	80	43	43	UG/KG	U H	R	D
2-CHLOROPHENOL	95-57-8	43	80	43	43	UG/KG	U	U	

Sample Delivery Group: 240-17467-1

2-METHYLNAPHTHALENE	91-57-6	18.0	11	5.3	5.3	UG/KG			
2-METHYLNAPHTHALENE	91-57-6	24.0	11	5.3	5.3	UG/KG	H	R	D
2-METHYLPHENOL (O-CRESOL)	95-48-7	130	320	130	130	UG/KG	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	130	320	130	130	UG/KG	U H	R	D
2-NITROANILINE	88-74-4	43	320	43	15	UG/KG	U	U	
2-NITROANILINE	88-74-4	43	320	43	14	UG/KG	U H	R	D
2-NITROPHENOL	88-75-5	43	80	43	43	UG/KG	U	U	
2-NITROPHENOL	88-75-5	43	80	43	43	UG/KG	U H	R	D
3,3'-DICHLOROBENZIDINE	91-94-1	130	160	130	29	UG/KG	U H J	R	D
3,3'-DICHLOROBENZIDINE	91-94-1	130	160	130	29	UG/KG	U J	R	Q
3-NITROANILINE	99-09-2	130	320	130	25	UG/KG	U H J	R	D
3-NITROANILINE	99-09-2	130	320	130	26	UG/KG	U J	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	130	240	130	130	UG/KG	U	UJ	C
4,6-DINITRO-2-METHYLPHENOL	534-52-1	130	240	130	130	UG/KG	U H	UJ	C
4-BROMOPHENYL PHENYL ETHE	101-55-3	43	80	43	21	UG/KG	U H	R	D
4-BROMOPHENYL PHENYL ETHE	101-55-3	43	80	43	21	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	43	240	43	33	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	43	240	43	33	UG/KG	U H	R	D
4-CHLOROANILINE	106-47-8	43	240	43	27	UG/KG	U	U	
4-CHLOROANILINE	106-47-8	43	240	43	27	UG/KG	U H	R	D
4-CHLOROPHENYL PHENYL ETH	7005-72-3	43	80	43	21	UG/KG	U H	R	D
4-CHLOROPHENYL PHENYL ETH	7005-72-3	43	80	43	21	UG/KG	U	U	
4-NITROANILINE	100-01-6	43	320	43	41	UG/KG	U J	UJ	Q
4-NITROANILINE	100-01-6	43	320	43	41	UG/KG	U H J	R	D
4-NITROPHENOL	100-02-7	130	530	130	130	UG/KG	U H	R	D
4-NITROPHENOL	100-02-7	130	530	130	130	UG/KG	U	U	
ACENAPHTHENE	83-32-9	19.0	11	5.3	5.3	UG/KG			
ACENAPHTHENE	83-32-9	27.0	11	5.3	5.3	UG/KG	H	R	D
ACENAPHTHYLENE	208-96-8	13.0	11	5.3	5.3	UG/KG			
ACENAPHTHYLENE	208-96-8	20.0	11	5.3	5.3	UG/KG	H	R	D
ANTHRACENE	120-12-7	57.0	11	5.3	5.3	UG/KG			
ANTHRACENE	120-12-7	77.0	11	5.3	5.3	UG/KG	H	R	D
BENZO(A)ANTHRACENE	56-55-3	140.0	11	5.3	5.3	UG/KG	H	R	D

Sample Delivery Group: 240-17467-1

BENZO(A)ANTHRACENE	56-55-3	230.0	11	5.3	5.3	UG/KG			
BENZO(A)PYRENE	50-32-8	160.0	11	5.3	5.3	UG/KG	H	R	D
BENZO(A)PYRENE	50-32-8	250.0	11	5.3	5.3	UG/KG			
BENZO(B)FLUORANTHENE	205-99-2	200.0	11	5.3	5.3	UG/KG	H	R	D
BENZO(B)FLUORANTHENE	205-99-2	360.0	11	5.3	5.3	UG/KG			
BENZO(G,H,I)PERYLENE	191-24-2	120.0	11	5.3	5.3	UG/KG	J	J	C
BENZO(G,H,I)PERYLENE	191-24-2	85.0	11	5.3	5.3	UG/KG	H	R	D
BENZO(K)FLUORANTHENE	207-08-9	140.0	11	5.3	5.3	UG/KG			
BENZO(K)FLUORANTHENE	207-08-9	83.0	11	5.3	5.3	UG/KG	H	R	D
BENZOIC ACID	65-85-0	530	1100	530	530	UG/KG	U H J	R	D
BENZOIC ACID	65-85-0	530	1100	530	530	UG/KG	U J	U	
BENZYL ALCOHOL	100-51-6	43	530	43	33	UG/KG	U H	R	D
BENZYL ALCOHOL	100-51-6	43	530	43	33	UG/KG	U	U	
BENZYL BUTYL PHTHALATE	85-68-7	43	80	43	16	UG/KG	U H	R	D
BENZYL BUTYL PHTHALATE	85-68-7	43	80	43	16	UG/KG	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	43	160	43	35	UG/KG	U H	R	D
BIS(2-CHLOROETHOXY) METHA	111-91-1	43	160	43	35	UG/KG	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	5.3	160	5.3	3.2	UG/KG	U H	R	D
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	5.3	160	5.3	3.2	UG/KG	U	U	
BIS(2-ETHYLHEXYL) PHTHALAT	117-81-7	43	80	43	30	UG/KG	U H	UJ	H
CARBAZOLE	86-74-8	44.0	80	43	43	UG/KG	J	J	
CARBAZOLE	86-74-8	50.0	80	43	43	UG/KG	J H	R	D
CHRYSENE	218-01-9	160.0	11	5.3	1.8	UG/KG	H	R	D
CHRYSENE	218-01-9	270.0	11	5.3	1.8	UG/KG			
CRESOLS, M & P		130	640	130	32	UG/KG	U H	R	D
CRESOLS, M & P		130	640	130	32	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	22.0	11	5.3	5.3	UG/KG	H	R	D
DIBENZ(A,H)ANTHRACENE	53-70-3	5.3	11	5.3	5.3	UG/KG	U	UJ	C
DIBENZOFURAN	132-64-9	17.0	80	5.3	5.3	UG/KG	J	J	
DIBENZOFURAN	132-64-9	39.0	80	5.3	5.3	UG/KG	J H	R	D
DIETHYL PHTHALATE	84-66-2	43	80	43	26	UG/KG	U	U	
DIETHYL PHTHALATE	84-66-2	43	80	43	25	UG/KG	U H	R	D
DIMETHYL PHTHALATE	131-11-3	43	80	43	27	UG/KG	U	U	

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DIMETHYL PHTHALATE	131-11-3	43	80	43	27	UG/KG	U H	R	D
DI-N-BUTYL PHTHALATE	84-74-2	43	80	43	24	UG/KG	U H	R	D
DI-N-BUTYL PHTHALATE	84-74-2	43	80	43	24	UG/KG	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	43	80	43	43	UG/KG	U H	R	D
DI-N-OCTYLPHTHALATE	117-84-0	43	80	43	43	UG/KG	U	U	
FLUORANTHENE	206-44-0	390.0	11	5.3	5.3	UG/KG	H	R	D
FLUORANTHENE	206-44-0	510.0	11	5.3	5.3	UG/KG			
FLUORENE	86-73-7	5.3	11	5.3	5.3	UG/KG	U	U	
FLUORENE	86-73-7	54.0	11	5.3	5.3	UG/KG	H	R	D
HEXACHLOROBENZENE	118-74-1	5.3	11	5.3	3.3	UG/KG	U H	R	D
HEXACHLOROBENZENE	118-74-1	5.3	11	5.3	3.3	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	43	80	43	43	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	43	80	43	43	UG/KG	U H	R	D
HEXACHLOROCYCLOPENTADIE	77-47-4	43	530	43	43	UG/KG	U H	R	D
HEXACHLOROCYCLOPENTADIE	77-47-4	43	530	43	43	UG/KG	U	U	
HEXACHLOROETHANE	67-72-1	43	80	43	14	UG/KG	U H J	R	D
HEXACHLOROETHANE	67-72-1	43	80	43	14	UG/KG	U J	UJ	C
INDENO(1,2,3-C,D)PYRENE	193-39-5	120.0	11	5.3	5.3	UG/KG		J	C
INDENO(1,2,3-C,D)PYRENE	193-39-5	74.0	11	5.3	5.3	UG/KG	H	R	D
ISOPHORONE	78-59-1	43	80	43	21	UG/KG	U H	R	D
ISOPHORONE	78-59-1	43	80	43	21	UG/KG	U	U	
NAPHTHALENE	91-20-3	18.0	11	5.3	5.3	UG/KG			
NAPHTHALENE	91-20-3	41.0	11	5.3	5.3	UG/KG	H	R	D
NITROBENZENE	98-95-3	5.3	160	5.3	3.5	UG/KG	U H J	R	D
NITROBENZENE	98-95-3	5.3	160	5.3	3.5	UG/KG	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	43	80	43	43	UG/KG	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	43	80	43	43	UG/KG	U H	R	D
N-NITROSODIPHENYLAMINE	86-30-6	43	80	43	33	UG/KG	U	U	
N-NITROSODIPHENYLAMINE	86-30-6	43	80	43	33	UG/KG	U H	R	D
PENTACHLOROPHENOL	87-86-5	130	240	130	130	UG/KG	U	U	
PENTACHLOROPHENOL	87-86-5	130	240	130	130	UG/KG	U H	R	D
PHENANTHRENE	85-01-8	260.0	11	5.3	5.3	UG/KG			
PHENANTHRENE	85-01-8	330.0	11	5.3	5.3	UG/KG	H	R	D

Sample Delivery Group: 240-17467-1

PHENOL	108-95-2	43	80	43	43	UG/KG	U H	R	D
PHENOL	108-95-2	43	80	43	43	UG/KG	U	U	
PYRENE	129-00-0	280.0	11	5.3	5.3	UG/KG	H	R	D
PYRENE	129-00-0	390.0	11	5.3	5.3	UG/KG			

Analysis Method SW8330

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.049	0.25	0.049	0.0098	MG/KG	U	U	
1,3-DINITROBENZENE	99-65-0	0.049	0.25	0.049	0.0041	MG/KG	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.049	0.25	0.049	0.019	MG/KG	U	U	
2,4-DINITROTOLUENE	121-14-2	0.049	0.25	0.049	0.0052	MG/KG	U	U	
2,6-DINITROTOLUENE	606-20-2	0.049	0.25	0.049	0.0072	MG/KG	U	U	
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.049	0.25	0.049	0.012	MG/KG	U	U	
2-NITROTOLUENE	88-72-2	0.049	0.25	0.049	0.013	MG/KG	U	UJ	C
3-NITROTOLUENE	99-08-1	0.049	0.25	0.049	0.015	MG/KG	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.049	0.25	0.049	0.0098	MG/KG	U	U	
4-NITROTOLUENE	99-99-0	0.049	0.25	0.049	0.018	MG/KG	U	U	
HMX	2691-41-0	0.049	0.25	0.049	0.012	MG/KG	U	U	
NITROBENZENE	98-95-3	0.049	0.25	0.049	0.017	MG/KG	U	R	D
NITROGLYCERIN	55-63-0	0.25	0.49	0.25	0.015	MG/KG	U	U	
NITROGUANIDINE	556-88-7	0.039	0.24	0.039	0.019	MG/KG	U J	UJ	Q
PETN	78-11-5	0.25	0.49	0.25	0.025	MG/KG	U	U	
RDX	121-82-4	0.049	0.25	0.049	0.012	MG/KG	U	UJ	C
TETRYL	479-45-8	0.029	0.25	0.049	0.0098	MG/KG	J	NJ	*III

Sample Delivery Group: 240-17467-2

Analysis Method SW6020

Sample Name 075SD-0002-0001-SD **AnalysisType:** N

Lab Sample Name: 240-17467-2 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	12000.0	4.4	0.88	0.42	MG/KG	J	J	E
ANTIMONY	7440-36-0	0.21	0.29	0.15	0.067	MG/KG	J	J-	Q
ARSENIC	7440-38-2	9.5	0.15	0.074	0.027	MG/KG		J-	Q
BARIUM	7440-39-3	110.0	1.5	0.029	0.016	MG/KG	Q	J-	Q
BERYLLIUM	7440-41-7	0.89	0.15	0.015	0.011	MG/KG			
CADMIUM	7440-43-9	0.63	0.15	0.044	0.019	MG/KG			
CALCIUM	7440-70-2	6400.0	15	3.7	1.9	MG/KG	J	J	
CHROMIUM	7440-47-3	15.0	0.29	0.059	0.033	MG/KG		J-	E, Q
COBALT	7440-48-4	9.6	0.074	0.015	0.0035	MG/KG	Q		
COPPER	7440-50-8	17.0	0.29	0.088	0.049	MG/KG	Q		
IRON	7439-89-6	20000.0	7.4	2.9	1.6	MG/KG	J	J	
LEAD	7439-92-1	22.0	0.15	0.044	0.023	MG/KG			
MAGNESIUM	7439-95-4	2800.0	15	2.9	1.6	MG/KG	J	J-	Q
MANGANESE	7439-96-5	2200.0	0.74	0.044	0.023	MG/KG	Q J	J	
NICKEL	7440-02-0	21.0	0.15	0.044	0.017	MG/KG	Q	J-	Q
POTASSIUM	7440-09-7	1400.0	15	8.8	4.6	MG/KG	J	J-	E, Q
SELENIUM	7782-49-2	1.3	0.74	0.15	0.075	MG/KG		J-	Q
SILVER	7440-22-4	1.5	0.15	0.044	0.017	MG/KG			
SODIUM	7440-23-5	75.0	15	7.4	3.9	MG/KG		J	E
THALLIUM	7440-28-0	0.21	0.15	0.029	0.015	MG/KG			
VANADIUM	7440-62-2	20.0	0.15	0.088	0.044	MG/KG		J-	E, Q
ZINC	7440-66-6	140.0	0.74	0.29	0.095	MG/KG	Q J	J	

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-77 Building 1037 Laundry Waste Water Sump

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method E353.2

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROCELLULOSE	9004-70-0	17	45	17	7.1	MG/KG	U	U	

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method SW6020

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	8200	2.5	0.5	0.24	MG/KG			
ANTIMONY	7440-36-0	0.2	0.17	0.083	0.038	MG/KG		J	I, Q
ARSENIC	7440-38-2	12	0.083	0.041	0.015	MG/KG		J-	Q
BARIUM	7440-39-3	49	0.83	0.017	0.0088	MG/KG	Q	J	M
BERYLLIUM	7440-41-7	0.46	0.083	0.008	0.0062	MG/KG			
CADMIUM	7440-43-9	0.19	0.083	0.025	0.011	MG/KG		J	I, Q
CALCIUM	7440-70-2	4500	8.3	2.1	1.1	MG/KG		J	A, E
CHROMIUM	7440-47-3	18	0.17	0.033	0.018	MG/KG			
COBALT	7440-48-4	7.4	0.041	0.008	0.002	MG/KG	Q		
COPPER	7440-50-8	16	0.17	0.05	0.027	MG/KG	Q	J	Q
IRON	7439-89-6	22000	4.1	1.7	0.89	MG/KG			
LEAD	7439-92-1	22	0.083	0.025	0.013	MG/KG			
MAGNESIUM	7439-95-4	2800	8.3	1.7	0.89	MG/KG		J+	Q
MANGANESE	7439-96-5	540	0.41	0.025	0.013	MG/KG	Q		
NICKEL	7440-02-0	24	0.083	0.025	0.0093	MG/KG	Q		
POTASSIUM	7440-09-7	830	8.3	5	2.6	MG/KG		J+	Q
SELENIUM	7782-49-2	0.56	0.41	0.083	0.042	MG/KG		J-	Q
SILVER	7440-22-4	0.027	0.083	0.025	0.0094	MG/KG	J	J+	I
SODIUM	7440-23-5	29	8.3	4.1	2.2	MG/KG		UJ	E, F
THALLIUM	7440-28-0	0.13	0.083	0.017	0.0084	MG/KG			
VANADIUM	7440-62-2	16	0.083	0.05	0.025	MG/KG			
ZINC	7440-66-6	63	0.41	0.17	0.054	MG/KG	Q		

Analysis Method SW7471A

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.045	0.1	0.033	0.014	MG/KG	J	J	

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method SW8081

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALDRIN	309-00-2	13	40	13	12	UG/KG	U	U	
ALPHA BHC (ALPHA HEXACHLO	319-84-6	13	25	13	7.3	UG/KG	U	U	
ALPHA ENDOSULFAN	959-98-8	6.7	17	6.7	5.2	UG/KG	U	U	
ALPHA-CHLORDANE	5103-71-9	13	30	13	9.5	UG/KG	U	U	
BETA BHC (BETA HEXACHLORO	319-85-7	13	35	13	11	UG/KG	U J	U	
BETA ENDOSULFAN	33213-65-9	13	25	13	8.2	UG/KG	U	U	
DELTA BHC (DELTA HEXACHLO	319-86-8	13	40	13	12	UG/KG	U	U	
DIELDRIN	60-57-1	6.7	17	6.7	4.7	UG/KG	U	U	
ENDOSULFAN SULFATE	1031-07-8	13	30	13	8.8	UG/KG	U	U	
ENDRIN	72-20-8	6.7	17	6.7	5	UG/KG	U	U	
ENDRIN ALDEHYDE	7421-93-4	13	30	13	10	UG/KG	U	U	
ENDRIN KETONE	53494-70-5	6.7	20	6.7	6.3	UG/KG	U	U	
GAMMA BHC (LINDANE)	58-89-9	13	25	13	7.4	UG/KG	U	U	
GAMMA-CHLORDANE	5566-34-7	6.7	17	6.7	4.2	UG/KG	U	U	
HEPTACHLOR	76-44-8	13	35	13	11	UG/KG	U	U	
HEPTACHLOR EPOXIDE	1024-57-3	13	25	13	8	UG/KG	U J	U	
METHOXYCHLOR	72-43-5	33	50	33	15	UG/KG	U J	U	
P,P'-DDD	72-54-8	6.7	20	6.7	6.2	UG/KG	U	U	
P,P'-DDE	72-55-9	5.2	17	6.7	3.9	UG/KG	J D	J	
P,P'-DDT	50-29-3	6.7	20	6.7	6.3	UG/KG	U	U	
TOXAPHENE	8001-35-2	200	670	200	190	UG/KG	U	UJ	C

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method SW8082

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	25	65	25	21	UG/KG	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	25	50	25	16	UG/KG	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	25	45	25	14	UG/KG	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	25	40	25	13	UG/KG	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	25	55	25	17	UG/KG	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	25	55	25	17	UG/KG	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	25	55	25	17	UG/KG	U	U	

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method SW8260B

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.99	4.9	0.99	0.55	UG/KG	U J	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.51	5.1	0.51	0.35	UG/KG	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.51	5.1	0.51	0.4	UG/KG	U J	U	
1,1-DICHLOROETHANE	75-34-3	0.51	5.1	0.51	0.37	UG/KG	U	U	
1,1-DICHLOROETHENE	75-35-4	1	5.1	1	0.54	UG/KG	U J	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	1	5.1	1	0.51	UG/KG	U J	U	
1,2-DICHLOROETHANE	107-06-2	0.51	5.1	0.51	0.35	UG/KG	U J	U	
1,2-DICHLOROPROPANE	78-87-5	1	5.1	1	0.71	UG/KG	U	U	
2-HEXANONE	591-78-6	1	21	1	0.65	UG/KG	U J	U	
ACETONE	67-64-1	6.2	20	6.2	6.2	UG/KG	U J	U	
BENZENE	71-43-2	0.51	5.1	0.51	0.24	UG/KG	U J	U	
BROMOCHLOROMETHANE	74-97-5	1	5.1	1	0.73	UG/KG	U J	U	
BROMODICHLOROMETHANE	75-27-4	0.51	5.1	0.51	0.29	UG/KG	U J	U	
BROMOFORM	75-25-2	0.51	5.1	0.51	0.34	UG/KG	U J	U	
BROMOMETHANE	74-83-9	1	5.1	1	0.56	UG/KG	U J	U	
CARBON DISULFIDE	75-15-0	0.51	5.1	0.51	0.45	UG/KG	U J	U	
CARBON TETRACHLORIDE	56-23-5	0.49	4.9	0.49	0.37	UG/KG	U J	U	
CHLOROBENZENE	108-90-7	0.51	5.1	0.51	0.34	UG/KG	U J	U	
CHLOROETHANE	75-00-3	1	5.1	1	0.89	UG/KG	U	U	
CHLOROFORM	67-66-3	0.51	5.1	0.51	0.3	UG/KG	U	U	
CHLOROMETHANE	74-87-3	0.51	5.1	0.51	0.42	UG/KG	U	U	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.51	5.1	0.51	0.35	UG/KG	U	U	
DIBROMOCHLOROMETHANE	124-48-1	1	5.1	1	0.57	UG/KG	U J	U	
ETHYLBENZENE	100-41-4	0.51	5.1	0.51	0.27	UG/KG	U J	U	
METHYL ETHYL KETONE (2-BUT	78-93-3	2.1	21	2.1	1.4	UG/KG	U J	U	
METHYL ISOBUTYL KETONE (4-	108-10-1	1	21	1	0.56	UG/KG	U J	U	
METHYLENE CHLORIDE	75-09-2	1	5.1	1	0.69	UG/KG	U J	U	
STYRENE	100-42-5	0.51	5.1	0.51	0.15	UG/KG	U J	U	

Sample Delivery Group: 240-17525-1_(77-SS)2

TERT-BUTYL METHYL ETHER	1634-04-4	0.51	5.1	0.51	0.44	UG/KG	U J	U
TETRACHLOROETHYLENE(PCE)	127-18-4	1	5.1	1	0.54	UG/KG	U J	U
TOLUENE	108-88-3	0.51	5.1	0.51	0.28	UG/KG	U J	U
TOTAL 1,2-DICHLOROETHENE	540-59-0	1	10	1	0.79	UG/KG	U J	U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1	5.1	1	0.56	UG/KG	U J	U
TRICHLOROETHYLENE (TCE)	79-01-6	0.51	5.1	0.51	0.43	UG/KG	U	U
VINYL CHLORIDE	75-01-4	0.51	5.1	0.51	0.4	UG/KG	U J	U
XYLENES, TOTAL		1.5	10	1.5	0.69	UG/KG	U J	U

Sample Delivery Group: 240-17525-1_(77-SS)2

Analysis Method SW8270C

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	110	200	110	110	UG/KG	U	U	
1,2-DICHLOROBENZENE	95-50-1	110	200	110	39	UG/KG	U	U	
1,3-DICHLOROBENZENE	541-73-1	110	200	110	45	UG/KG	U	U	
1,4-DICHLOROBENZENE	106-46-7	110	200	110	81	UG/KG	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	110	610	110	100	UG/KG	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	320	610	320	320	UG/KG	U	U	
2,4-DICHLOROPHENOL	120-83-2	110	610	110	81	UG/KG	U	U	
2,4-DIMETHYLPHENOL	105-67-9	320	610	320	81	UG/KG	U	U	
2,4-DINITROPHENOL	51-28-5	320	1300	320	320	UG/KG	U	U	
2,4-DINITROTOLUENE	121-14-2	110	810	110	110	UG/KG	U	R	D
2,6-DINITROTOLUENE	606-20-2	110	810	110	85	UG/KG	U	R	D
2-CHLORONAPHTHALENE	91-58-7	13	200	13	13	UG/KG	U	U	
2-CHLOROPHENOL	95-57-8	110	200	110	110	UG/KG	U	U	
2-METHYLNAPHTHALENE	91-57-6	54	27	13	13	UG/KG			
2-METHYLPHENOL (O-CRESOL)	95-48-7	320	810	320	320	UG/KG	U	U	
2-NITROANILINE	88-74-4	110	810	110	37	UG/KG	U	U	
2-NITROPHENOL	88-75-5	110	200	110	110	UG/KG	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	320	410	320	73	UG/KG	U	UJ	C
3-NITROANILINE	99-09-2	320	810	320	65	UG/KG	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	320	610	320	320	UG/KG	U	U	
4-BROMOPHENYL PHENYL ETHE	101-55-3	110	200	110	53	UG/KG	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	110	610	110	85	UG/KG	U	U	
4-CHLOROANILINE	106-47-8	110	610	110	69	UG/KG	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	110	200	110	53	UG/KG	U	U	
4-NITROANILINE	100-01-6	110	810	110	110	UG/KG	U	U	
4-NITROPHENOL	100-02-7	320	1300	320	320	UG/KG	U	U	
ACENAPHTHENE	83-32-9	13	27	13	13	UG/KG	U	U	
ACENAPHTHYLENE	208-96-8	13	27	13	13	UG/KG	U	U	

Sample Delivery Group: 240-17525-1_(77-SS)2

ANTHRACENE	120-12-7	13	27	13	13	UG/KG	U	U	
BENZO(A)ANTHRACENE	56-55-3	57	27	13	13	UG/KG			
BENZO(A)PYRENE	50-32-8	88	27	13	13	UG/KG			
BENZO(B)FLUORANTHENE	205-99-2	91	27	13	13	UG/KG			
BENZO(G,H,I)PERYLENE	191-24-2	47	27	13	13	UG/KG	M		
BENZO(K)FLUORANTHENE	207-08-9	18	27	13	13	UG/KG	J M	J	
BENZOIC ACID	65-85-0	1400	2700	1400	1400	UG/KG	U	R	Q
BENZYL ALCOHOL	100-51-6	110	1300	110	85	UG/KG	U	U	
BENZYL BUTYL PHTHALATE	85-68-7	110	200	110	41	UG/KG	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	110	410	110	89	UG/KG	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	13	410	13	8.1	UG/KG	U	U	
BIS(2-CHLOROISOPROPYL) ETHE	108-60-1	110	410	110	39	UG/KG	U	U	
BIS(2-ETHYLHEXYL) PHTHALAT	117-81-7	110	200	110	77	UG/KG	U	U	
CARBAZOLE	86-74-8	110	200	110	110	UG/KG	U	U	
CHRYSENE	218-01-9	66	27	13	4.5	UG/KG			
CRESOLS, M & P		320	1600	320	81	UG/KG	U	U	
DIBENZ(A,H)ANTHRACENE	53-70-3	13	27	13	13	UG/KG	U	U	
DIBENZOFURAN	132-64-9	14	200	13	13	UG/KG	J	J	
DIETHYL PHTHALATE	84-66-2	110	200	110	65	UG/KG	U	U	
DIMETHYL PHTHALATE	131-11-3	110	200	110	69	UG/KG	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	110	200	110	61	UG/KG	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	110	200	110	110	UG/KG	U	U	
FLUORANTHENE	206-44-0	120	27	13	13	UG/KG			
FLUORENE	86-73-7	13	27	13	13	UG/KG	U	U	
HEXACHLOROBENZENE	118-74-1	13	27	13	8.5	UG/KG	U	U	
HEXACHLOROBUTADIENE	87-68-3	110	200	110	110	UG/KG	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	110	1300	110	110	UG/KG	U	U	
HEXACHLOROETHANE	67-72-1	110	200	110	37	UG/KG	U	U	
INDENO(1,2,3-C,D)PYRENE	193-39-5	55	27	13	13	UG/KG			
ISOPHORONE	78-59-1	110	200	110	53	UG/KG	U	U	
NAPHTHALENE	91-20-3	44	27	13	13	UG/KG			
NITROBENZENE	98-95-3	13	410	13	8.9	UG/KG	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	110	200	110	110	UG/KG	U	U	

Sample Delivery Group: 240-17525-1_(77-SS)2

N-NITROSODIPHENYLAMINE	86-30-6	110	200	110	85	UG/KG	U	R	C
PENTACHLOROPHENOL	87-86-5	320	610	320	320	UG/KG	U	U	
PHENANTHRENE	85-01-8	77	27	13	13	UG/KG			
PHENOL	108-95-2	110	200	110	110	UG/KG	U	U	
PYRENE	129-00-0	95	27	13	13	UG/KG			

Analysis Method SW8330B

Sample Name 077SS-0001M-0001-SO **AnalysisType:** N

Lab Sample Name: 240-17525-5 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.05	0.25	0.05	0.01	MG/KG	U	U	
1,3-DINITROBENZENE	99-65-0	0.05	0.25	0.05	0.0042	MG/KG	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.05	0.25	0.05	0.019	MG/KG	U	U	
2,4-DINITROTOLUENE	121-14-2	0.05	0.25	0.05	0.0053	MG/KG	U	U	
2,6-DINITROTOLUENE	606-20-2	0.05	0.25	0.05	0.0073	MG/KG	U	U	
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.05	0.25	0.05	0.013	MG/KG	U	U	
2-NITROTOLUENE	88-72-2	0.05	0.25	0.05	0.013	MG/KG	U	UJ	C
3-NITROTOLUENE	99-08-1	0.05	0.25	0.05	0.016	MG/KG	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.05	0.25	0.05	0.01	MG/KG	U	U	
4-NITROTOLUENE	99-99-0	0.05	0.25	0.05	0.018	MG/KG	U	U	
HEXAHYDRO-1,3,5-TRINITRO-1,3,	121-82-4	0.05	0.25	0.05	0.012	MG/KG	U	UJ	C
NITROBENZENE	98-95-3	0.05	0.25	0.05	0.018	MG/KG	U	R	D
NITROGLYCERIN	55-63-0	0.25	0.5	0.25	0.015	MG/KG	U	U	
NITROGUANIDINE	556-88-7	0.04	0.25	0.04	0.02	MG/KG	U	U	
OCTAHYDRO-1,3,5,7-TETRANITR	2691-41-0	0.05	0.25	0.05	0.012	MG/KG	U	U	
PENTAERYTHRITOL TETRANITR	78-11-5	0.25	0.5	0.25	0.025	MG/KG	U	U	
TETRYL	479-45-8	0.05	0.25	0.05	0.01	MG/KG	U	U	

Validated Sample Result Forms for Sampling : Ravenna Army Ammunition Plant Ravenna, Ohio
Remedial Investigation Compliance Restoration Site: RVAAP-83 Former Buildings 1031 and 1039

Sample Delivery Group: 99211_83_0813

Analysis Method BNASIM

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
2-METHYLNAPHTHALENE	91-57-6	1.9	1.6	0.85	0.23	ug/kg			
ACENAPHTHENE	83-32-9	0.78	1.6	0.85	0.35	ug/kg	J	J	
ACENAPHTHYLENE	208-96-8	0.85	1.6	0.85	0.25	ug/kg	U	U	
ANTHRACENE	120-12-7	2.1	1.6	0.85	0.33	ug/kg			
BENZO(A)ANTHRACENE	56-55-3	7.3	1.6	0.85	0.34	ug/kg			
BENZO(A)PYRENE	50-32-8	3.2	1.6	0.85	0.3	ug/kg			
BENZO(B)FLUORANTHENE	205-99-2	8.9	1.6	0.85	0.42	ug/kg			
BENZO(G,H,I)PERYLENE	191-24-2	6	1.6	0.85	0.41	ug/kg			
BENZO(K)FLUORANTHENE	207-08-9	1.9	1.6	0.85	0.39	ug/kg			
CHRYSENE	218-01-9	8.3	1.6	0.85	0.37	ug/kg			
DIBENZ(A,H)ANTHRACENE	53-70-3	1.2	1.6	0.85	0.37	ug/kg	J	J	
FLUORANTHENE	206-44-0	10	1.6	0.85	0.38	ug/kg			
FLUORENE	86-73-7	0.93	1.6	0.85	0.38	ug/kg	J	J	
INDENO(1,2,3-C,D)PYRENE	193-39-5	3.6	1.6	0.85	0.38	ug/kg			
NAPHTHALENE	91-20-3	2	1.6	0.85	0.29	ug/kg			
PHENANTHRENE	85-01-8	11	1.6	0.85	0.48	ug/kg			
PYRENE	129-00-0	8.1	1.6	0.85	0.43	ug/kg			

Analysis Method E353.2

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROCELLULOSE	9004-70-0	100	200	100	33	mg/kg	U	U	

Sample Delivery Group: 99211_83_0813

Analysis Method SW6010C

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N **Validation Leve** IV

Lab Sample Name: 337818

Analyte	CAS No	Result Value	LOQ	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
ALUMINUM	7429-90-5	12500	1.2	mg/kg			
ANTIMONY	7440-36-0	1.2	4.1	mg/kg	JV	J-	Q, *III
ARSENIC	7440-38-2	13.9	4.1	mg/kg		J-	Q
BARIUM	7440-39-3	78.1	0.26	mg/kg	B	J-	A, P, Q, *III
BERYLLIUM	7440-41-7	0.68	0.21	mg/kg		J-	P, Q
CADMIUM	7440-43-9	0.1	0.21	mg/kg	U	UJ	P, Q
CALCIUM	7440-70-2	28900	7.3	mg/kg		J-	P
CHROMIUM	7440-47-3	18.3	0.73	mg/kg		J-	P, Q, *III
COBALT	7440-48-4	11.8	1.2	mg/kg		J-	P, Q
COPPER	7440-50-8	21.3	2.1	mg/kg		J-	Q
IRON	7439-89-6	27200	9.3	mg/kg			
LEAD	7439-92-1	11.8	1.3	mg/kg		J-	P, Q
MAGNESIUM	7439-95-4	7530	4.1	mg/kg		J-	A, P, Q, *III
MANGANESE	7439-96-5	428	0.78	mg/kg			
NICKEL	7440-02-0	29.2	0.62	mg/kg		J-	P, Q, *III
POTASSIUM	7440-09-7	1300	68	mg/kg			
SELENIUM	7782-49-2	0.24	0.41	mg/kg	U	UJ	Q, $, *III
SILVER	7440-22-4	0.12	0.1	mg/kg	U	UJ	Q, $, *III
SODIUM	7440-23-5	55.2	25	mg/kg			
THALLIUM	7440-28-0	0.79	2.5	mg/kg	JV	UJ	B, P, Q, *III
VANADIUM	7440-62-2	18.8	0.41	mg/kg	B	J-	P, Q
ZINC	7440-66-6	70.2	1.6	mg/kg		J-	P, Q, *III

Sample Delivery Group: 99211_83_0813

Analysis Method SW7471B

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
MERCURY	7439-97-6	0.013	0.009	0.004	0.0023	mg/kg		J+	Q

Analysis Method SW8082

Sample Name 083SB-0012M-0001-SO **AnalysisType:** N

Lab Sample Name: 337828 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
PCB-1016 (AROCHLOR 1016)	12674-11-2	21	31	21	5.2	ug/kg	U	U	
PCB-1221 (AROCHLOR 1221)	11104-28-2	21	31	21	7.2	ug/kg	U	U	
PCB-1232 (AROCHLOR 1232)	11141-16-5	21	31	21	9.3	ug/kg	U	U	
PCB-1242 (AROCHLOR 1242)	53469-21-9	21	31	21	7.2	ug/kg	U	U	
PCB-1248 (AROCHLOR 1248)	12672-29-6	21	31	21	7.2	ug/kg	U	U	
PCB-1254 (AROCHLOR 1254)	11097-69-1	21	31	21	9.3	ug/kg	U	U	
PCB-1260 (AROCHLOR 1260)	11096-82-5	21	31	21	6.2	ug/kg	U	U	
PCB-1262 (AROCHLOR 1262)	37324-23-5	21	31	21	7.2	ug/kg	U	U	
PCB-1268 (AROCHLOR 1268)	11100-14-4	21	31	21	5.2	ug/kg	U	U	

Sample Delivery Group: 99211_83_0813

Analysis Method SW8260C

Sample Name 083SB-0002M-0001-SO **AnalysisType:** N

Lab Sample Name: 338808 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
BENZENE	71-43-2	0.95	1.9	0.95	0.28	ug/kg	U	U	
ETHYLBENZENE	100-41-4	0.95	1.9	0.95	0.38	ug/kg	U	U	
TOLUENE	108-88-3	0.95	1.9	0.95	0.38	ug/kg	U	U	
XYLENES, TOTAL		1.9	3.8	1.9	0.66	ug/kg	U	U	

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337819 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,1,1-TRICHLOROETHANE	71-55-6	0.9	1.8	0.9	0.27	ug/kg	U	U	
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.9	1.8	0.9	0.45	ug/kg	U	U	
1,1,2-TRICHLOROETHANE	79-00-5	0.9	1.8	0.9	0.36	ug/kg	U	U	
1,1-DICHLOROETHANE	75-34-3	0.9	1.8	0.9	0.36	ug/kg	U	U	
1,1-DICHLOROETHENE	75-35-4	0.9	1.8	0.9	0.36	ug/kg	U	U	
1,2-DIBROMOETHANE (ETHYLEN	106-93-4	0.9	1.8	0.9	0.36	ug/kg	U	U	
1,2-DICHLOROETHANE	107-06-2	0.9	1.8	0.9	0.45	ug/kg	U	U	
1,2-DICHLOROPROPANE	78-87-5	0.9	1.8	0.9	0.36	ug/kg	U	U	
2-HEXANONE	591-78-6	18	36	18	9.9	ug/kg	U	U	
ACETONE	67-64-1	9	18	9	9	ug/kg	U	U	
BENZENE	71-43-2	0.9	1.8	0.9	0.27	ug/kg	U	U	
BROMOCHLOROMETHANE	74-97-5	0.9	1.8	0.9	0.36	ug/kg	U	U	
BROMODICHLOROMETHANE	75-27-4	0.9	1.8	0.9	0.36	ug/kg	U	U	
BROMOFORM	75-25-2	0.9	1.8	0.9	0.36	ug/kg	U	U	
BROMOMETHANE	74-83-9	0.9	1.8	0.9	0.63	ug/kg	U	U	
CARBON DISULFIDE	75-15-0	1.8	3.6	1.8	0.81	ug/kg	U	U	
CARBON TETRACHLORIDE	56-23-5	0.9	1.8	0.9	0.27	ug/kg	U	U	
CHLOROBENZENE	108-90-7	0.9	1.8	0.9	0.36	ug/kg	U	U	
CHLOROETHANE	75-00-3	0.9	1.8	0.9	0.45	ug/kg	U	UJ	C
CHLOROFORM	67-66-3	0.9	1.8	0.9	0.36	ug/kg	U	U	

Sample Delivery Group: 99211_83_0813

CHLOROMETHANE	74-87-3	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
CIS-1,2-DICHLOROETHYLENE	156-59-2	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.9	1.8	0.9	0.27	ug/kg	U	**U**	
DIBROMOCHLOROMETHANE	124-48-1	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
ETHYLBENZENE	100-41-4	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
M,P-XYLENE (SUM OF ISOMERS)		1.8	3.6	1.8	0.63	ug/kg	U	**R**	**D**
METHYL ETHYL KETONE (2-BUT	78-93-3	9	18	9	9	ug/kg	U	**U**	
METHYL ISOBUTYL KETONE (4-	108-10-1	9	18	9	9	ug/kg	U	**U**	
METHYLENE CHLORIDE	75-09-2	6.0	9	1.8	1.5	ug/kg	J	**U**	**B**
O-XYLENE (1,2-DIMETHYLBENZ	95-47-6	0.9	1.8	0.9	0.36	ug/kg	U	**R**	**D**
STYRENE	100-42-5	0.9	1.8	0.9	0.27	ug/kg	U	**U**	
TETRACHLOROETHYLENE(PCE)	127-18-4	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
TOLUENE	108-88-3	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
TOTAL 1,2-DICHLOROETHENE	540-59-0	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
TRANS-1,2-DICHLOROETHENE	156-60-5	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.9	1.8	0.9	0.36	ug/kg	U	**U**	
TRICHLOROETHYLENE (TCE)	79-01-6	0.9	1.8	0.9	0.27	ug/kg	U	**U**	
VINYL CHLORIDE	75-01-4	0.9	1.8	0.9	0.45	ug/kg	U	**U**	
XYLENES, TOTAL		1.8	3.6	1.8	0.63	ug/kg	U	**U**	

Sample Delivery Group: 99211_83_0813

Analysis Method SW8270D

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,2,4-TRICHLOROBENZENE	120-82-1	64	130	64	22	ug/kg	U	U	
1,2-DICHLOROBENZENE	95-50-1	64	130	64	25	ug/kg	U	U	
1,3-DICHLOROBENZENE	541-73-1	64	130	64	21	ug/kg	U	U	
1,4-DICHLOROBENZENE	106-46-7	64	130	64	20	ug/kg	U	U	
2,2'-OXYBIS(1-CHLORO)PROPAN	108-60-1	64	130	64	32	ug/kg	U	U	
2,4,5-TRICHLOROPHENOL	95-95-4	320	640	320	140	ug/kg	U	U	
2,4,6-TRICHLOROPHENOL	88-06-2	320	640	320	140	ug/kg	U	U	
2,4-DICHLOROPHENOL	120-83-2	320	640	320	130	ug/kg	U	U	
2,4-DIMETHYLPHENOL	105-67-9	320	640	320	110	ug/kg	U	U	
2,4-DINITROPHENOL	51-28-5	320	1100	320	290	ug/kg	U	U	
2,4-DINITROTOLUENE	121-14-2	64	130	64	25	ug/kg	U	U	
2,6-DINITROTOLUENE	606-20-2	64	130	64	25	ug/kg	U	U	
2-CHLORONAPHTHALENE	91-58-7	64	130	64	24	ug/kg	U	U	
2-CHLOROPHENOL	95-57-8	640	2100	640	360	ug/kg	U	U	
2-METHYLPHENOL (O-CRESOL)	95-48-7	640	2100	640	450	ug/kg	U	U	
2-NITROANILINE	88-74-4	64	130	64	24	ug/kg	U	U	
2-NITROPHENOL	88-75-5	320	1100	320	300	ug/kg	U	U	
3,3'-DICHLOROBENZIDINE	91-94-1	160	530	160	160	ug/kg	U	U	
3-NITROANILINE	99-09-2	64	130	64	23	ug/kg	U	U	
4,6-DINITRO-2-METHYLPHENOL	534-52-1	320	1100	320	290	ug/kg	U	U	
4-BROMOPHENYL PHENYL ETHE	101-55-3	64	130	64	27	ug/kg	U	U	
4-CHLORO-3-METHYLPHENOL	59-50-7	640	2100	640	400	ug/kg	U	U	
4-CHLOROANILINE	106-47-8	64	210	64	41	ug/kg	U	U	
4-CHLOROPHENYL PHENYL ETH	7005-72-3	64	130	64	28	ug/kg	U	U	
4-NITROANILINE	100-01-6	64	130	64	32	ug/kg	U	U	
4-NITROPHENOL	100-02-7	640	2100	640	420	ug/kg	U	U	
BENZOIC ACID	65-85-0	1600	3200	1600	310	ug/kg	U	UJ	C
BENZYL ALCOHOL	100-51-6	130	420	130	88	ug/kg	U	R	C

Sample Delivery Group: 99211_83_0813

BENZYL BUTYL PHTHALATE	85-68-7	130	420	130	77	ug/kg	U	U	
BIS(2-CHLOROETHOXY) METHA	111-91-1	64	130	64	24	ug/kg	U	U	
BIS(2-CHLOROETHYL) ETHER (2	111-44-4	64	130	64	27	ug/kg	U	U	
CARBAZOLE	86-74-8	64	130	64	30	ug/kg	U	U	
CRESOLS, M & P		1100	3800	1100	690	ug/kg	U	U	
DIBENZOFURAN	132-64-9	64	130	64	25	ug/kg	U	U	
DIETHYL PHTHALATE	84-66-2	130	420	130	68	ug/kg	U	U	
DIMETHYL PHTHALATE	131-11-3	130	420	130	67	ug/kg	U	U	
DI-N-BUTYL PHTHALATE	84-74-2	130	420	130	84	ug/kg	U	U	
DI-N-OCTYLPHTHALATE	117-84-0	64	210	64	63	ug/kg	U	U	
HEXACHLOROBENZENE	118-74-1	64	130	64	30	ug/kg	U	U	
HEXACHLOROBUTADIENE	87-68-3	130	420	130	66	ug/kg	U	U	
HEXACHLOROCYCLOPENTADIE	77-47-4	64	210	64	55	ug/kg	U	UJ	C
HEXACHLOROETHANE	67-72-1	64	130	64	35	ug/kg	U	U	
ISOPHORONE	78-59-1	64	210	64	53	ug/kg	U	U	
NITROBENZENE	98-95-3	64	210	64	63	ug/kg	U	U	
N-NITROSODI-N-PROPYLAMINE	621-64-7	130	420	130	74	ug/kg	U	U	
N-NITROSODIPHENYLAMINE	86-30-6	130	250	130	53	ug/kg	U	U	
PENTACHLOROPHENOL	87-86-5	320	1100	320	250	ug/kg	U	U	
PHENOL	108-95-2	320	640	320	170	ug/kg	U	U	

Analysis Method SW8330

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
NITROGUANIDINE	556-88-7	0.12	0.25	0.12	0.06	mg/kg	U	U	

Sample Delivery Group: 99211_83_0813

Analysis Method SW8330B

Sample Name 083SB-0005M-0001-SO **AnalysisType:** N

Lab Sample Name: 337818 **Validation Level:** IV

Analyte	CAS No	Result Value	LOQ	LOD	DL	Result	Lab Qualifier	Validation Qualifier	Validation Qualifier Code
1,3,5-TRINITROBENZENE	99-35-4	0.3	0.5	0.3	0.13	mg/kg	U	U	
1,3-DINITROBENZENE	99-65-0	0.2	0.3	0.2	0.08	mg/kg	U	U	
2,4,6-TRINITROTOLUENE	118-96-7	0.2	0.5	0.2	0.09	mg/kg	U	U	
2,4-DINITROTOLUENE	121-14-2	0.2	0.3	0.2	0.08	mg/kg	U	R	D
2,6-DINITROTOLUENE	606-20-2	0.2	0.3	0.2	0.07	mg/kg	U	R	D
2-AMINO-4,6-DINITROTOLUENE	35572-78-2	0.2	0.3	0.2	0.09	mg/kg	U	U	
2-NITROTOLUENE	88-72-2	0.2	0.3	0.2	0.09	mg/kg	U	UJ	C
3,5-DINITROANILINE	618-87-1	0.2	0.3	0.2	0.09	mg/kg	U	R	C
3-NITROTOLUENE	99-08-1	0.3	0.5	0.3	0.11	mg/kg	U	U	
4-AMINO-2,6-DINITROTOLUENE	19406-51-0	0.2	0.3	0.2	0.08	mg/kg	U	UJ	C
4-NITROTOLUENE	99-99-0	0.2	0.5	0.2	0.1	mg/kg	U	U	
HEXAHYDRO-1,3,5-TRINITRO-1,3,	121-82-4	0.3	0.5	0.3	0.14	mg/kg	U	U	
NITROBENZENE	98-95-3	0.2	0.5	0.2	0.1	mg/kg	U	R	D
NITROGLYCERIN	55-63-0	1.2	2	1.2	0.5	mg/kg	U	U	
OCTAHYDRO-1,3,5,7-TETRANITR	2691-41-0	0.3	0.5	0.3	0.12	mg/kg	U	U	
PETN	78-11-5	1.2	2	1.2	0.6	mg/kg	U	U	
TETRYL	479-45-8	0.2	0.3	0.2	0.09	mg/kg	U	U	

APPENDIX B

Sample Qualification Summary

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
070SB-044M-0001-SO	BARIUM	64.0	MG/KG	0.98	0.020	J	M
070SB-044M-0001-SO	SELENIUM	0.47	MG/KG	0.49	0.098	J+	I
070SB-044M-0001-SO	MCPA	3300	UG/KG	8000	3300	UJ	C
070SB-044M-0001-SO	MCPP	3300	UG/KG	8000	3300	UJ	C
070SB-044M-0001-SO	1,1,1-TRICHLOROETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.57	UG/KG	5.7	0.57	UJ	Q, S
070SB-044M-0001-SO	1,1,2-TRICHLOROETHANE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	1,1-DICHLOROETHANE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	1,1-DICHLOROETHENE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	1,2-DIBROMOETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	1,2-DICHLOROETHANE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	1,2-DICHLOROPROPANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	2-HEXANONE	1.8	UG/KG	23	1.1	UJ	B, C, S
070SB-044M-0001-SO	ACETONE	41.0	UG/KG	23	7.2	J	S
070SB-044M-0001-SO	BENZENE	1.3	UG/KG	5.7	0.57	J	S
070SB-044M-0001-SO	BROMOCHLOROMETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	BROMODICHLOROMETHANE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	BROMOFORM	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	BROMOMETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	CARBON DISULFIDE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	CARBON TETRACHLORIDE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	CHLOROBENZENE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	CHLOROETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	CHLOROFORM	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	CHLOROMETHANE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	DIBROMOCHLOROMETHANE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	ETHYLBENZENE	1.8	UG/KG	5.7	0.57	J	S
070SB-044M-0001-SO	METHYL ETHYL KETONE	12.0	UG/KG	23	2.3	J	S
070SB-044M-0001-SO	METHYL ISOBUTYL KETONE	1.3	UG/KG	23	1.1	UJ	B, S
070SB-044M-0001-SO	METHYLENE CHLORIDE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	STYRENE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	TERT-BUTYL METHYL ETHER	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	TETRACHLOROETHYLENE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	TOLUENE	3.3	UG/KG	5.7	0.57	J	S
070SB-044M-0001-SO	TOTAL 1,2-DICHLOROETHENE	1.1	UG/KG	11	1.1	UJ	S
070SB-044M-0001-SO	TRANS-1,3-DICHLOROPROPENE	1.1	UG/KG	5.7	1.1	UJ	S
070SB-044M-0001-SO	TRICHLOROETHYLENE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	VINYL CHLORIDE	0.57	UG/KG	5.7	0.57	UJ	S
070SB-044M-0001-SO	XYLENES, TOTAL	1.7	UG/KG	11	1.7	UJ	S
070SB-044M-0001-SO	2,4-DINITROPHENOL	810	UG/KG	3300	810	UJ	C
070SB-044M-0001-SO	2,4-DINITROTOLUENE	270	UG/KG	2000	270	R	D
070SB-044M-0001-SO	2,6-DINITROTOLUENE	270	UG/KG	2000	270	R	D
070SB-044M-0001-SO	BENZO(G,H,I)PERYLENE	33	UG/KG	67	33	UJ	C
070SB-044M-0001-SO	N-NITROSODIPHENYLAMINE	270	UG/KG	510	270	R	C
070SB-044M-0001-SO	PENTACHLOROPHENOL	810	UG/KG	1500	810	R	D
070SB-044M-0001-SO	2-NITROTOLUENE	0.048	MG/KG	0.24	0.048	UJ	C
070SB-044M-0001-SO	NITROBENZENE	0.048	MG/KG	0.24	0.048	R	D

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
070SB-044M-0001-SO	RDX	0.048	MG/KG	0.24	0.048	UJ	C
070SB-046M-0001-SO	2,4-DINITROPHENOL	800	UG/KG	3300	800	UJ	C
070SB-046M-0001-SO	BENZO(G,H,I)PERYLENE	33	UG/KG	67	33	UJ	C
070SB-046M-0001-SO	N-NITROSODIPHENYLAMINE	270	UG/KG	500	270	R	C
070SS-0003M-0001-SO	2,4-Dinitrophenol	810	ug/kg	3300	810	UJ	C
070SS-0003M-0001-SO	3,3'-Dichlorobenzidine	180	ug/kg	1000	810	UJ	C
070SS-0003M-0001-SO	4,6-Dinitro-2-methylphenol	810	ug/kg	1500	810	UJ	C
070SS-0006M-0001-SO	C6-C12	58.0	UG/KG	92	46	J	C, Q
070SS-0006M-0001-SO	Antimony	1.5	mg/kg	0.19	0.14	J-	Q
070SS-0006M-0001-SO	Cadmium	0.46	mg/kg	0.19	0.0093	J	E
070SS-0006M-0001-SO	Chromium	35	mg/kg	0.46	0.42	J-	E, Q
070SS-0006M-0001-SO	Copper	23	mg/kg	0.37	0.28	J-	A
070SS-0006M-0001-SO	Lead	62	mg/kg	0.28	0.19	J	A, E
070SS-0006M-0001-SO	Nickel	30	mg/kg	0.46	0.23	J	A
070SS-0006M-0001-SO	Potassium	940	mg/kg	93	9.3	J+	Q
070SS-0006M-0001-SO	Selenium	0.99	mg/kg	0.46	0.056	J-	Q, M
070SS-0006M-0001-SO	Sodium	55	mg/kg	93	37	U	F
070SS-0006M-0001-SO	Vanadium	16	mg/kg	0.46	0.093	J+	Q
070SS-0006M-0001-SO	Aroclor-1242	380	ug/kg	200	120	J	Q, *III
070SS-0006M-0001-SO	Dicamba	8.1	ug/kg	40	17	UJ	Q
070SS-0006M-0001-SO	Dichlorprop	37	ug/kg	80	67	UJ	Q
070SS-0006M-0001-SO	MCPA	1600	ug/kg	8000	3300	UJ	C
070SS-0006M-0001-SO	MCPP	1500	ug/kg	8000	3300	UJ	C
070SS-0006M-0001-SO	1,1,1-Trichloroethane	0.97	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	1,1,2,2-Tetrachloroethane	0.59	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	1,1,2-Trichloroethane	0.68	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	1,1-Dichloroethane	0.62	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	1,1-Dichloroethene	0.9	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	1,2-Dibromoethane	0.87	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	1,2-Dichloroethane	0.59	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	1,2-Dichloroethene, Total	1.3	ug/kg	17	1.7	UJ	S
070SS-0006M-0001-SO	1,2-Dichloropropane	1.2	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	2-Butanone (MEK)	2.4	ug/kg	35	3.5	UJ	S
070SS-0006M-0001-SO	2-Hexanone	1.1	ug/kg	35	1.7	UJ	S
070SS-0006M-0001-SO	4-Methyl-2-pentanone (MIBK)	0.94	ug/kg	35	1.7	UJ	S
070SS-0006M-0001-SO	Acetone	11	ug/kg	35	11	UJ	C, S
070SS-0006M-0001-SO	Benzene	0.4	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Bromochloromethane	1.2	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Bromodichloromethane	0.49	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Bromoform	0.57	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Bromomethane	0.94	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Carbon disulfide	0.76	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Carbon tetrachloride	0.64	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Chlorobenzene	0.57	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Chloroethane	1.5	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Chloroform	0.5	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Chloromethane	0.71	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	cis-1,3-Dichloropropene	0.59	ug/kg	8.7	0.87	UJ	S

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
070SS-0006M-0001-SO	Dibromochloromethane	0.95	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Ethylbenzene	0.45	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Methyl tert-butyl ether	0.75	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Methylene Chloride	1.2	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Styrene	0.26	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Tetrachloroethene	0.9	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Toluene	0.47	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	trans-1,3-Dichloropropene	0.94	ug/kg	8.7	1.7	UJ	S
070SS-0006M-0001-SO	Trichloroethene	0.73	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Vinyl chloride	0.68	ug/kg	8.7	0.87	UJ	S
070SS-0006M-0001-SO	Xylenes, Total	1.2	ug/kg	17	2.6	UJ	S
070SS-0006M-0001-SO	2,4-Dinitrophenol	390	ug/kg	1600	390	UJ	C
070SS-0006M-0001-SO	2,4-Dinitrotoluene	130	ug/kg	990	130	R	D
070SS-0006M-0001-SO	2,6-Dinitrotoluene	100	ug/kg	990	130	R	D
070SS-0006M-0001-SO	3,3'-Dichlorobenzidine	89	ug/kg	490	390	R	Q
070SS-0006M-0001-SO	3-Nitroaniline	79	ug/kg	990	390	UJ	Q
070SS-0006M-0001-SO	4,6-Dinitro-2-methylphenol	390	ug/kg	740	390	UJ	C, Q
070SS-0006M-0001-SO	4-Chloroaniline	84	ug/kg	740	130	R	Q
070SS-0006M-0001-SO	4-Nitroaniline	130	ug/kg	990	130	UJ	Q
070SS-0006M-0001-SO	Pentachlorophenol	390	ug/kg	740	390	R	D
070SS-0006M-0001-SO	2-Nitrotoluene	0.013	mg/kg	0.25	0.05	UJ	C
070SS-0006M-0001-SO	Nitrobenzene	0.018	mg/kg	0.25	0.05	R	D
070SS-0006M-0001-SO	Nitroglycerin	0.015	mg/kg	0.5	0.25	UJ	Q
070SS-0006M-0001-SO	RDX	0.012	mg/kg	0.25	0.05	UJ	C

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
071SB-0013M-0001-SO	BENZO(A)ANTHRACENE	0.90	ug/kg	1.5	0.82	U	B
071SB-0013M-0001-SO	PHENANTHRENE	4.0	ug/kg	1.5	0.8	U	B
071SB-0013M-0001-SO	LEAD	9	mg/kg	1.3	0.64	J-	P, Q
071SB-0013M-0001-SO	BROMOMETHANE	0.93	ug/kg	1.9	0.93	UJ	C
071SB-0013M-0001-SO	M,P-XYLENE (SUM OF ISOMERS)	1.9	ug/kg	3.7	1.9	R	D
071SB-0013M-0001-SO	METHYLENE CHLORIDE	9.9	ug/kg	9.3	1.9	UJ	B, C
071SB-0013M-0001-SO	O-XYLENE (1,2-DIMETHYLBENZENE)	0.93	ug/kg	1.9	0.93	R	D
071SB-0013M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	310	ug/kg	1000	310	UJ	C
071SB-0013M-0001-SO	BENZOIC ACID	1500	ug/kg	3100	1500	UJ	C
071SB-0013M-0001-SO	BENZYL ALCOHOL	120	ug/kg	410	120	R	C
071SB-0013M-0001-SO	HEXACHLOROCYCLOPENTADIENE	62	ug/kg	210	62	UJ	C
071SB-0017M-0001-SO	2-NITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	C
071SB-0017M-0001-SO	4-AMINO-2,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	C
071SB-0018M-0001-SO	BENZO(A)ANTHRACENE	1.2	ug/kg	1.5	0.82	U	B
071SB-0018M-0001-SO	NAPHTHALENE	0.82	ug/kg	1.5	0.82	U	B
071SB-0018M-0001-SO	PHENANTHRENE	4.7	ug/kg	1.5	0.82	U	B
071SB-0018M-0001-SO	LEAD	8.8	mg/kg	1.2	0.62	J-	P, Q
071SB-0018M-0001-SO	BROMOMETHANE	0.86	ug/kg	1.7	0.86	UJ	C
071SB-0018M-0001-SO	M,P-XYLENE (SUM OF ISOMERS)	1.7	ug/kg	3.5	1.7	R	D
071SB-0018M-0001-SO	METHYLENE CHLORIDE	6.3	ug/kg	8.6	1.7	UJ	B, C
071SB-0018M-0001-SO	O-XYLENE (1,2-DIMETHYLBENZENE)	0.86	ug/kg	1.7	0.86	R	D
071SB-0018M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	310	ug/kg	1000	310	UJ	C
071SB-0018M-0001-SO	BENZOIC ACID	1500	ug/kg	3100	1500	UJ	C
071SB-0018M-0001-SO	BENZYL ALCOHOL	120	ug/kg	410	120	R	C
071SB-0018M-0001-SO	HEXACHLOROCYCLOPENTADIENE	61	ug/kg	200	61	UJ	C

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
072SB-0001-0001-SO	C6-C12	320.0	UG/KG	110	55	J	Q
072SB-0001-0001-SO	ANTIMONY	0.075	MG/KG	0.21	0.10	J-	Q
072SB-0001-0001-SO	ARSENIC	14.0	MG/KG	0.10	0.051	J-	Q
072SB-0001-0001-SO	BARIUM	36.0	MG/KG	1.0	0.021	J+	Q
072SB-0001-0001-SO	BERYLLIUM	0.65	MG/KG	0.10	0.010	J-	Q
072SB-0001-0001-SO	CADMIUM	0.15	MG/KG	0.10	0.031	J-	Q
072SB-0001-0001-SO	CALCIUM	2900.0	MG/KG	10	2.6	J+	E, Q
072SB-0001-0001-SO	NICKEL	29.0	MG/KG	0.10	0.031	J-	Q
072SB-0001-0001-SO	POTASSIUM	1900.0	MG/KG	10	6.2	J-	Q
072SB-0001-0001-SO	SELENIUM	0.9	MG/KG	0.51	0.10	J-	Q
072SB-0001-0001-SO	BENZENE	25	UG/KG	250	25	UJ	S
072SB-0001-0001-SO	ETHYLBENZENE	9.9	UG/KG	250	9.9	UJ	S
072SB-0001-0001-SO	TOLUENE	25	UG/KG	250	25	UJ	S
072SB-0001-0001-SO	XYLENES, TOTAL	30	UG/KG	500	30	UJ	S
072SB-0012-0001-SO	ANTIMONY	0.2	MG/KG	0.21	0.11	J-	Q
072SB-0012-0001-SO	ARSENIC	5.6	MG/KG	0.11	0.053	J	E
072SB-0012-0001-SO	BERYLLIUM	0.88	MG/KG	0.11	0.011	J-	Q
072SB-0012-0001-SO	COPPER	31.0	MG/KG	0.21	0.064	J+	Q
072SB-0012-0001-SO	LEAD	20.0	MG/KG	0.11	0.032	J+	Q
072SB-0012-0001-SO	POTASSIUM	1000.0	MG/KG	11	6.4	J-	Q
072SB-0012-0001-SO	SELENIUM	1.0	MG/KG	0.53	0.11	J-	Q
072SB-0012-0001-SO	BENZENE	0.47	UG/KG	4.7	0.47	UJ	S
072SB-0012-0001-SO	ETHYLBENZENE	0.47	UG/KG	4.7	0.47	UJ	S
072SB-0012-0001-SO	TOLUENE	0.47	UG/KG	4.7	0.47	UJ	S
072SB-0012-0001-SO	XYLENES, TOTAL	1.4	UG/KG	9.4	1.4	UJ	S
072SB-0014-0001-SO	ANTIMONY	0.13	MG/KG	0.20	0.10	J-	Q
072SB-0014-0001-SO	ARSENIC	5.6	MG/KG	0.10	0.050	J-	E, Q
072SB-0014-0001-SO	BARIUM	61.0	MG/KG	1.0	0.020	J+	Q
072SB-0014-0001-SO	BERYLLIUM	0.91	MG/KG	0.10	0.010	J-	Q
072SB-0014-0001-SO	CADMIUM	0.26	MG/KG	0.10	0.030	J-	Q
072SB-0014-0001-SO	CALCIUM	430.0	MG/KG	10	2.5	J+	E, Q
072SB-0014-0001-SO	COPPER	34.0	MG/KG	0.20	0.060	J+	Q
072SB-0014-0001-SO	LEAD	23.0	MG/KG	0.10	0.030	J+	Q
072SB-0014-0001-SO	NICKEL	34.0	MG/KG	0.10	0.030	J-	Q
072SB-0014-0001-SO	POTASSIUM	1200.0	MG/KG	10	6.0	J-	Q
072SB-0014-0001-SO	SELENIUM	1.1	MG/KG	0.50	0.10	J-	Q
072SB-0014-0001-SO	ALPHA BHC	1.5	UG/KG	2.9	1.5	UJ	Q
072SB-0014-0001-SO	ALPHA ENDOSULFAN	0.77	UG/KG	1.9	0.77	UJ	Q
072SB-0014-0001-SO	ALPHA-CHLORDANE	1.5	UG/KG	3.4	1.5	UJ	Q
072SB-0014-0001-SO	BETA BHC	1.5	UG/KG	4.0	1.5	UJ	Q
072SB-0014-0001-SO	BETA ENDOSULFAN	1.5	UG/KG	2.9	1.5	UJ	Q
072SB-0014-0001-SO	DELTA BHC	1.5	UG/KG	4.6	1.5	UJ	Q
072SB-0014-0001-SO	DIELDRIN	0.77	UG/KG	1.9	0.77	UJ	Q
072SB-0014-0001-SO	ENDOSULFAN SULFATE	1.5	UG/KG	3.4	1.5	UJ	Q
072SB-0014-0001-SO	ENDRIN	0.77	UG/KG	1.9	0.77	UJ	Q
072SB-0014-0001-SO	ENDRIN ALDEHYDE	1.5	UG/KG	3.4	1.5	UJ	Q
072SB-0014-0001-SO	ENDRIN KETONE	0.77	UG/KG	2.3	0.77	UJ	Q

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
072SB-0014-0001-SO	GAMMA BHC (LINDANE)	1.5	UG/KG	2.9	1.5	UJ	Q
072SB-0014-0001-SO	GAMMA-CHLORDANE	0.77	UG/KG	1.9	0.77	UJ	Q
072SB-0014-0001-SO	HEPTACHLOR	1.5	UG/KG	4.0	1.5	UJ	Q
072SB-0014-0001-SO	HEPTACHLOR EPOXIDE	1.5	UG/KG	2.9	1.5	UJ	Q
072SB-0014-0001-SO	METHOXYCHLOR	3.8	UG/KG	5.7	3.8	UJ	Q
072SB-0014-0001-SO	P,P'-DDD	0.77	UG/KG	2.3	0.77	UJ	Q
072SB-0014-0001-SO	P,P'-DDE	0.77	UG/KG	1.9	0.77	UJ	Q
072SB-0014-0001-SO	TOXAPHENE	23	UG/KG	77	23	UJ	C
072SB-0014-0001-SO	2-HEXANONE	0.88	UG/KG	18	0.88	UJ	C
072SB-0014-0001-SO	ACETONE	5.5	UG/KG	18	5.5	UJ	C
072SB-0014-0001-SO	2,4-DINITROPHENOL	90	UG/KG	370	90	UJ	C
072SB-0014-0001-SO	2,4-DINITROTOLUENE	30	UG/KG	230	30	R	D
072SB-0014-0001-SO	2,6-DINITROTOLUENE	30	UG/KG	230	30	R	D
072SB-0014-0001-SO	3,3'-DICHLOROBENZIDINE	90	UG/KG	110	90	UJ	C
072SB-0014-0001-SO	4,6-DINITRO-2-METHYLPHENOL	90	UG/KG	170	90	UJ	C
072SB-0014-0001-SO	4-NITROANILINE	30	UG/KG	230	30	R	C
072SB-0014-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	56	UG/KG	56	30	U	B
072SB-0014-0001-SO	2-NITROTOLUENE	0.049	MG/KG	0.25	0.049	UJ	C
072SB-0014-0001-SO	NITROBENZENE	0.049	MG/KG	0.25	0.049	R	D
072SB-0014-0001-SO	RDX	0.049	MG/KG	0.25	0.049	UJ	C
072SB-0026-0001-SO	ANTIMONY	0.10	MG/KG	0.20	0.10	R	Q
072SB-0026-0001-SO	ARSENIC	0.51	MG/KG	0.10	0.050	J-	Q
072SB-0026-0001-SO	BARIUM	31.0	MG/KG	1.0	0.020	J	M
072SB-0026-0001-SO	CADMIUM	0.19	MG/KG	0.10	0.030	J+	I
072SB-0026-0001-SO	CALCIUM	750.0	MG/KG	10	2.5	J-	Q
072SB-0026-0001-SO	COPPER	17.0	MG/KG	0.20	0.060	J-	Q
072SB-0026-0001-SO	SELENIUM	0.74	MG/KG	0.50	0.10	J-	Q
072SB-0026-0001-SO	SILVER	0.03	MG/KG	0.10	0.030	J+	I
072SB-0026-0001-SO	THALLIUM	0.12	MG/KG	0.10	0.020	J-	Q
072SB-0026-0001-SO	ZINC	45.0	MG/KG	0.50	0.20	J	A
072SB-0026-0001-SO	BENZENE	0.51	UG/KG	5.1	0.51	UJ	S
072SB-0026-0001-SO	ETHYLBENZENE	0.51	UG/KG	5.1	0.51	UJ	S
072SB-0026-0001-SO	TOLUENE	0.51	UG/KG	5.1	0.51	UJ	S
072SB-0026-0001-SO	XYLENES, TOTAL	1.5	UG/KG	10	1.5	UJ	S
072SB-0026-0001-SO	ACENAPHTHENE	3.4	UG/KG	6.9	3.4	UJ	S
072SB-0026-0001-SO	ACENAPHTHENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	ACENAPHTHYLENE	3.4	UG/KG	6.9	3.4	UJ	S
072SB-0026-0001-SO	ACENAPHTHYLENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	ANTHRACENE	3.4	UG/KG	6.9	3.4	UJ	S
072SB-0026-0001-SO	ANTHRACENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	BENZO(A)ANTHRACENE	15.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	BENZO(A)ANTHRACENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	BENZO(A)PYRENE	18.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	BENZO(A)PYRENE	18.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	BENZO(B)FLUORANTHENE	16.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	BENZO(B)FLUORANTHENE	12.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	BENZO(G,H,I)PERYLENE	140.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	BENZO(G,H,I)PERYLENE	130.0	UG/KG	7.0	3.5	R	D

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
072SB-0026-0001-SO	BENZO(K)FLUORANTHENE	5.8	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	BENZO(K)FLUORANTHENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	CHRYSENE	9.1	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	CHRYSENE	3.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	DIBENZ(A,H)ANTHRACENE	3.4	UG/KG	6.9	3.4	UJ	S
072SB-0026-0001-SO	DIBENZ(A,H)ANTHRACENE	7.1	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	FLUORANTHENE	12.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	FLUORANTHENE	9.5	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	FLUORENE	8.4	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	FLUORENE	10.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	INDENO(1,2,3-C,D)PYRENE	17.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	INDENO(1,2,3-C,D)PYRENE	18.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	NAPHTHALENE	29.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	NAPHTHALENE	30.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	PHENANTHRENE	50.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	PHENANTHRENE	47.0	UG/KG	7.0	3.5	R	D
072SB-0026-0001-SO	PYRENE	16.0	UG/KG	6.9	3.4	J	S
072SB-0026-0001-SO	PYRENE	15.0	UG/KG	7.0	3.5	R	D
072SB-0030-0001-SO	1,1,1-TRICHLOROETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.44	UG/KG	4.4	0.44	UJ	S, I
072SB-0030-0001-SO	1,1,2-TRICHLOROETHANE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	1,1-DICHLOROETHANE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	1,1-DICHLOROETHENE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	1,2-DIBROMOETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	1,2-DICHLOROETHANE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	1,2-DICHLOROPROPANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	2-HEXANONE	0.88	UG/KG	18	0.88	UJ	C, S
072SB-0030-0001-SO	ACETONE	5.5	UG/KG	18	5.5	UJ	C, S
072SB-0030-0001-SO	BENZENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	BROMOCHLOROMETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	BROMODICHLOROMETHANE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	BROMOFORM	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	BROMOMETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	CARBON DISULFIDE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	CARBON TETRACHLORIDE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	CHLOROBENZENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	CHLOROETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	CHLOROFORM	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	CHLOROMETHANE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	CIS-1,3-DICHLOROPROPENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	DIBROMOCHLOROMETHANE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	ETHYLBENZENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	METHYL ETHYL KETONE	1.8	UG/KG	18	1.8	UJ	S
072SB-0030-0001-SO	METHYL ISOBUTYL KETONE	0.88	UG/KG	18	0.88	UJ	S
072SB-0030-0001-SO	METHYLENE CHLORIDE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	STYRENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	TERT-BUTYL METHYL ETHER	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	TETRACHLOROETHYLENE	0.88	UG/KG	4.4	0.88	UJ	S

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
072SB-0030-0001-SO	TOLUENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	TOTAL 1,2-DICHLOROETHENE	0.88	UG/KG	8.8	0.88	UJ	S
072SB-0030-0001-SO	TRANS-1,3-DICHLOROPROPENE	0.88	UG/KG	4.4	0.88	UJ	S
072SB-0030-0001-SO	TRICHLOROETHYLENE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	VINYL CHLORIDE	0.44	UG/KG	4.4	0.44	UJ	S
072SB-0030-0001-SO	XYLENES, TOTAL	1.3	UG/KG	8.8	1.3	UJ	S
072SB-0039-0001-SO	ANTIMONY	0.11	MG/KG	0.22	0.11	R	Q
072SB-0039-0001-SO	ARSENIC	9.4	MG/KG	0.11	0.056	J-	Q
072SB-0039-0001-SO	BARIUM	50.0	MG/KG	1.1	0.022	J-	Q, M
072SB-0039-0001-SO	BERYLLIUM	0.64	MG/KG	0.11	0.011	J-	Q
072SB-0039-0001-SO	CADMIUM	0.19	MG/KG	0.11	0.033	J+	I
072SB-0039-0001-SO	CHROMIUM	18.0	MG/KG	0.22	0.045	J-	Q
072SB-0039-0001-SO	LEAD	9.7	MG/KG	0.11	0.033	J+	Q
072SB-0039-0001-SO	NICKEL	24.0	MG/KG	0.11	0.033	J-	Q
072SB-0039-0001-SO	POTASSIUM	2500.0	MG/KG	11	6.7	J-	E, Q
072SB-0039-0001-SO	SELENIUM	0.78	MG/KG	0.56	0.11	J-	Q
072SB-0039-0001-SO	SILVER	0.029	MG/KG	0.11	0.033	J+	I
072SB-0039-0001-SO	VANADIUM	20.0	MG/KG	0.11	0.067	J-	Q
072SB-0039-0001-SO	2-HEXANONE	0.98	UG/KG	20	0.98	UJ	C
072SB-0063-0001-SO	ANTIMONY	0.069	MG/KG	0.21	0.10	J	I, Q
072SB-0063-0001-SO	ARSENIC	11.0	MG/KG	0.10	0.052	J-	Q
072SB-0063-0001-SO	BARIUM	21.0	MG/KG	1.0	0.021	J	M
072SB-0063-0001-SO	CADMIUM	0.15	MG/KG	0.10	0.031	J	I, Q
072SB-0063-0001-SO	CALCIUM	1200.0	MG/KG	10	2.6	J+	Q
072SB-0063-0001-SO	CHROMIUM	9.2	MG/KG	0.21	0.041	J-	Q
072SB-0063-0001-SO	COBALT	7.7	MG/KG	0.052	0.010	J-	Q
072SB-0063-0001-SO	COPPER	15.0	MG/KG	0.21	0.062	J-	Q
072SB-0063-0001-SO	MANGANESE	270.0	MG/KG	0.52	0.031	J	E
072SB-0063-0001-SO	POTASSIUM	950.0	MG/KG	10	6.2	J-	Q
072SB-0063-0001-SO	SELENIUM	0.38	MG/KG	0.52	0.10	J	I, Q
072SB-0063-0001-SO	SILVER	0.024	MG/KG	0.10	0.031	J	I, Q
072SB-0063-0001-SO	SODIUM	32.0	MG/KG	10	5.2	J-	Q
076SB-0119-0001-SO	CHROMIUM, HEXAVALENT	0.91	MG/KG	0.91	0.91	UJ	H
076SB-0122-0001-SO	CHROMIUM, HEXAVALENT	0.94	MG/KG	0.94	0.94	UJ	H
076SB-0126-0001-SO	CHROMIUM, HEXAVALENT	0.31	MG/KG	0.89	0.89	J-	H
076SB-0130-0001-SO	CHROMIUM, HEXAVALENT	0.88	MG/KG	0.88	0.88	UJ	H

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
075SD-0002-0001-SD	ALUMINUM	12000.0	MG/KG	4.4	0.88	J	E
075SD-0002-0001-SD	ANTIMONY	0.21	MG/KG	0.29	0.15	J-	Q
075SD-0002-0001-SD	ARSENIC	9.5	MG/KG	0.15	0.074	J-	Q
075SD-0002-0001-SD	BARIUM	110.0	MG/KG	1.5	0.029	J-	Q
075SD-0002-0001-SD	CHROMIUM	15.0	MG/KG	0.29	0.059	J-	E, Q
075SD-0002-0001-SD	MAGNESIUM	2800.0	MG/KG	15	2.9	J-	Q
075SD-0002-0001-SD	NICKEL	21.0	MG/KG	0.15	0.044	J-	Q
075SD-0002-0001-SD	POTASSIUM	1400.0	MG/KG	15	8.8	J-	E, Q
075SD-0002-0001-SD	SELENIUM	1.3	MG/KG	0.74	0.15	J-	Q
075SD-0002-0001-SD	SODIUM	75.0	MG/KG	15	7.4	J	E
075SD-0002-0001-SD	VANADIUM	20.0	MG/KG	0.15	0.088	J-	E, Q
075SD-0002-0001-SD	MERCURY	0.47	MG/KG	0.15	0.050	J-	Q
075SD-0002-0001-SD	STYRENE	7.6	UG/KG	7.6	0.76	U	B
075SD-0002-0001-SD	1,2,4-TRICHLOROBENZENE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	1,2-DICHLOROBENZENE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	1,3-DICHLOROBENZENE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	1,4-DICHLOROBENZENE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	2,2'-OXYBIS(1-CHLORO)PROPANE	43	UG/KG	160	43	R	D
075SD-0002-0001-SD	2,4,5-TRICHLOROPHENOL	43	UG/KG	240	43	R	D
075SD-0002-0001-SD	2,4,6-TRICHLOROPHENOL	130	UG/KG	240	130	R	D
075SD-0002-0001-SD	2,4-DICHLOROPHENOL	43	UG/KG	240	43	R	D
075SD-0002-0001-SD	2,4-DIMETHYLPHENOL	130	UG/KG	240	130	R	D
075SD-0002-0001-SD	2,4-DINITROPHENOL	130	UG/KG	530	130	UJ	C
075SD-0002-0001-SD	2,4-DINITROPHENOL	130	UG/KG	530	130	R	D
075SD-0002-0001-SD	2,4-DINITROTOLUENE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	2,4-DINITROTOLUENE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	2,6-DINITROTOLUENE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	2,6-DINITROTOLUENE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	2-CHLORONAPHTHALENE	5.3	UG/KG	80	5.3	R	D
075SD-0002-0001-SD	2-CHLOROPHENOL	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	2-METHYLNAPHTHALENE	24.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	2-METHYLPHENOL	130	UG/KG	320	130	R	D
075SD-0002-0001-SD	2-NITROANILINE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	2-NITROPHENOL	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	3,3'-DICHLOROBENZIDINE	130	UG/KG	160	130	R	Q
075SD-0002-0001-SD	3,3'-DICHLOROBENZIDINE	130	UG/KG	160	130	R	D
075SD-0002-0001-SD	3-NITROANILINE	130	UG/KG	320	130	R	D
075SD-0002-0001-SD	4,6-DINITRO-2-METHYLPHENOL	130	UG/KG	240	130	UJ	C
075SD-0002-0001-SD	4,6-DINITRO-2-METHYLPHENOL	130	UG/KG	240	130	R	D
075SD-0002-0001-SD	4-BROMOPHENYL PHENYL ETHER	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	4-CHLORO-3-METHYLPHENOL	43	UG/KG	240	43	R	D
075SD-0002-0001-SD	4-CHLOROANILINE	43	UG/KG	240	43	R	D
075SD-0002-0001-SD	4-CHLOROPHENYL PHENYL ETHER	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	4-NITROANILINE	43	UG/KG	320	43	UJ	Q
075SD-0002-0001-SD	4-NITROANILINE	43	UG/KG	320	43	R	D
075SD-0002-0001-SD	4-NITROPHENOL	130	UG/KG	530	130	R	D
075SD-0002-0001-SD	ACENAPHTHENE	27.0	UG/KG	11	5.3	R	D

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
075SD-0002-0001-SD	ACENAPHTHYLENE	20.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	ANTHRACENE	77.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZO(A)ANTHRACENE	140.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZO(A)PYRENE	160.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZO(B)FLUORANTHENE	200.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZO(G,H,I)PERYLENE	120.0	UG/KG	11	5.3	J	C
075SD-0002-0001-SD	BENZO(G,H,I)PERYLENE	85.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZO(K)FLUORANTHENE	83.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	BENZOIC ACID	530	UG/KG	1100	530	R	D
075SD-0002-0001-SD	BENZYL ALCOHOL	43	UG/KG	530	43	R	D
075SD-0002-0001-SD	BENZYL BUTYL PHTHALATE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	BIS(2-CHLOROETHOXY) METHANE	43	UG/KG	160	43	R	D
075SD-0002-0001-SD	BIS(2-CHLOROETHYL) ETHER	5.3	UG/KG	160	5.3	R	D
075SD-0002-0001-SD	BIS(2-ETHYLHEXYL) PHTHALATE	43	UG/KG	80	43	UJ	H
075SD-0002-0001-SD	CARBAZOLE	50.0	UG/KG	80	43	R	D
075SD-0002-0001-SD	CHRYSENE	160.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	CRESOLS, M & P	130	UG/KG	640	130	R	D
075SD-0002-0001-SD	DIBENZ(A,H)ANTHRACENE	5.3	UG/KG	11	5.3	UJ	C
075SD-0002-0001-SD	DIBENZ(A,H)ANTHRACENE	22.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	DIBENZOFURAN	39.0	UG/KG	80	5.3	R	D
075SD-0002-0001-SD	DIETHYL PHTHALATE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	DIMETHYL PHTHALATE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	DI-N-BUTYL PHTHALATE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	DI-N-OCTYLPHTHALATE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	FLUORANTHENE	390.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	FLUORENE	54.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	HEXACHLOROBENZENE	5.3	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	HEXACHLOROBUTADIENE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	HEXACHLOROCYCLOPENTADIENE	43	UG/KG	530	43	R	D
075SD-0002-0001-SD	HEXACHLOROETHANE	43	UG/KG	80	43	UJ	C
075SD-0002-0001-SD	HEXACHLOROETHANE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	INDENO(1,2,3-C,D)PYRENE	120.0	UG/KG	11	5.3	J	C
075SD-0002-0001-SD	INDENO(1,2,3-C,D)PYRENE	74.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	ISOPHORONE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	NAPHTHALENE	41.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	NITROBENZENE	5.3	UG/KG	160	5.3	R	D
075SD-0002-0001-SD	N-NITROSODI-N-PROPYLAMINE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	N-NITROSODIPHENYLAMINE	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	PENTACHLOROPHENOL	130	UG/KG	240	130	R	D
075SD-0002-0001-SD	PHENANTHRENE	330.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	PHENOL	43	UG/KG	80	43	R	D
075SD-0002-0001-SD	PYRENE	280.0	UG/KG	11	5.3	R	D
075SD-0002-0001-SD	2-NITROTOLUENE	0.049	MG/KG	0.25	0.049	UJ	C
075SD-0002-0001-SD	NITROBENZENE	0.049	MG/KG	0.25	0.049	R	D
075SD-0002-0001-SD	NITROGUANIDINE	0.039	MG/KG	0.24	0.039	UJ	Q
075SD-0002-0001-SD	RDX	0.049	MG/KG	0.25	0.049	UJ	C
075SD-0002-0001-SD	TETRYL	0.029	MG/KG	0.25	0.049	NJ	*III

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
077SS-0001M-0001-SO	ANTIMONY	0.2	MG/KG	0.17	0.083	J	I, Q
077SS-0001M-0001-SO	ARSENIC	12	MG/KG	0.083	0.041	J-	Q
077SS-0001M-0001-SO	BARIUM	49	MG/KG	0.83	0.017	J	M
077SS-0001M-0001-SO	CADMIUM	0.19	MG/KG	0.083	0.025	J	I, Q
077SS-0001M-0001-SO	CALCIUM	4500	MG/KG	8.3	2.1	J	A, E
077SS-0001M-0001-SO	COPPER	16	MG/KG	0.17	0.05	J	Q
077SS-0001M-0001-SO	MAGNESIUM	2800	MG/KG	8.3	1.7	J+	Q
077SS-0001M-0001-SO	POTASSIUM	830	MG/KG	8.3	5	J+	Q
077SS-0001M-0001-SO	SELENIUM	0.56	MG/KG	0.41	0.083	J-	Q
077SS-0001M-0001-SO	SILVER	0.027	MG/KG	0.083	0.025	J+	I
077SS-0001M-0001-SO	SODIUM	29	MG/KG	8.3	4.1	UJ	E, F
077SS-0001M-0001-SO	TOXAPHENE	200	UG/KG	670	200	UJ	C
077SS-0001M-0001-SO	2,4-DINITROTOLUENE	110	UG/KG	810	110	R	D
077SS-0001M-0001-SO	2,6-DINITROTOLUENE	110	UG/KG	810	110	R	D
077SS-0001M-0001-SO	3,3'-DICHLOROBENZIDINE	320	UG/KG	410	320	UJ	C
077SS-0001M-0001-SO	BENZOIC ACID	0	UG/KG	2700	1400	R	Q
077SS-0001M-0001-SO	N-NITROSODIPHENYLAMINE	110	UG/KG	200	110	R	C
077SS-0001M-0001-SO	2-NITROTOLUENE	0.05	MG/KG	0.25	0.05	UJ	C
077SS-0001M-0001-SO	NITROBENZENE	0.05	MG/KG	0.25	0.05	R	D
077SS-0001M-0001-SO	RDX	0.05	MG/KG	0.25	0.05	UJ	C

Sample	Analyte	Result	Units	LOQ	LOD	Qualifier	Code
083SB-0005M-0001-SO	ANTIMONY	1.2	mg/kg	4.1	2.1	J-	Q
083SB-0005M-0001-SO	ARSENIC	13.9	mg/kg	4.1	2.1	J-	Q
083SB-0005M-0001-SO	BARIUM	78.1	mg/kg	0.26	0.13	J-	A, P, Q, *III
083SB-0005M-0001-SO	BERYLLIUM	0.68	mg/kg	0.21	0.062	J-	P, Q
083SB-0005M-0001-SO	CADMIUM	0.1	mg/kg	0.21	0.1	UJ	P, Q
083SB-0005M-0001-SO	CALCIUM	28900	mg/kg	7.3	3.6	J-	P
083SB-0005M-0001-SO	CHROMIUM	18.3	mg/kg	0.73	0.36	J-	P, Q, *III
083SB-0005M-0001-SO	COBALT	11.8	mg/kg	1.2	0.62	J-	P, Q
083SB-0005M-0001-SO	COPPER	21.3	mg/kg	2.1	1	J-	Q
083SB-0005M-0001-SO	LEAD	11.8	mg/kg	1.3	0.65	J-	P, Q
083SB-0005M-0001-SO	MAGNESIUM	7530	mg/kg	4.1	2.1	J-	A, P, Q, *III
083SB-0005M-0001-SO	NICKEL	29.2	mg/kg	0.62	0.31	J-	P, Q, *III
083SB-0005M-0001-SO	SELENIUM	0.24	mg/kg	0.41	0.24	UJ	Q, $, *III
083SB-0005M-0001-SO	SILVER	0.12	mg/kg	0.1	0.12	UJ	Q, $, *III
083SB-0005M-0001-SO	THALLIUM	0.79	mg/kg	2.5	1.2	UJ	B, P, Q, *III
083SB-0005M-0001-SO	VANADIUM	18.8	mg/kg	0.41	0.21	J-	P, Q
083SB-0005M-0001-SO	ZINC	70.2	mg/kg	1.6	0.78	J-	P, Q, *III
083SB-0005M-0001-SO	MERCURY	0.013	mg/kg	0.0091	0.0046	J+	Q
083SB-0005M-0001-SO	CHLOROETHANE	0.9	ug/kg	1.8	0.9	UJ	C
083SB-0005M-0001-SO	M,P-XYLENE	1.8	ug/kg	3.6	1.8	R	D
083SB-0005M-0001-SO	METHYLENE CHLORIDE	6.0	ug/kg	9	1.8	U	B
083SB-0005M-0001-SO	O-XYLENE	0.9	ug/kg	1.8	0.9	R	D
083SB-0005M-0001-SO	BENZOIC ACID	1600	ug/kg	3200	1600	UJ	C
083SB-0005M-0001-SO	BENZYL ALCOHOL	130	ug/kg	420	130	R	C
083SB-0005M-0001-SO	HEXACHLOROCYCLOPENTADIENE	64	ug/kg	210	64	UJ	C
083SB-0005M-0001-SO	2,4-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	R	D
083SB-0005M-0001-SO	2,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	R	D
083SB-0005M-0001-SO	2-NITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	C
083SB-0005M-0001-SO	3,5-DINITROANILINE	0.2	mg/kg	0.3	0.2	R	C
083SB-0005M-0001-SO	4-AMINO-2,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	C
083SB-0005M-0001-SO	NITROBENZENE	0.2	mg/kg	0.5	0.2	R	D

APPENDIX C

Primary/Field Duplicate Sample Comparisons

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-0042M-0001-SO	C10-C20	370	MG/KG	210		070SB-043M-0001-SO	350	MG/KG	100		N/A	Yes
070SB-0042M-0001-SO	C20-C34	430	MG/KG	210		070SB-043M-0001-SO	400	MG/KG	100		N/A	Yes
070SB-0042M-0001-SO	C6-C12	49	UG/KG	98	U	070SB-043M-0001-SO	980	UG/KG	110		N/A	No
070SB-0042M-0001-SO	1,1,1-TRICHLOROETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,1,2-TRICHLOROETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,1-DICHLOROETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,1-DICHLOROETHENE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,2-DIBROMOETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,2-DICHLOROETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	1,2-Dichloroethene, Total	0.89	UG/KG	8.9	U	070SB-043M-0001-SO	1.1	UG/KG	11	U	N/A	Yes
070SB-0042M-0001-SO	1,2-DICHLOROPROPANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	2-Butanone (MEK)	6.2	UG/KG	18	J	070SB-043M-0001-SO	5.5	UG/KG	21	J	N/A	Yes
070SB-0042M-0001-SO	2-HEXANONE	0.89	UG/KG	18	U	070SB-043M-0001-SO	1.1	UG/KG	21	U	N/A	Yes
070SB-0042M-0001-SO	4-Methyl-2-pentanone (MIBK)	0.89	UG/KG	18	U	070SB-043M-0001-SO	1.1	UG/KG	21	U	N/A	Yes
070SB-0042M-0001-SO	ACETONE	24	UG/KG	18		070SB-043M-0001-SO	27	UG/KG	21		N/A	Yes
070SB-0042M-0001-SO	BENZENE	0.73	UG/KG	4.5	J	070SB-043M-0001-SO	0.84	UG/KG	5.4	J	N/A	Yes
070SB-0042M-0001-SO	BROMOCHLOROMETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	BROMODICHLOROMETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	BROMOFORM	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	BROMOMETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CARBON DISULFIDE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CARBON TETRACHLORIDE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CHLOROBENZENE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CHLOROETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CHLOROFORM	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CHLOROMETHANE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	DIBROMOCHLOROMETHANE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	ETHYLBENZENE	4.7	UG/KG	4.5		070SB-043M-0001-SO	4.7	UG/KG	5.4	J	N/A	Yes
070SB-0042M-0001-SO	Methyl tert-butyl ether	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	METHYLENE CHLORIDE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.8	UG/KG	5.4	J	N/A	Yes
070SB-0042M-0001-SO	STYRENE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	TETRACHLOROETHYLENE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	TOLUENE	2.7	UG/KG	4.5	J	070SB-043M-0001-SO	1.9	UG/KG	5.4	J	N/A	Yes
070SB-0042M-0001-SO	TRANS-1,3-DICHLOROPROPENE	0.89	UG/KG	4.5	U	070SB-043M-0001-SO	1.1	UG/KG	5.4	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-0042M-0001-SO	Trichloroethene	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	VINYL CHLORIDE	0.45	UG/KG	4.5	U	070SB-043M-0001-SO	0.54	UG/KG	5.4	U	N/A	Yes
070SB-0042M-0001-SO	XYLENES, TOTAL	20	UG/KG	8.9		070SB-043M-0001-SO	20	UG/KG	11		N/A	Yes
070SB-0042M-0001-SO	1,2,4-TRICHLOROBENZENE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	1,2-DICHLOROBENZENE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	1,3-DICHLOROBENZENE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	1,4-DICHLOROBENZENE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	2,4,5-TRICHLOROPHENOL	270	UG/KG	1500	U	070SB-043M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	2,4,6-TRICHLOROPHENOL	790	UG/KG	1500	U	070SB-043M-0001-SO	790	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	2,4-DICHLOROPHENOL	270	UG/KG	1500	U	070SB-043M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	2,4-DIMETHYLPHENOL	790	UG/KG	1500	U	070SB-043M-0001-SO	790	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	2,4-DINITROPHENOL	790	UG/KG	3300	U	070SB-043M-0001-SO	790	UG/KG	3300	U	N/A	Yes
070SB-0042M-0001-SO	2,4-DINITROTOLUENE	270	UG/KG	2000	U	070SB-043M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	2,6-DINITROTOLUENE	270	UG/KG	2000	U	070SB-043M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	2-CHLORONAPHTHALENE	33	UG/KG	500	U	070SB-043M-0001-SO	33	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	2-CHLOROPHENOL	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	2-METHYLNAPHTHALENE	680	UG/KG	66		070SB-043M-0001-SO	660	UG/KG	66		3	N/A
070SB-0042M-0001-SO	2-METHYLPHENOL	790	UG/KG	2000	U	070SB-043M-0001-SO	790	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	2-NITROANILINE	270	UG/KG	2000	U	070SB-043M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	2-NITROPHENOL	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	3,3'-DICHLOROBENZIDINE	790	UG/KG	990	U	070SB-043M-0001-SO	790	UG/KG	990	U	N/A	Yes
070SB-0042M-0001-SO	3-NITROANILINE	790	UG/KG	2000	U	070SB-043M-0001-SO	790	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	790	UG/KG	1500	U	070SB-043M-0001-SO	790	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	4-BROMOPHENYL PHENYL ETHER	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	4-CHLORO-3-METHYLPHENOL	270	UG/KG	1500	U	070SB-043M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	4-CHLOROANILINE	270	UG/KG	1500	U	070SB-043M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	4-NITROANILINE	270	UG/KG	2000	U	070SB-043M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-0042M-0001-SO	4-NITROPHENOL	790	UG/KG	3300	U	070SB-043M-0001-SO	790	UG/KG	3300	U	N/A	Yes
070SB-0042M-0001-SO	ACENAPHTHENE	380	UG/KG	66		070SB-043M-0001-SO	260	UG/KG	66		N/A	No
070SB-0042M-0001-SO	ACENAPHTHYLENE	79	UG/KG	66		070SB-043M-0001-SO	61	UG/KG	66	J	N/A	Yes
070SB-0042M-0001-SO	ANTHRACENE	33	UG/KG	66	U	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes
070SB-0042M-0001-SO	Benzo[a]anthracene	140	UG/KG	66		070SB-043M-0001-SO	150	UG/KG	66		N/A	Yes
070SB-0042M-0001-SO	Benzo[a]pyrene	41	UG/KG	66	J	070SB-043M-0001-SO	51	UG/KG	66	J	N/A	Yes
070SB-0042M-0001-SO	Benzo[b]fluoranthene	34	UG/KG	66	J	070SB-043M-0001-SO	33	UG/KG	66	J	N/A	Yes
070SB-0042M-0001-SO	Benzo[g,h,i]perylene	57	UG/KG	66	J	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-0042M-0001-SO	Benzo[k]fluoranthene	33	UG/KG	66	U	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes
070SB-0042M-0001-SO	BENZOIC ACID	3300	UG/KG	6500	U	070SB-043M-0001-SO	3300	UG/KG	6500	U	N/A	Yes
070SB-0042M-0001-SO	BENZYL ALCOHOL	270	UG/KG	3300	U	070SB-043M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-0042M-0001-SO	BENZYL BUTYL PHTHALATE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	270	UG/KG	990	U	070SB-043M-0001-SO	270	UG/KG	990	U	N/A	Yes
070SB-0042M-0001-SO	BIS(2-CHLOROETHYL) ETHER	33	UG/KG	990	U	070SB-043M-0001-SO	33	UG/KG	990	U	N/A	Yes
070SB-0042M-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	270	UG/KG	990	U	070SB-043M-0001-SO	270	UG/KG	990	U	N/A	Yes
070SB-0042M-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	CARBAZOLE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	CHRYSENE	190	UG/KG	66		070SB-043M-0001-SO	98	UG/KG	66		N/A	No
070SB-0042M-0001-SO	CRESOLS, M & P	790	UG/KG	4000	U	070SB-043M-0001-SO	790	UG/KG	3900	U	N/A	Yes
070SB-0042M-0001-SO	DIBENZ(A,H)ANTHRACENE	33	UG/KG	66	U	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes
070SB-0042M-0001-SO	DIBENZOFURAN	250	UG/KG	500	J	070SB-043M-0001-SO	180	UG/KG	490	J	N/A	Yes
070SB-0042M-0001-SO	DIETHYL PHTHALATE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	DIMETHYL PHTHALATE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	DI-N-BUTYL PHTHALATE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	Di-n-octyl phthalate	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	FLUORANTHENE	170	UG/KG	66		070SB-043M-0001-SO	120	UG/KG	66		N/A	Yes
070SB-0042M-0001-SO	FLUORENE	650	UG/KG	66		070SB-043M-0001-SO	500	UG/KG	66		26	N/A
070SB-0042M-0001-SO	HEXACHLOROBENZENE	33	UG/KG	66	U	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes
070SB-0042M-0001-SO	HEXACHLOROBUTADIENE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	HEXACHLOROCYCLOPENTADIENE	270	UG/KG	3300	U	070SB-043M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-0042M-0001-SO	HEXACHLOROETHANE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	Indeno[1,2,3-cd]pyrene	33	UG/KG	66	U	070SB-043M-0001-SO	33	UG/KG	66	U	N/A	Yes
070SB-0042M-0001-SO	ISOPHORONE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	NAPHTHALENE	50	UG/KG	66	J	070SB-043M-0001-SO	51	UG/KG	66	J	N/A	Yes
070SB-0042M-0001-SO	NITROBENZENE	33	UG/KG	990	U	070SB-043M-0001-SO	33	UG/KG	990	U	N/A	Yes
070SB-0042M-0001-SO	N-NITROSODI-N-PROPYLAMINE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	N-NITROSODIPHENYLAMINE	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	PENTACHLOROPHENOL	790	UG/KG	1500	U	070SB-043M-0001-SO	790	UG/KG	1500	U	N/A	Yes
070SB-0042M-0001-SO	PHENANTHRENE	1000	UG/KG	66		070SB-043M-0001-SO	810	UG/KG	66		21	N/A
070SB-0042M-0001-SO	PHENOL	270	UG/KG	500	U	070SB-043M-0001-SO	270	UG/KG	490	U	N/A	Yes
070SB-0042M-0001-SO	PYRENE	1000	UG/KG	66		070SB-043M-0001-SO	730	UG/KG	66		31	N/A
070SB-044M-0001-SO	2,4 DB	33	UG/KG	80	U	070SB-045M-0001-SO	33	UG/KG	79	U	N/A	Yes
070SB-044M-0001-SO	2,4,5-T	8.3	UG/KG	20	U	070SB-045M-0001-SO	8.3	UG/KG	20	U	N/A	Yes
070SB-044M-0001-SO	2,4-D	33	UG/KG	80	U	070SB-045M-0001-SO	33	UG/KG	79	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-044M-0001-SO	DALAPON	17	UG/KG	40	U	070SB-045M-0001-SO	17	UG/KG	40	U	N/A	Yes
070SB-044M-0001-SO	DICAMBA	17	UG/KG	40	U	070SB-045M-0001-SO	17	UG/KG	40	U	N/A	Yes
070SB-044M-0001-SO	Dichlorprop	66	UG/KG	80	U	070SB-045M-0001-SO	66	UG/KG	79	U	N/A	Yes
070SB-044M-0001-SO	DINOSEB	10	UG/KG	12	U	070SB-045M-0001-SO	9.9	UG/KG	12	U	N/A	Yes
070SB-044M-0001-SO	MCPA	3300	UG/KG	8000	UJ	070SB-045M-0001-SO	3300	UG/KG	7900	U	N/A	Yes
070SB-044M-0001-SO	MCPP	3300	UG/KG	8000	UJ	070SB-045M-0001-SO	3300	UG/KG	7900	U	N/A	Yes
070SB-044M-0001-SO	PENTACHLOROPHENOL	8.3	UG/KG	10	U	070SB-045M-0001-SO	8.3	UG/KG	9.9	U	N/A	Yes
070SB-044M-0001-SO	SILVEX (2,4,5-TP)	8.3	UG/KG	20	U	070SB-045M-0001-SO	8.3	UG/KG	20	U	N/A	Yes
070SB-044M-0001-SO	1,2,4-TRICHLOROBENZENE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	1,2-DICHLOROBENZENE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	1,3-DICHLOROBENZENE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	1,4-DICHLOROBENZENE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	2,4,5-TRICHLOROPHENOL	270	UG/KG	1500	U	070SB-045M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	2,4,6-TRICHLOROPHENOL	810	UG/KG	1500	U	070SB-045M-0001-SO	800	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	2,4-DICHLOROPHENOL	270	UG/KG	1500	U	070SB-045M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	2,4-DIMETHYLPHENOL	810	UG/KG	1500	U	070SB-045M-0001-SO	800	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	2,4-DINITROPHENOL	810	UG/KG	3300	UJ	070SB-045M-0001-SO	800	UG/KG	3300	U	N/A	Yes
070SB-044M-0001-SO	2,4-DINITROTOLUENE	270	UG/KG	2000	R	070SB-045M-0001-SO	270	UG/KG	2000	U	N/A	N/A
070SB-044M-0001-SO	2,6-DINITROTOLUENE	270	UG/KG	2000	R	070SB-045M-0001-SO	270	UG/KG	2000	U	N/A	N/A
070SB-044M-0001-SO	2-CHLORONAPHTHALENE	33	UG/KG	510	U	070SB-045M-0001-SO	33	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	2-CHLOROPHENOL	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	2-METHYLNAPHTHALENE	33	UG/KG	67	U	070SB-045M-0001-SO	81	UG/KG	67		N/A	Yes
070SB-044M-0001-SO	2-METHYLPHENOL	810	UG/KG	2000	U	070SB-045M-0001-SO	800	UG/KG	2000	U	N/A	Yes
070SB-044M-0001-SO	2-NITROANILINE	270	UG/KG	2000	U	070SB-045M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-044M-0001-SO	2-NITROPHENOL	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	3,3'-DICHLOROBENZIDINE	810	UG/KG	1000	U	070SB-045M-0001-SO	800	UG/KG	1000	U	N/A	Yes
070SB-044M-0001-SO	3-NITROANILINE	810	UG/KG	2000	U	070SB-045M-0001-SO	800	UG/KG	2000	U	N/A	Yes
070SB-044M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	810	UG/KG	1500	U	070SB-045M-0001-SO	800	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	4-BROMOPHENYL PHENYL ETHER	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	4-CHLORO-3-METHYLPHENOL	270	UG/KG	1500	U	070SB-045M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	4-CHLOROANILINE	270	UG/KG	1500	U	070SB-045M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-044M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	4-NITROANILINE	270	UG/KG	2000	U	070SB-045M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-044M-0001-SO	4-NITROPHENOL	810	UG/KG	3300	U	070SB-045M-0001-SO	800	UG/KG	3300	U	N/A	Yes
070SB-044M-0001-SO	ACENAPHTHENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	ACENAPHTHYLENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-044M-0001-SO	ANTHRACENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	Benzo[a]anthracene	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	Benzo[a]pyrene	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	Benzo[b]fluoranthene	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	Benzo[g,h,i]perylene	33	UG/KG	67	UJ	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	Benzo[k]fluoranthene	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	BENZOIC ACID	3400	UG/KG	6700	U	070SB-045M-0001-SO	3300	UG/KG	6600	U	N/A	Yes
070SB-044M-0001-SO	BENZYL ALCOHOL	270	UG/KG	3300	U	070SB-045M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-044M-0001-SO	BENZYL BUTYL PHTHALATE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	270	UG/KG	1000	U	070SB-045M-0001-SO	270	UG/KG	1000	U	N/A	Yes
070SB-044M-0001-SO	BIS(2-CHLOROETHYL) ETHER	33	UG/KG	1000	U	070SB-045M-0001-SO	33	UG/KG	1000	U	N/A	Yes
070SB-044M-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	270	UG/KG	1000	U	070SB-045M-0001-SO	270	UG/KG	1000	U	N/A	Yes
070SB-044M-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	CARBAZOLE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	CHRYSENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	CRESOLS, M & P	810	UG/KG	4000	U	070SB-045M-0001-SO	800	UG/KG	4000	U	N/A	Yes
070SB-044M-0001-SO	DIBENZ(A,H)ANTHRACENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	DIBENZOFURAN	33	UG/KG	510	U	070SB-045M-0001-SO	33	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	DIETHYL PHTHALATE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	DIMETHYL PHTHALATE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	DI-N-BUTYL PHTHALATE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	Di-n-octyl phthalate	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	FLUORANTHENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	FLUORENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	HEXACHLOROBENZENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	HEXACHLOROBUTADIENE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	HEXACHLOROCYCLOPENTADIENE	270	UG/KG	3300	U	070SB-045M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-044M-0001-SO	HEXACHLOROETHANE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	Indeno[1,2,3-cd]pyrene	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-044M-0001-SO	ISOPHORONE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	NAPHTHALENE	33	UG/KG	67	U	070SB-045M-0001-SO	69	UG/KG	67		N/A	Yes
070SB-044M-0001-SO	NITROBENZENE	33	UG/KG	1000	U	070SB-045M-0001-SO	33	UG/KG	1000	U	N/A	Yes
070SB-044M-0001-SO	N-NITROSODI-N-PROPYLAMINE	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	N-NITROSODIPHENYLAMINE	270	UG/KG	510	R	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	N/A
070SB-044M-0001-SO	PENTACHLOROPHENOL	810	UG/KG	1500	R	070SB-045M-0001-SO	800	UG/KG	1500	U	N/A	N/A
070SB-044M-0001-SO	PHENANTHRENE	33	UG/KG	67	U	070SB-045M-0001-SO	45	UG/KG	67	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-044M-0001-SO	PHENOL	270	UG/KG	510	U	070SB-045M-0001-SO	270	UG/KG	500	U	N/A	Yes
070SB-044M-0001-SO	PYRENE	33	UG/KG	67	U	070SB-045M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	ALUMINUM	6900	MG/KG	2.9		070SB-047M-0001-SO	9700	MG/KG	3		34	N/A
070SB-046M-0001-SO	ANTIMONY	0.097	MG/KG	0.19	U	070SB-047M-0001-SO	0.1	MG/KG	0.2	U	N/A	Yes
070SB-046M-0001-SO	ARSENIC	7.8	MG/KG	0.1		070SB-047M-0001-SO	8.1	MG/KG	0.1		4	N/A
070SB-046M-0001-SO	BARIUM	39	MG/KG	0.97		070SB-047M-0001-SO	55	MG/KG	1		34	N/A
070SB-046M-0001-SO	BERYLLIUM	0.35	MG/KG	0.1		070SB-047M-0001-SO	0.49	MG/KG	0.1		N/A	No
070SB-046M-0001-SO	CADMIUM	0.15	MG/KG	0.1		070SB-047M-0001-SO	0.17	MG/KG	0.1		N/A	Yes
070SB-046M-0001-SO	CALCIUM	1600	MG/KG	9.7		070SB-047M-0001-SO	1500	MG/KG	10		6	N/A
070SB-046M-0001-SO	CHROMIUM	9.8	MG/KG	0.19		070SB-047M-0001-SO	14	MG/KG	0.2		35	N/A
070SB-046M-0001-SO	COBALT	5.5	MG/KG	0.05		070SB-047M-0001-SO	7.6	MG/KG	0.05		32	N/A
070SB-046M-0001-SO	COPPER	14	MG/KG	0.19		070SB-047M-0001-SO	16	MG/KG	0.2		13	N/A
070SB-046M-0001-SO	IRON	16000	MG/KG	4.9		070SB-047M-0001-SO	20000	MG/KG	5		22	N/A
070SB-046M-0001-SO	LEAD	12	MG/KG	0.1		070SB-047M-0001-SO	14	MG/KG	0.1		15	N/A
070SB-046M-0001-SO	MAGNESIUM	1700	MG/KG	9.7		070SB-047M-0001-SO	2500	MG/KG	10		38	N/A
070SB-046M-0001-SO	MANGANESE	220	MG/KG	0.49		070SB-047M-0001-SO	270	MG/KG	0.5		20	N/A
070SB-046M-0001-SO	NICKEL	12	MG/KG	0.1		070SB-047M-0001-SO	17	MG/KG	0.1		34	N/A
070SB-046M-0001-SO	POTASSIUM	630	MG/KG	9.7		070SB-047M-0001-SO	850	MG/KG	10		30	N/A
070SB-046M-0001-SO	SELENIUM	0.31	MG/KG	0.49	J	070SB-047M-0001-SO	0.4	MG/KG	0.5	J	N/A	Yes
070SB-046M-0001-SO	SILVER	0.026	MG/KG	0.1	J	070SB-047M-0001-SO	0.029	MG/KG	0.1	J	N/A	Yes
070SB-046M-0001-SO	SODIUM	69	MG/KG	9.7		070SB-047M-0001-SO	91	MG/KG	10		28	N/A
070SB-046M-0001-SO	THALLIUM	0.098	MG/KG	0.1		070SB-047M-0001-SO	0.13	MG/KG	0.1		N/A	Yes
070SB-046M-0001-SO	VANADIUM	12	MG/KG	0.1		070SB-047M-0001-SO	16	MG/KG	0.1		29	N/A
070SB-046M-0001-SO	ZINC	37	MG/KG	0.49		070SB-047M-0001-SO	45	MG/KG	0.5		20	N/A
070SB-046M-0001-SO	Aroclor-1016	25	UG/KG	65	U	070SB-047M-0001-SO	25	UG/KG	65	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1221	25	UG/KG	50	U	070SB-047M-0001-SO	25	UG/KG	50	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1232	25	UG/KG	45	U	070SB-047M-0001-SO	25	UG/KG	45	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1242	25	UG/KG	40	U	070SB-047M-0001-SO	25	UG/KG	40	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1248	25	UG/KG	55	U	070SB-047M-0001-SO	25	UG/KG	55	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1254	25	UG/KG	55	U	070SB-047M-0001-SO	25	UG/KG	55	U	N/A	Yes
070SB-046M-0001-SO	Aroclor-1260	25	UG/KG	55	U	070SB-047M-0001-SO	25	UG/KG	55	U	N/A	Yes
070SB-046M-0001-SO	MERCURY	0.018	MG/KG	0.09	J	070SB-047M-0001-SO	0.021	MG/KG	0.091	J	N/A	Yes
070SB-046M-0001-SO	1,2,4-TRICHLOROBENZENE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	1,2-DICHLOROBENZENE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	1,3-DICHLOROBENZENE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	1,4-DICHLOROBENZENE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-046M-0001-SO	2,4,5-TRICHLOROPHENOL	270	UG/KG	1500	U	070SB-047M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	2,4,6-TRICHLOROPHENOL	800	UG/KG	1500	U	070SB-047M-0001-SO	810	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	2,4-DICHLOROPHENOL	270	UG/KG	1500	U	070SB-047M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	2,4-DIMETHYLPHENOL	800	UG/KG	1500	U	070SB-047M-0001-SO	810	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	2,4-DINITROPHENOL	800	UG/KG	3300	UJ	070SB-047M-0001-SO	810	UG/KG	3300	U	N/A	Yes
070SB-046M-0001-SO	2,4-DINITROTOLUENE	270	UG/KG	2000	U	070SB-047M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	2,6-DINITROTOLUENE	270	UG/KG	2000	U	070SB-047M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	2-CHLORONAPHTHALENE	33	UG/KG	500	U	070SB-047M-0001-SO	33	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	2-CHLOROPHENOL	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	2-METHYLNAPHTHALENE	33	UG/KG	67	U	070SB-047M-0001-SO	34	UG/KG	67	J	N/A	Yes
070SB-046M-0001-SO	2-METHYLPHENOL	800	UG/KG	2000	U	070SB-047M-0001-SO	810	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	2-NITROANILINE	270	UG/KG	2000	U	070SB-047M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	2-NITROPHENOL	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	3,3'-DICHLOROBENZIDINE	800	UG/KG	1000	U	070SB-047M-0001-SO	810	UG/KG	1000	U	N/A	Yes
070SB-046M-0001-SO	3-NITROANILINE	800	UG/KG	2000	U	070SB-047M-0001-SO	810	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	800	UG/KG	1500	U	070SB-047M-0001-SO	810	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	4-BROMOPHENYL PHENYL ETHER	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	4-CHLORO-3-METHYLPHENOL	270	UG/KG	1500	U	070SB-047M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	4-CHLOROANILINE	270	UG/KG	1500	U	070SB-047M-0001-SO	270	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	4-NITROANILINE	270	UG/KG	2000	U	070SB-047M-0001-SO	270	UG/KG	2000	U	N/A	Yes
070SB-046M-0001-SO	4-NITROPHENOL	800	UG/KG	3300	U	070SB-047M-0001-SO	810	UG/KG	3300	U	N/A	Yes
070SB-046M-0001-SO	ACENAPHTHENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	ACENAPHTHYLENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	ANTHRACENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	Benzo[a]anthracene	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	Benzo[a]pyrene	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	Benzo[b]fluoranthene	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	Benzo[g,h,i]perylene	33	UG/KG	67	UJ	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	Benzo[k]fluoranthene	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	BENZOIC ACID	3300	UG/KG	6600	U	070SB-047M-0001-SO	3400	UG/KG	6700	U	N/A	Yes
070SB-046M-0001-SO	BENZYL ALCOHOL	270	UG/KG	3300	U	070SB-047M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-046M-0001-SO	BENZYL BUTYL PHTHALATE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	270	UG/KG	1000	U	070SB-047M-0001-SO	270	UG/KG	1000	U	N/A	Yes
070SB-046M-0001-SO	BIS(2-CHLOROETHYL) ETHER	33	UG/KG	1000	U	070SB-047M-0001-SO	33	UG/KG	1000	U	N/A	Yes
070SB-046M-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	270	UG/KG	1000	U	070SB-047M-0001-SO	270	UG/KG	1000	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SB-046M-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	CARBAZOLE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	CHRYSENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	CRESOLS, M & P	800	UG/KG	4000	U	070SB-047M-0001-SO	810	UG/KG	4000	U	N/A	Yes
070SB-046M-0001-SO	DIBENZ(A,H)ANTHRACENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	DIBENZOFURAN	33	UG/KG	500	U	070SB-047M-0001-SO	33	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	DIETHYL PHTHALATE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	DIMETHYL PHTHALATE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	DI-N-BUTYL PHTHALATE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	Di-n-octyl phthalate	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	FLUORANTHENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	FLUORENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	HEXACHLOROBENZENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	HEXACHLOROBUTADIENE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	HEXACHLOROCYCLOPENTADIENE	270	UG/KG	3300	U	070SB-047M-0001-SO	270	UG/KG	3300	U	N/A	Yes
070SB-046M-0001-SO	HEXACHLOROETHANE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	Indeno[1,2,3-cd]pyrene	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	ISOPHORONE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	NAPHTHALENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	NITROBENZENE	33	UG/KG	1000	U	070SB-047M-0001-SO	33	UG/KG	1000	U	N/A	Yes
070SB-046M-0001-SO	N-NITROSODI-N-PROPYLAMINE	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	N-NITROSODIPHENYLAMINE	270	UG/KG	500	R	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	N/A
070SB-046M-0001-SO	PENTACHLOROPHENOL	800	UG/KG	1500	U	070SB-047M-0001-SO	810	UG/KG	1500	U	N/A	Yes
070SB-046M-0001-SO	PHENANTHRENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SB-046M-0001-SO	PHENOL	270	UG/KG	500	U	070SB-047M-0001-SO	270	UG/KG	510	U	N/A	Yes
070SB-046M-0001-SO	PYRENE	33	UG/KG	67	U	070SB-047M-0001-SO	33	UG/KG	67	U	N/A	Yes
070SS-0006M-0001-SO	Nitrocellulose	1	mg/kg	5	J	070SS-0007M-0001-SO	0.9	mg/kg	5	J	N/A	Yes
070SS-0006M-0001-SO	Aluminum	9800	mg/kg	9.3		070SS-0007M-0001-SO	9700	mg/kg	9.6		1	N/A
070SS-0006M-0001-SO	Antimony	1.5	mg/kg	0.19	J-	070SS-0007M-0001-SO	1.1	mg/kg	0.19		31	N/A
070SS-0006M-0001-SO	Arsenic	18	mg/kg	0.46		070SS-0007M-0001-SO	19	mg/kg	0.48		5	N/A
070SS-0006M-0001-SO	Barium	71	mg/kg	0.46		070SS-0007M-0001-SO	67	mg/kg	0.48		6	N/A
070SS-0006M-0001-SO	Beryllium	0.75	mg/kg	0.09		070SS-0007M-0001-SO	0.72	mg/kg	0.096		4	N/A
070SS-0006M-0001-SO	Cadmium	0.46	mg/kg	0.19	J	070SS-0007M-0001-SO	0.31	mg/kg	0.19		N/A	Yes
070SS-0006M-0001-SO	Calcium	7000	mg/kg	190		070SS-0007M-0001-SO	4500	mg/kg	190		43	N/A
070SS-0006M-0001-SO	Chromium	35	mg/kg	0.46	J-	070SS-0007M-0001-SO	21	mg/kg	0.48		50	N/A
070SS-0006M-0001-SO	Cobalt	8.6	mg/kg	0.09		070SS-0007M-0001-SO	8.2	mg/kg	0.096		5	N/A

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SS-0006M-0001-SO	Copper	23	mg/kg	0.37	J-	070SS-0007M-0001-SO	22	mg/kg	0.38		4	N/A
070SS-0006M-0001-SO	Iron	23000	mg/kg	46		070SS-0007M-0001-SO	22000	mg/kg	48		4	N/A
070SS-0006M-0001-SO	Lead	62	mg/kg	0.28	J	070SS-0007M-0001-SO	42	mg/kg	0.29		38	N/A
070SS-0006M-0001-SO	Magnesium	2800	mg/kg	93		070SS-0007M-0001-SO	2400	mg/kg	96		15	N/A
070SS-0006M-0001-SO	Manganese	520	mg/kg	2.3		070SS-0007M-0001-SO	430	mg/kg	0.48		19	N/A
070SS-0006M-0001-SO	Nickel	30	mg/kg	0.46	J	070SS-0007M-0001-SO	27	mg/kg	0.48		11	N/A
070SS-0006M-0001-SO	Potassium	940	mg/kg	93	J+	070SS-0007M-0001-SO	1000	mg/kg	96		6	N/A
070SS-0006M-0001-SO	Selenium	0.99	mg/kg	0.46	J-	070SS-0007M-0001-SO	1.2	mg/kg	0.48		N/A	Yes
070SS-0006M-0001-SO	Silver	0.034	mg/kg	0.09	J	070SS-0007M-0001-SO	0.037	mg/kg	0.096	J	N/A	Yes
070SS-0006M-0001-SO	Sodium	55	mg/kg	93	U	070SS-0007M-0001-SO	49	mg/kg	96	J	N/A	Yes
070SS-0006M-0001-SO	Thallium	0.24	mg/kg	0.19		070SS-0007M-0001-SO	0.19	mg/kg	0.19		N/A	Yes
070SS-0006M-0001-SO	Vanadium	16	mg/kg	0.46	J+	070SS-0007M-0001-SO	16	mg/kg	0.48		0	N/A
070SS-0006M-0001-SO	Zinc	110	mg/kg	3.7		070SS-0007M-0001-SO	110	mg/kg	3.8		0	N/A
070SS-0006M-0001-SO	MERCURY	0.05	mg/kg	0.09	J	070SS-0007M-0001-SO	0.067	mg/kg	0.11	J	N/A	Yes
070SS-0006M-0001-SO	C10-C20	23	mg/kg	17		070SS-0007M-0001-SO	30	mg/kg	9.3	9.3	N/A	Yes
070SS-0006M-0001-SO	C20-C34	110	mg/kg	17		070SS-0007M-0001-SO	150	mg/kg	17		N/A	No
070SS-0006M-0001-SO	Aroclor-1016	100	ug/kg	320	U	070SS-0007M-0001-SO	21	ug/kg	66	U	N/A	Yes
070SS-0006M-0001-SO	Aroclor-1221	80	ug/kg	250	U	070SS-0007M-0001-SO	16	ug/kg	51	U	N/A	Yes
070SS-0006M-0001-SO	Aroclor-1232	70	ug/kg	220	U	070SS-0007M-0001-SO	14	ug/kg	45	U	N/A	Yes
070SS-0006M-0001-SO	Aroclor-1242	380	ug/kg	200	J	070SS-0007M-0001-SO	13	ug/kg	40	U	N/A	No
070SS-0006M-0001-SO	Aroclor-1248	85	ug/kg	270	U	070SS-0007M-0001-SO	120	ug/kg	56		N/A	Yes
070SS-0006M-0001-SO	Aroclor-1254	85	ug/kg	270	U	070SS-0007M-0001-SO	17	ug/kg	56	U	N/A	Yes
070SS-0006M-0001-SO	Aroclor-1260	85	ug/kg	270	U	070SS-0007M-0001-SO	43	ug/kg	56	J	N/A	Yes
070SS-0006M-0001-SO	2,4,5-T	3.7	ug/kg	20	U	070SS-0007M-0001-SO	3.8	ug/kg	20	U	N/A	Yes
070SS-0006M-0001-SO	2,4-D	19	ug/kg	80	U	070SS-0007M-0001-SO	19	ug/kg	80	U	N/A	Yes
070SS-0006M-0001-SO	2,4-DB	21	ug/kg	80	U	070SS-0007M-0001-SO	22	ug/kg	80	U	N/A	Yes
070SS-0006M-0001-SO	Dalapon	7.8	ug/kg	40	U	070SS-0007M-0001-SO	7.8	ug/kg	40	U	N/A	Yes
070SS-0006M-0001-SO	Dicamba	8.1	ug/kg	40	UJ	070SS-0007M-0001-SO	8.1	ug/kg	40	U	N/A	Yes
070SS-0006M-0001-SO	Dichlorprop	37	ug/kg	80	UJ	070SS-0007M-0001-SO	37	ug/kg	80	U	N/A	Yes
070SS-0006M-0001-SO	Dinoseb	10	ug/kg	12	U	070SS-0007M-0001-SO	10	ug/kg	12	U	N/A	Yes
070SS-0006M-0001-SO	MCPA	1600	ug/kg	8000	UJ	070SS-0007M-0001-SO	1700	ug/kg	8000	U	N/A	Yes
070SS-0006M-0001-SO	MCPP	1500	ug/kg	8000	UJ	070SS-0007M-0001-SO	1500	ug/kg	8000	U	N/A	Yes
070SS-0006M-0001-SO	Pentachlorophenol	4.3	ug/kg	10	U	070SS-0007M-0001-SO	4.3	ug/kg	10	U	N/A	Yes
070SS-0006M-0001-SO	Silvex (2,4,5-TP)	4.1	ug/kg	20	U	070SS-0007M-0001-SO	4.1	ug/kg	20	U	N/A	Yes
070SS-0006M-0001-SO	1,3,5-Trinitrobenzene	0.01	mg/kg	0.25	U	070SS-0007M-0001-SO	0.01	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	1,3-Dinitrobenzene	0.004	mg/kg	0.25	U	070SS-0007M-0001-SO	0.0042	mg/kg	0.25	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SS-0006M-0001-SO	2,4,6-Trinitrotoluene	0.019	mg/kg	0.25	U	070SS-0007M-0001-SO	0.019	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	2,4-Dinitrotoluene	0.005	mg/kg	0.25	U	070SS-0007M-0001-SO	0.0053	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	2,6-Dinitrotoluene	0.007	mg/kg	0.25	U	070SS-0007M-0001-SO	0.0073	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	2-Amino-4,6-dinitrotoluene	0.012	mg/kg	0.25	U	070SS-0007M-0001-SO	0.013	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	2-Nitrotoluene	0.013	mg/kg	0.25	UJ	070SS-0007M-0001-SO	0.013	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	3-Nitrotoluene	0.015	mg/kg	0.25	U	070SS-0007M-0001-SO	0.016	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	4-Amino-2,6-dinitrotoluene	0.01	mg/kg	0.25	U	070SS-0007M-0001-SO	0.01	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	4-Nitrotoluene	0.018	mg/kg	0.25	U	070SS-0007M-0001-SO	0.018	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	HMX	0.012	mg/kg	0.25	U	070SS-0007M-0001-SO	0.012	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	Nitrobenzene	0.018	mg/kg	0.25	R	070SS-0007M-0001-SO	0.018	mg/kg	0.25	U	N/A	N/A
070SS-0006M-0001-SO	Nitroglycerin	0.015	mg/kg	0.5	UJ	070SS-0007M-0001-SO	0.015	mg/kg	0.5	U	N/A	Yes
070SS-0006M-0001-SO	PETN	0.025	mg/kg	0.5	U	070SS-0007M-0001-SO	0.025	mg/kg	0.5	U	N/A	Yes
070SS-0006M-0001-SO	RDX	0.012	mg/kg	0.25	UJ	070SS-0007M-0001-SO	0.012	mg/kg	0.25	U	N/A	Yes
070SS-0006M-0001-SO	Tetryl	0.01	mg/kg	0.25	U	070SS-0007M-0001-SO	0.029	mg/kg	0.25	J	N/A	Yes
070SS-0006M-0001-SO	1,1,1-Trichloroethane	0.97	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.82	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,1,2,2-Tetrachloroethane	0.59	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.5	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,1,2-Trichloroethane	0.68	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.57	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,1-Dichloroethane	0.62	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.53	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,1-Dichloroethene	0.9	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.77	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,2-Dibromoethane	0.87	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.74	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,2-Dichloroethane	0.59	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.5	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	1,2-Dichloroethene, Total	1.3	ug/kg	17	UJ	070SS-0007M-0001-SO	1.1	ug/kg	15	U	N/A	Yes
070SS-0006M-0001-SO	1,2-Dichloropropane	1.2	ug/kg	8.7	UJ	070SS-0007M-0001-SO	1	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	2-Butanone (MEK)	2.4	ug/kg	35	UJ	070SS-0007M-0001-SO	2.1	ug/kg	29	U	N/A	Yes
070SS-0006M-0001-SO	2-Hexanone	1.1	ug/kg	35	UJ	070SS-0007M-0001-SO	0.93	ug/kg	29	U	N/A	Yes
070SS-0006M-0001-SO	4-Methyl-2-pentanone (MIBK)	0.94	ug/kg	35	UJ	070SS-0007M-0001-SO	0.8	ug/kg	29	U	N/A	Yes
070SS-0006M-0001-SO	Acetone	11	ug/kg	35	UJ	070SS-0007M-0001-SO	28	ug/kg	29	J	N/A	Yes
070SS-0006M-0001-SO	Benzene	0.4	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.34	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Bromochloromethane	1.2	ug/kg	8.7	UJ	070SS-0007M-0001-SO	1	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Bromodichloromethane	0.49	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.41	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Bromoform	0.57	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.49	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Bromomethane	0.94	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.8	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Carbon disulfide	0.76	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.65	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Carbon tetrachloride	0.64	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.54	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Chlorobenzene	0.57	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.49	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Chloroethane	1.5	ug/kg	8.7	UJ	070SS-0007M-0001-SO	1.3	ug/kg	7.4	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SS-0006M-0001-SO	Chloroform	0.5	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.43	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Chloromethane	0.71	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.6	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	cis-1,3-Dichloropropene	0.59	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.5	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Dibromochloromethane	0.95	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.81	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Ethylbenzene	0.45	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.38	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Methyl tert-butyl ether	0.75	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.63	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Methylene Chloride	1.2	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.99	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Styrene	0.26	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.22	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Tetrachloroethene	0.9	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.77	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Toluene	0.47	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.4	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	trans-1,3-Dichloropropene	0.94	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.8	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Trichloroethene	0.73	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.62	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Vinyl chloride	0.68	ug/kg	8.7	UJ	070SS-0007M-0001-SO	0.57	ug/kg	7.4	U	N/A	Yes
070SS-0006M-0001-SO	Xylenes, Total	1.2	ug/kg	17	UJ	070SS-0007M-0001-SO	0.99	ug/kg	15	U	N/A	Yes
070SS-0006M-0001-SO	1,2,4-Trichlorobenzene	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	1,2-Dichlorobenzene	48	ug/kg	250	U	070SS-0007M-0001-SO	48	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	1,3-Dichlorobenzene	54	ug/kg	250	U	070SS-0007M-0001-SO	55	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	1,4-Dichlorobenzene	99	ug/kg	250	U	070SS-0007M-0001-SO	99	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	2,4,5-Trichlorophenol	120	ug/kg	740	U	070SS-0007M-0001-SO	120	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	2,4,6-Trichlorophenol	390	ug/kg	740	U	070SS-0007M-0001-SO	400	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	2,4-Dichlorophenol	99	ug/kg	740	U	070SS-0007M-0001-SO	99	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	2,4-Dimethylphenol	99	ug/kg	740	U	070SS-0007M-0001-SO	99	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	2,4-Dinitrophenol	390	ug/kg	1600	UJ	070SS-0007M-0001-SO	400	ug/kg	1600	U	N/A	Yes
070SS-0006M-0001-SO	2,4-Dinitrotoluene	130	ug/kg	990	R	070SS-0007M-0001-SO	130	ug/kg	990	U	N/A	N/A
070SS-0006M-0001-SO	2,6-Dinitrotoluene	100	ug/kg	990	R	070SS-0007M-0001-SO	100	ug/kg	990	U	N/A	N/A
070SS-0006M-0001-SO	2-Chloronaphthalene	16	ug/kg	250	U	070SS-0007M-0001-SO	16	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	2-Chlorophenol	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	2-Methylnaphthalene	280	ug/kg	33		070SS-0007M-0001-SO	260	ug/kg	33		7	N/A
070SS-0006M-0001-SO	2-Methylphenol	390	ug/kg	990	U	070SS-0007M-0001-SO	400	ug/kg	990	U	N/A	Yes
070SS-0006M-0001-SO	2-Nitroaniline	45	ug/kg	990	U	070SS-0007M-0001-SO	45	ug/kg	990	U	N/A	Yes
070SS-0006M-0001-SO	2-Nitrophenol	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	3 & 4 Methylphenol	99	ug/kg	2000	U	070SS-0007M-0001-SO	99	ug/kg	2000	U	N/A	Yes
070SS-0006M-0001-SO	3,3'-Dichlorobenzidine	89	ug/kg	490	R	070SS-0007M-0001-SO	90	ug/kg	500	U	N/A	N/A
070SS-0006M-0001-SO	3-Nitroaniline	79	ug/kg	990	UJ	070SS-0007M-0001-SO	80	ug/kg	990	U	N/A	Yes
070SS-0006M-0001-SO	4,6-Dinitro-2-methylphenol	390	ug/kg	740	UJ	070SS-0007M-0001-SO	400	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	4-Bromophenyl phenyl ether	64	ug/kg	250	U	070SS-0007M-0001-SO	65	ug/kg	250	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SS-0006M-0001-SO	4-Chloro-3-methylphenol	100	ug/kg	740	U	070SS-0007M-0001-SO	100	ug/kg	750	U	N/A	Yes
070SS-0006M-0001-SO	4-Chloroaniline	84	ug/kg	740	R	070SS-0007M-0001-SO	85	ug/kg	750	U	N/A	N/A
070SS-0006M-0001-SO	4-Chlorophenyl phenyl ether	64	ug/kg	250	U	070SS-0007M-0001-SO	65	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	4-Nitroaniline	130	ug/kg	990	UJ	070SS-0007M-0001-SO	130	ug/kg	990	U	N/A	Yes
070SS-0006M-0001-SO	4-Nitrophenol	390	ug/kg	1600	U	070SS-0007M-0001-SO	400	ug/kg	1600	U	N/A	Yes
070SS-0006M-0001-SO	Acenaphthene	40	ug/kg	33		070SS-0007M-0001-SO	68	ug/kg	33		N/A	Yes
070SS-0006M-0001-SO	Acenaphthylene	16	ug/kg	33	U	070SS-0007M-0001-SO	16	ug/kg	33	U	N/A	Yes
070SS-0006M-0001-SO	Anthracene	79	ug/kg	33		070SS-0007M-0001-SO	110	ug/kg	33		N/A	Yes
070SS-0006M-0001-SO	Benzo[a]anthracene	160	ug/kg	33		070SS-0007M-0001-SO	230	ug/kg	33		N/A	No
070SS-0006M-0001-SO	Benzo[a]pyrene	130	ug/kg	33		070SS-0007M-0001-SO	190	ug/kg	33		N/A	No
070SS-0006M-0001-SO	Benzo[b]fluoranthene	200	ug/kg	33		070SS-0007M-0001-SO	300	ug/kg	33		40	N/A
070SS-0006M-0001-SO	Benzo[g,h,i]perylene	130	ug/kg	33		070SS-0007M-0001-SO	190	ug/kg	33		N/A	No
070SS-0006M-0001-SO	Benzo[k]fluoranthene	91	ug/kg	33		070SS-0007M-0001-SO	120	ug/kg	33		N/A	Yes
070SS-0006M-0001-SO	Benzoic acid	1600	ug/kg	3300	U	070SS-0007M-0001-SO	1700	ug/kg	3300	U	N/A	Yes
070SS-0006M-0001-SO	Benzyl alcohol	100	ug/kg	1600	U	070SS-0007M-0001-SO	100	ug/kg	1600	U	N/A	Yes
070SS-0006M-0001-SO	bis (2-chloroisopropyl) ether	47	ug/kg	490	U	070SS-0007M-0001-SO	47	ug/kg	500	U	N/A	Yes
070SS-0006M-0001-SO	Bis(2-chloroethoxy)methane	110	ug/kg	490	U	070SS-0007M-0001-SO	110	ug/kg	500	U	N/A	Yes
070SS-0006M-0001-SO	Bis(2-chloroethyl)ether	9.9	ug/kg	490	U	070SS-0007M-0001-SO	9.9	ug/kg	500	U	N/A	Yes
070SS-0006M-0001-SO	Bis(2-ethylhexyl) phthalate	94	ug/kg	250	U	070SS-0007M-0001-SO	94	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Butyl benzyl phthalate	49	ug/kg	250	U	070SS-0007M-0001-SO	50	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Carbazole	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Chrysene	200	ug/kg	33		070SS-0007M-0001-SO	270	ug/kg	33		30	N/A
070SS-0006M-0001-SO	Dibenz(a,h)anthracene	16	ug/kg	33	U	070SS-0007M-0001-SO	16	ug/kg	33	U	N/A	Yes
070SS-0006M-0001-SO	Dibenzofuran	88	ug/kg	250	J	070SS-0007M-0001-SO	100	ug/kg	250	J	N/A	Yes
070SS-0006M-0001-SO	Diethyl phthalate	79	ug/kg	250	U	070SS-0007M-0001-SO	80	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Dimethyl phthalate	84	ug/kg	250	U	070SS-0007M-0001-SO	85	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Di-n-butyl phthalate	74	ug/kg	250	U	070SS-0007M-0001-SO	75	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Di-n-octyl phthalate	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Fluoranthene	370	ug/kg	33		070SS-0007M-0001-SO	610	ug/kg	33		49	N/A
070SS-0006M-0001-SO	Fluorene	38	ug/kg	33		070SS-0007M-0001-SO	77	ug/kg	33		N/A	No
070SS-0006M-0001-SO	Hexachlorobenzene	10	ug/kg	33	U	070SS-0007M-0001-SO	10	ug/kg	33	U	N/A	Yes
070SS-0006M-0001-SO	Hexachlorobutadiene	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Hexachlorocyclopentadiene	130	ug/kg	1600	U	070SS-0007M-0001-SO	130	ug/kg	1600	U	N/A	Yes
070SS-0006M-0001-SO	Hexachloroethane	44	ug/kg	250	U	070SS-0007M-0001-SO	45	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Indeno[1,2,3-cd]pyrene	90	ug/kg	33		070SS-0007M-0001-SO	110	ug/kg	33		N/A	Yes
070SS-0006M-0001-SO	Isophorone	64	ug/kg	250	U	070SS-0007M-0001-SO	65	ug/kg	250	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	Qual	Sample	Result	Units	LOQ	Qual	RPD	W/In LOQ
070SS-0006M-0001-SO	Naphthalene	220	ug/kg	33		070SS-0007M-0001-SO	220	ug/kg	33		0	N/A
070SS-0006M-0001-SO	Nitrobenzene	11	ug/kg	490	U	070SS-0007M-0001-SO	11	ug/kg	500	U	N/A	Yes
070SS-0006M-0001-SO	N-Nitrosodi-n-propylamine	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	N-Nitrosodiphenylamine	100	ug/kg	250	U	070SS-0007M-0001-SO	100	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Pentachlorophenol	390	ug/kg	740	R	070SS-0007M-0001-SO	400	ug/kg	750	U	N/A	N/A
070SS-0006M-0001-SO	Phenanthrene	420	ug/kg	33		070SS-0007M-0001-SO	650	ug/kg	33		43	N/A
070SS-0006M-0001-SO	Phenol	130	ug/kg	250	U	070SS-0007M-0001-SO	130	ug/kg	250	U	N/A	Yes
070SS-0006M-0001-SO	Pyrene	280	ug/kg	33		070SS-0007M-0001-SO	480	ug/kg	33		53	N/A
070SS-0006M-0001-SO	Nitroguanidine	0.019	mg/kg	0.24	U	070SS-0007M-0001-SO	0.019	mg/kg	0.24	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0013M-0001-SO	Diesel	20	mg/kg	41	15	J	071SB-0014M-0001-SO	21	41	15	J	N/A	Yes
071SB-0013M-0001-SO	Gasoline	2.6	mg/kg	5.3	2.6	U	071SB-0014M-0001-SO	2.8	5.6	2.8	U	N/A	Yes
071SB-0013M-0001-SO	LEAD	9	mg/kg	1.3	0.64	J-	071SB-0014M-0001-SO	11	1.3	0.65		20	N/A
071SB-0013M-0001-SO	1,1,1-TRICHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,1,2-TRICHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,1-DICHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,1-DICHLOROETHENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,2-DIBROMOETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,2-DICHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,2-Dichloroethene, Total	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	1,2-DICHLOROPROPANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	2-Butanone (MEK)	9.3	ug/kg	19	9.3	U	071SB-0014M-0001-SO	9.3	19	9.3	U	N/A	Yes
071SB-0013M-0001-SO	2-HEXANONE	19	ug/kg	37	19	U	071SB-0014M-0001-SO	19	37	19	U	N/A	Yes
071SB-0013M-0001-SO	4-Methyl-2-pentanone (MIBK)	9.3	ug/kg	19	9.3	U	071SB-0014M-0001-SO	9.3	19	9.3	U	N/A	Yes
071SB-0013M-0001-SO	ACETONE	9.3	ug/kg	19	9.3	U	071SB-0014M-0001-SO	9.3	19	9.3	U	N/A	Yes
071SB-0013M-0001-SO	BENZENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	BROMOCHLOROMETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	BROMODICHLOROMETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	BROMOFORM	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	BROMOMETHANE	0.93	ug/kg	1.9	0.93	UJ	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CARBON DISULFIDE	1.9	ug/kg	3.7	1.9	U	071SB-0014M-0001-SO	1.9	3.7	1.9	U	N/A	Yes
071SB-0013M-0001-SO	CARBON TETRACHLORIDE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CHLOROBENZENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CHLOROETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CHLOROFORM	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CHLOROMETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CIS-1,2-DICHLOROETHYLENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	DIBROMOCHLOROMETHANE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	ETHYLBENZENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	Methyl tert-butyl ether	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	METHYLENE CHLORIDE	9.9	ug/kg	9.9	1.9	UJ	071SB-0014M-0001-SO	1.9	9.3	1.9	J	N/A	Yes
071SB-0013M-0001-SO	STYRENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	TETRACHLOROETHYLENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	TOLUENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0013M-0001-SO	TRANS-1,2-DICHLOROETHENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	TRANS-1,3-DICHLOROPROPENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	TRICHLOROETHYLENE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	VINYL CHLORIDE	0.93	ug/kg	1.9	0.93	U	071SB-0014M-0001-SO	0.93	1.9	0.93	U	N/A	Yes
071SB-0013M-0001-SO	Xylenes, Total	1.9	ug/kg	3.7	1.9	U	071SB-0014M-0001-SO	1.9	3.7	1.9	U	N/A	Yes
071SB-0013M-0001-SO	1,2,4-TRICHLOROBENZENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	1,2-DICHLOROBENZENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	1,3-DICHLOROBENZENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	1,4-DICHLOROBENZENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2,2'-OXYBIS(1-CHLORO)PROPANE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2,4,5-TRICHLOROPHENOL	310	ug/kg	620	310	U	071SB-0014M-0001-SO	310	620	310	U	N/A	Yes
071SB-0013M-0001-SO	2,4,6-TRICHLOROPHENOL	310	ug/kg	620	310	U	071SB-0014M-0001-SO	310	620	310	U	N/A	Yes
071SB-0013M-0001-SO	2,4-DICHLOROPHENOL	310	ug/kg	620	310	U	071SB-0014M-0001-SO	310	620	310	U	N/A	Yes
071SB-0013M-0001-SO	2,4-DIMETHYLPHENOL	310	ug/kg	620	310	U	071SB-0014M-0001-SO	310	620	310	U	N/A	Yes
071SB-0013M-0001-SO	2,4-DINITROPHENOL	310	ug/kg	1000	310	U	071SB-0014M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0013M-0001-SO	2,4-DINITROTOLUENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2,6-DINITROTOLUENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2-CHLORONAPHTHALENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2-CHLOROPHENOL	620	ug/kg	2100	620	U	071SB-0014M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0013M-0001-SO	2-METHYLNAPHTHALENE	2.9	ug/kg	1.5	0.82		071SB-0014M-0001-SO	3.2	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	2-METHYLPHENOL	620	ug/kg	2100	620	U	071SB-0014M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0013M-0001-SO	2-NITROANILINE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	2-NITROPHENOL	310	ug/kg	1000	310	U	071SB-0014M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0013M-0001-SO	3 & 4 Methylphenol	1100	ug/kg	3700	1100	U	071SB-0014M-0001-SO	1100	3700	1100	U	N/A	Yes
071SB-0013M-0001-SO	3,3'-DICHLOROBENZIDINE	150	ug/kg	510	150	U	071SB-0014M-0001-SO	150	510	150	U	N/A	Yes
071SB-0013M-0001-SO	3-NITROANILINE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	310	ug/kg	1000	310	UJ	071SB-0014M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0013M-0001-SO	4-BROMOPHENYL PHENYL ETHER	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	4-CHLORO-3-METHYLPHENOL	620	ug/kg	2100	620	U	071SB-0014M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0013M-0001-SO	4-CHLOROANILINE	62	ug/kg	210	62	U	071SB-0014M-0001-SO	62	210	62	U	N/A	Yes
071SB-0013M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	4-NITROANILINE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	4-NITROPHENOL	620	ug/kg	2100	620	U	071SB-0014M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0013M-0001-SO	ACENAPHTHENE	1	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	1.1	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	ACENAPHTHYLENE	0.82	ug/kg	1.5	0.82	U	071SB-0014M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
071SB-0013M-0001-SO	ANTHRACENE	0.82	ug/kg	1.5	0.82	U	071SB-0014M-0001-SO	0.82	1.5	0.82	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0013M-0001-SO	Benzo[a]anthracene	0.90	ug/kg	1.5	0.90	U	071SB-0014M-0001-SO	1.2	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	Benzo[a]pyrene	0.29	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	0.52	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	Benzo[b]fluoranthene	2.3	ug/kg	1.5	0.82		071SB-0014M-0001-SO	2.8	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	Benzo[g,h,i]perylene	1.8	ug/kg	1.5	0.82		071SB-0014M-0001-SO	2.2	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	Benzo[k]fluoranthene	0.82	ug/kg	1.5	0.82	U	071SB-0014M-0001-SO	1.7	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	BENZOIC ACID	1500	ug/kg	3100	1500	UJ	071SB-0014M-0001-SO	1500	3100	1500	U	N/A	Yes
071SB-0013M-0001-SO	BENZYL ALCOHOL	120	ug/kg	410	120	R	071SB-0014M-0001-SO	120	410	120	U	N/A	N/A
071SB-0013M-0001-SO	BENZYL BUTYL PHTHALATE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	BIS(2-CHLOROETHYL) ETHER	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	CARBAZOLE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	CHRYSENE	4.3	ug/kg	1.5	0.82		071SB-0014M-0001-SO	5.1	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	DIBENZ(A,H)ANTHRACENE	0.82	ug/kg	1.5	0.82	U	071SB-0014M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
071SB-0013M-0001-SO	DIBENZOFURAN	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	DIETHYL PHTHALATE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	DIMETHYL PHTHALATE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	DI-N-BUTYL PHTHALATE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	DI-N-OCTYLPHTHALATE	62	ug/kg	210	62	U	071SB-0014M-0001-SO	62	210	62	U	N/A	Yes
071SB-0013M-0001-SO	FLUORANTHENE	0.82	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	1.2	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	FLUORENE	0.93	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	1.1	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	HEXACHLOROBENZENE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	HEXACHLOROBUTADIENE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	HEXACHLOROCYCLOPENTADIENE	62	ug/kg	210	62	UJ	071SB-0014M-0001-SO	62	210	62	U	N/A	Yes
071SB-0013M-0001-SO	HEXACHLOROETHANE	62	ug/kg	120	62	U	071SB-0014M-0001-SO	62	120	62	U	N/A	Yes
071SB-0013M-0001-SO	Indeno[1,2,3-cd]pyrene	0.52	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	0.71	1.5	0.82	J	N/A	Yes
071SB-0013M-0001-SO	ISOPHORONE	62	ug/kg	210	62	U	071SB-0014M-0001-SO	62	210	62	U	N/A	Yes
071SB-0013M-0001-SO	NAPHTHALENE	3.7	ug/kg	1.5	0.82		071SB-0014M-0001-SO	0.82	1.5	0.82	J	N/A	No
071SB-0013M-0001-SO	NITROBENZENE	62	ug/kg	210	62	U	071SB-0014M-0001-SO	62	210	62	U	N/A	Yes
071SB-0013M-0001-SO	N-NITROSODI-N-PROPYLAMINE	120	ug/kg	410	120	U	071SB-0014M-0001-SO	120	410	120	U	N/A	Yes
071SB-0013M-0001-SO	N-NITROSODIPHENYLAMINE	120	ug/kg	250	120	U	071SB-0014M-0001-SO	120	250	120	U	N/A	Yes
071SB-0013M-0001-SO	PENTACHLOROPHENOL	310	ug/kg	1000	310	U	071SB-0014M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0013M-0001-SO	PHENANTHRENE	4.0	ug/kg	1.5	4.0	U	071SB-0014M-0001-SO	4.1	1.5	0.82		N/A	Yes
071SB-0013M-0001-SO	PHENOL	310	ug/kg	620	310	U	071SB-0014M-0001-SO	310	620	310	U	N/A	Yes
071SB-0013M-0001-SO	PYRENE	1.2	ug/kg	1.5	0.82	J	071SB-0014M-0001-SO	1.4	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	Diesel	19	mg/kg	41	15	J	071SB-0019M-0001-SO	22	41	15	J	N/A	Yes
071SB-0018M-0001-SO	Gasoline	2.6	mg/kg	5.3	2.6	U	071SB-0019M-0001-SO	2.8	5.7	2.8	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0018M-0001-SO	LEAD	8.8	mg/kg	1.2	0.62	J-	071SB-0019M-0001-SO	8.2	0.25	0.13		N/A	Yes
071SB-0018M-0001-SO	1,1,1-TRICHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,1,2-TRICHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,1-DICHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,1-DICHLOROETHENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,2-DIBROMOETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,2-DICHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,2-Dichloroethene, Total	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	1,2-DICHLOROPROPANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	2-Butanone (MEK)	8.6	ug/kg	17	8.6	U	071SB-0019M-0001-SO	9.7	19	9.7	U	N/A	Yes
071SB-0018M-0001-SO	2-HEXANONE	17	ug/kg	35	17	U	071SB-0019M-0001-SO	19	39	19	U	N/A	Yes
071SB-0018M-0001-SO	4-Methyl-2-pentanone (MIBK)	8.6	ug/kg	17	8.6	U	071SB-0019M-0001-SO	9.7	19	9.7	U	N/A	Yes
071SB-0018M-0001-SO	ACETONE	8.6	ug/kg	17	8.6	U	071SB-0019M-0001-SO	9.7	19	9.7	U	N/A	Yes
071SB-0018M-0001-SO	BENZENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	BROMOCHLOROMETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	BROMODICHLOROMETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	BROMOFORM	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	BROMOMETHANE	0.86	ug/kg	1.7	0.86	UJ	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CARBON DISULFIDE	1.7	ug/kg	3.5	1.7	U	071SB-0019M-0001-SO	1.9	3.9	1.9	U	N/A	Yes
071SB-0018M-0001-SO	CARBON TETRACHLORIDE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CHLOROBENZENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CHLOROETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CHLOROFORM	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CHLOROMETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CIS-1,2-DICHLOROETHYLENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	DIBROMOCHLOROMETHANE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	ETHYLBENZENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	Methyl tert-butyl ether	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	METHYLENE CHLORIDE	6.3	ug/kg	8.6	1.7	UJ	071SB-0019M-0001-SO	1.9	9.7	1.9	J	N/A	Yes
071SB-0018M-0001-SO	STYRENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	TETRACHLOROETHYLENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	TOLUENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	TRANS-1,2-DICHLOROETHENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	TRANS-1,3-DICHLOROPROPENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0018M-0001-SO	TRICHLOROETHYLENE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	VINYL CHLORIDE	0.86	ug/kg	1.7	0.86	U	071SB-0019M-0001-SO	0.97	1.9	0.97	U	N/A	Yes
071SB-0018M-0001-SO	Xylenes, Total	1.7	ug/kg	3.5	1.7	U	071SB-0019M-0001-SO	1.9	3.9	1.9	U	N/A	Yes
071SB-0018M-0001-SO	1,2,4-TRICHLOROBENZENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	1,2-DICHLOROBENZENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	1,3-DICHLOROBENZENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	1,4-DICHLOROBENZENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2,2'-OXYBIS(1-CHLORO)PROPANE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2,4,5-TRICHLOROPHENOL	310	ug/kg	610	310	U	071SB-0019M-0001-SO	310	620	310	U	N/A	Yes
071SB-0018M-0001-SO	2,4,6-TRICHLOROPHENOL	310	ug/kg	610	310	U	071SB-0019M-0001-SO	310	620	310	U	N/A	Yes
071SB-0018M-0001-SO	2,4-DICHLOROPHENOL	310	ug/kg	610	310	U	071SB-0019M-0001-SO	310	620	310	U	N/A	Yes
071SB-0018M-0001-SO	2,4-DIMETHYLPHENOL	310	ug/kg	610	310	U	071SB-0019M-0001-SO	310	620	310	U	N/A	Yes
071SB-0018M-0001-SO	2,4-DINITROPHENOL	310	ug/kg	1000	310	U	071SB-0019M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0018M-0001-SO	2,4-DINITROTOLUENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2,6-DINITROTOLUENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2-CHLORONAPHTHALENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2-CHLOROPHENOL	610	ug/kg	2000	610	U	071SB-0019M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0018M-0001-SO	2-METHYLNAPHTHALENE	3	ug/kg	1.5	0.82		071SB-0019M-0001-SO	3.9	1.5	0.82		N/A	Yes
071SB-0018M-0001-SO	2-METHYLPHENOL	610	ug/kg	2000	610	U	071SB-0019M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0018M-0001-SO	2-NITROANILINE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	2-NITROPHENOL	310	ug/kg	1000	310	U	071SB-0019M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0018M-0001-SO	3 & 4 Methylphenol	1100	ug/kg	3700	1100	U	071SB-0019M-0001-SO	1100	3700	1100	U	N/A	Yes
071SB-0018M-0001-SO	3,3'-DICHLOROBENZIDINE	150	ug/kg	510	150	U	071SB-0019M-0001-SO	150	510	150	U	N/A	Yes
071SB-0018M-0001-SO	3-NITROANILINE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	310	ug/kg	1000	310	UJ	071SB-0019M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0018M-0001-SO	4-BROMOPHENYL PHENYL ETHER	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	4-CHLORO-3-METHYLPHENOL	610	ug/kg	2000	610	U	071SB-0019M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0018M-0001-SO	4-CHLOROANILINE	61	ug/kg	200	61	U	071SB-0019M-0001-SO	62	210	62	U	N/A	Yes
071SB-0018M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	4-NITROANILINE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	4-NITROPHENOL	610	ug/kg	2000	610	U	071SB-0019M-0001-SO	620	2100	620	U	N/A	Yes
071SB-0018M-0001-SO	ACENAPHTHENE	0.62	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
071SB-0018M-0001-SO	ACENAPHTHYLENE	0.82	ug/kg	1.5	0.82	U	071SB-0019M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
071SB-0018M-0001-SO	ANTHRACENE	0.82	ug/kg	1.5	0.82	U	071SB-0019M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
071SB-0018M-0001-SO	Benzo[a]anthracene	1.2	ug/kg	1.5	1.2	U	071SB-0019M-0001-SO	1.3	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	Benzo[a]pyrene	0.42	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	0.51	1.5	0.82	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
071SB-0018M-0001-SO	Benzo[b]fluoranthene	2.9	ug/kg	1.5	0.82		071SB-0019M-0001-SO	3.2	1.5	0.82		N/A	Yes
071SB-0018M-0001-SO	Benzo[g,h,i]perylene	1.5	ug/kg	1.5	0.82		071SB-0019M-0001-SO	2.1	1.5	0.82		N/A	Yes
071SB-0018M-0001-SO	Benzo[k]fluoranthene	0.82	ug/kg	1.5	0.82	U	071SB-0019M-0001-SO	0.4	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	BENZOIC ACID	1500	ug/kg	3100	1500	UJ	071SB-0019M-0001-SO	1500	3100	1500	U	N/A	Yes
071SB-0018M-0001-SO	BENZYL ALCOHOL	120	ug/kg	410	120	R	071SB-0019M-0001-SO	120	410	120	U	N/A	N/A
071SB-0018M-0001-SO	BENZYL BUTYL PHTHALATE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	BIS(2-CHLOROETHYL) ETHER	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	CARBAZOLE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	CHRYSENE	4.8	ug/kg	1.5	0.82		071SB-0019M-0001-SO	5.5	1.5	0.82		N/A	Yes
071SB-0018M-0001-SO	DIBENZ(A,H)ANTHRACENE	0.82	ug/kg	1.5	0.82	U	071SB-0019M-0001-SO	0.36	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	DIBENZOFURAN	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	DIETHYL PHTHALATE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	DIMETHYL PHTHALATE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	DI-N-BUTYL PHTHALATE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	DI-N-OCTYLPHTHALATE	61	ug/kg	200	61	U	071SB-0019M-0001-SO	62	210	62	U	N/A	Yes
071SB-0018M-0001-SO	FLUORANTHENE	1.4	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	1.4	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	FLUORENE	1.1	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	0.82	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	HEXACHLOROBENZENE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	HEXACHLOROBUTADIENE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	HEXACHLOROCYCLOPENTADIENE	61	ug/kg	200	61	UJ	071SB-0019M-0001-SO	62	210	62	U	N/A	Yes
071SB-0018M-0001-SO	HEXACHLOROETHANE	61	ug/kg	120	61	U	071SB-0019M-0001-SO	62	120	62	U	N/A	Yes
071SB-0018M-0001-SO	Indeno[1,2,3-cd]pyrene	0.61	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	0.69	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	ISOPHORONE	61	ug/kg	200	61	U	071SB-0019M-0001-SO	62	210	62	U	N/A	Yes
071SB-0018M-0001-SO	NAPHTHALENE	0.35	ug/kg	1.5	0.82	U	071SB-0019M-0001-SO	0.82	1.5	0.82	J	N/A	Yes
071SB-0018M-0001-SO	NITROBENZENE	61	ug/kg	200	61	U	071SB-0019M-0001-SO	62	210	62	U	N/A	Yes
071SB-0018M-0001-SO	N-NITROSODI-N-PROPYLAMINE	120	ug/kg	410	120	U	071SB-0019M-0001-SO	120	410	120	U	N/A	Yes
071SB-0018M-0001-SO	N-NITROSODIPHENYLAMINE	120	ug/kg	250	120	U	071SB-0019M-0001-SO	120	250	120	U	N/A	Yes
071SB-0018M-0001-SO	PENTACHLOROPHENOL	310	ug/kg	1000	310	U	071SB-0019M-0001-SO	310	1000	310	U	N/A	Yes
071SB-0018M-0001-SO	PHENANTHRENE	4.7	ug/kg	1.5	4.7	U	071SB-0019M-0001-SO	4.8	1.5	0.82		N/A	Yes
071SB-0018M-0001-SO	PHENOL	310	ug/kg	610	310	U	071SB-0019M-0001-SO	310	620	310	U	N/A	Yes
071SB-0018M-0001-SO	PYRENE	1.4	ug/kg	1.5	0.82	J	071SB-0019M-0001-SO	1.4	1.5	0.82	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0001-0001-SO	ALUMINUM	12000	MG/KG	3.1	0.62	J	072SB-0002-0001-SO	12000	2.9	0.58		0	N/A
072SB-0001-0001-SO	ANTIMONY	0.075	MG/KG	0.21	0.1	J-	072SB-0002-0001-SO	0.083	0.19	0.096	J	N/A	Yes
072SB-0001-0001-SO	ARSENIC	14	MG/KG	0.1	0.051	J-	072SB-0002-0001-SO	7.8	0.096	0.048		35	N/A
072SB-0001-0001-SO	BARIUM	36	MG/KG	1	0.021	J+	072SB-0002-0001-SO	87	0.96	0.019		64	N/A
072SB-0001-0001-SO	BERYLLIUM	0.65	MG/KG	0.1	0.01	J-	072SB-0002-0001-SO	0.6	0.096	0.0096		5	N/A
072SB-0001-0001-SO	CADMIUM	0.15	MG/KG	0.1	0.031	J-	072SB-0002-0001-SO	0.19	0.096	0.029		N/A	Yes
072SB-0001-0001-SO	CALCIUM	2900	MG/KG	10	2.6	J+	072SB-0002-0001-SO	28000	9.6	2.4		149	N/A
072SB-0001-0001-SO	CHROMIUM	18	MG/KG	0.21	0.041		072SB-0002-0001-SO	19	0.19	0.039		4	N/A
072SB-0001-0001-SO	COBALT	12	MG/KG	0.051	0.01		072SB-0002-0001-SO	9.6	0.048	0.0096		14	N/A
072SB-0001-0001-SO	COPPER	16	MG/KG	0.21	0.062		072SB-0002-0001-SO	17	0.19	0.058		4	N/A
072SB-0001-0001-SO	IRON	28000	MG/KG	5.1	2.1	J	072SB-0002-0001-SO	26000	4.8	1.9		5	N/A
072SB-0001-0001-SO	LEAD	11	MG/KG	0.1	0.031		072SB-0002-0001-SO	10	0.096	0.029		6	N/A
072SB-0001-0001-SO	MAGNESIUM	6000	MG/KG	10	2.1		072SB-0002-0001-SO	8100	9.6	1.9		21	N/A
072SB-0001-0001-SO	MANGANESE	190	MG/KG	0.51	0.031	J	072SB-0002-0001-SO	270	0.48	0.029		25	N/A
072SB-0001-0001-SO	NICKEL	29	MG/KG	0.1	0.031	J-	072SB-0002-0001-SO	25	0.096	0.029		10	N/A
072SB-0001-0001-SO	POTASSIUM	1900	MG/KG	10	6.2	J-	072SB-0002-0001-SO	2100	9.6	5.8		7	N/A
072SB-0001-0001-SO	SELENIUM	0.9	MG/KG	0.51	0.1	J-	072SB-0002-0001-SO	0.9	0.48	0.096		N/A	Yes
072SB-0001-0001-SO	SILVER	0.033	MG/KG	0.1	0.031	J	072SB-0002-0001-SO	0.034	0.096	0.029	J	N/A	Yes
072SB-0001-0001-SO	SODIUM	85	MG/KG	10	5.1		072SB-0002-0001-SO	100	9.6	4.8		11	N/A
072SB-0001-0001-SO	THALLIUM	0.18	MG/KG	0.1	0.021		072SB-0002-0001-SO	0.15	0.096	0.019		N/A	Yes
072SB-0001-0001-SO	VANADIUM	17	MG/KG	0.1	0.062		072SB-0002-0001-SO	20	0.096	0.058		11	N/A
072SB-0001-0001-SO	ZINC	59	MG/KG	0.51	0.21		072SB-0002-0001-SO	52	0.48	0.19		8	N/A
072SB-0001-0001-SO	C10-C20	11	MG/KG	20	11	U	072SB-0002-0001-SO	11	19	11	U	N/A	Yes
072SB-0001-0001-SO	C20-C34	11	MG/KG	20	11	U	072SB-0002-0001-SO	11	19	11	U	N/A	Yes
072SB-0001-0001-SO	C6-C12	320	UG/KG	110	55	J	072SB-0002-0001-SO	180	100	50		N/A	No
072SB-0001-0001-SO	MERCURY	0.039	MG/KG	0.12	0.039	U	072SB-0002-0001-SO	0.034	0.1	0.034	U	N/A	Yes
072SB-0001-0001-SO	BENZENE	25	UG/KG	250	25	UJ	072SB-0002-0001-SO	24	240	24	U	N/A	Yes
072SB-0001-0001-SO	ETHYLBENZENE	9.9	UG/KG	250	9.9	UJ	072SB-0002-0001-SO	9.5	240	9.5	U	N/A	Yes
072SB-0001-0001-SO	TOLUENE	25	UG/KG	250	25	UJ	072SB-0002-0001-SO	24	240	24	U	N/A	Yes
072SB-0001-0001-SO	XYLENES, TOTAL	30	UG/KG	500	30	UJ	072SB-0002-0001-SO	29	480	29	U	N/A	Yes
072SB-0001-0001-SO	ACENAPHTHENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	ACENAPHTHYLENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	ANTHRACENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	Benzo[a]anthracene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	Benzo[a]pyrene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	Benzo[b]fluoranthene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0001-0001-SO	Benzo[g,h,i]perylene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	Benzo[k]fluoranthene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	CHRYSENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	DIBENZ(A,H)ANTHRACENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	FLUORANTHENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	FLUORENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	Indeno[1,2,3-cd]pyrene	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	NAPHTHALENE	8.9	UG/KG	8	4		072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	PHENANTHRENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0001-0001-SO	PYRENE	4	UG/KG	8	4	U	072SB-0002-0001-SO	3.9	7.8	3.9	U	N/A	Yes
072SB-0012-0001-SO	ALUMINUM	8500	MG/KG	3.2	0.64	J	072SB-0013-0001-SO	9600	3	0.59		8	N/A
072SB-0012-0001-SO	ANTIMONY	0.2	MG/KG	0.21	0.11	J-	072SB-0013-0001-SO	0.14	0.2	0.099	J	N/A	Yes
072SB-0012-0001-SO	ARSENIC	5.6	MG/KG	0.11	0.053	J	072SB-0013-0001-SO	4.7	0.099	0.049		11	N/A
072SB-0012-0001-SO	BARIUM	55	MG/KG	1.1	0.021		072SB-0013-0001-SO	53	0.99	0.02		2	N/A
072SB-0012-0001-SO	BERYLLIUM	0.88	MG/KG	0.11	0.011	J-	072SB-0013-0001-SO	0.81	0.099	0.0099		5	N/A
072SB-0012-0001-SO	CADMIUM	0.2	MG/KG	0.11	0.032		072SB-0013-0001-SO	0.23	0.099	0.03		N/A	Yes
072SB-0012-0001-SO	CALCIUM	400	MG/KG	11	2.7		072SB-0013-0001-SO	450	9.9	2.5		8	N/A
072SB-0012-0001-SO	CHROMIUM	18	MG/KG	0.21	0.042		072SB-0013-0001-SO	20	0.2	0.039		7	N/A
072SB-0012-0001-SO	COBALT	18	MG/KG	0.053	0.011		072SB-0013-0001-SO	17	0.049	0.0099		4	N/A
072SB-0012-0001-SO	COPPER	31	MG/KG	0.21	0.064	J+	072SB-0013-0001-SO	33	0.2	0.059		4	N/A
072SB-0012-0001-SO	IRON	37000	MG/KG	5.3	2.1	J	072SB-0013-0001-SO	36000	4.9	2		2	N/A
072SB-0012-0001-SO	LEAD	20	MG/KG	0.11	0.032	J+	072SB-0013-0001-SO	17	0.099	0.03		11	N/A
072SB-0012-0001-SO	MAGNESIUM	4000	MG/KG	11	2.1		072SB-0013-0001-SO	4300	9.9	2		5	N/A
072SB-0012-0001-SO	MANGANESE	910	MG/KG	0.53	0.032	J	072SB-0013-0001-SO	700	0.49	0.03		17	N/A
072SB-0012-0001-SO	NICKEL	31	MG/KG	0.11	0.032		072SB-0013-0001-SO	32	0.099	0.03		2	N/A
072SB-0012-0001-SO	POTASSIUM	1000	MG/KG	11	6.4	J-	072SB-0013-0001-SO	1200	9.9	5.9		13	N/A
072SB-0012-0001-SO	SELENIUM	1	MG/KG	0.53	0.11	J-	072SB-0013-0001-SO	1.1	0.49	0.099		N/A	Yes
072SB-0012-0001-SO	SILVER	0.032	MG/KG	0.11	0.032	J	072SB-0013-0001-SO	0.037	0.099	0.03	J	N/A	Yes
072SB-0012-0001-SO	SODIUM	60	MG/KG	11	5.3		072SB-0013-0001-SO	66	9.9	4.9		6	N/A
072SB-0012-0001-SO	THALLIUM	0.14	MG/KG	0.11	0.021		072SB-0013-0001-SO	0.11	0.099	0.02		N/A	Yes
072SB-0012-0001-SO	VANADIUM	17	MG/KG	0.11	0.064		072SB-0013-0001-SO	18	0.099	0.059		4	N/A
072SB-0012-0001-SO	ZINC	69	MG/KG	0.53	0.21		072SB-0013-0001-SO	80	0.49	0.2		10	N/A
072SB-0012-0001-SO	C10-C20	10	MG/KG	19	10	U	072SB-0013-0001-SO	10	18	10	U	N/A	Yes
072SB-0012-0001-SO	C20-C34	10	MG/KG	19	10	U	072SB-0013-0001-SO	10	18	10	U	N/A	Yes
072SB-0012-0001-SO	C6-C12	47	UG/KG	93	47	U	072SB-0013-0001-SO	48	96	48	U	N/A	Yes
072SB-0012-0001-SO	MERCURY	0.04	MG/KG	0.1	0.034	J	072SB-0013-0001-SO	0.021	0.097	0.032	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0012-0001-SO	BENZENE	0.47	UG/KG	4.7	0.47	UJ	072SB-0013-0001-SO	0.45	4.5	0.45	U	N/A	Yes
072SB-0012-0001-SO	ETHYLBENZENE	0.47	UG/KG	4.7	0.47	UJ	072SB-0013-0001-SO	0.45	4.5	0.45	U	N/A	Yes
072SB-0012-0001-SO	TOLUENE	0.47	UG/KG	4.7	0.47	UJ	072SB-0013-0001-SO	0.45	4.5	0.45	U	N/A	Yes
072SB-0012-0001-SO	XYLENES, TOTAL	1.4	UG/KG	9.4	1.4	UJ	072SB-0013-0001-SO	1.3	8.9	1.3	U	N/A	Yes
072SB-0012-0001-SO	ACENAPHTHENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	ACENAPHTHYLENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	ANTHRACENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	Benzo[a]anthracene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	Benzo[a]pyrene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	Benzo[b]fluoranthene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	4.4	7.3	3.6	J	N/A	Yes
072SB-0012-0001-SO	Benzo[g,h,i]perylene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	Benzo[k]fluoranthene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	CHRYSENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	DIBENZ(A,H)ANTHRACENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	FLUORANTHENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	FLUORENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	Indeno[1,2,3-cd]pyrene	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	NAPHTHALENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	PHENANTHRENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0012-0001-SO	PYRENE	3.8	UG/KG	7.6	3.8	U	072SB-0013-0001-SO	3.6	7.3	3.6	U	N/A	Yes
072SB-0026-0001-SO	ALUMINUM	6000	MG/KG	3	0.6	J	072SB-0027-0001-SO	5900	3.1	0.61		1	N/A
072SB-0026-0001-SO	ANTIMONY	0.1	MG/KG	0.2	0.1	R	072SB-0027-0001-SO	0.082	0.2	0.1	J	N/A	N/A
072SB-0026-0001-SO	ARSENIC	0.51	MG/KG	0.1	0.05	J-	072SB-0027-0001-SO	1.1	0.1	0.051		56	N/A
072SB-0026-0001-SO	BARIUM	31	MG/KG	1	0.02	J	072SB-0027-0001-SO	16	1	0.02		38	N/A
072SB-0026-0001-SO	BERYLLIUM	0.69	MG/KG	0.1	0.01		072SB-0027-0001-SO	0.58	0.1	0.01		11	N/A
072SB-0026-0001-SO	CADMIUM	0.19	MG/KG	0.1	0.03	J+	072SB-0027-0001-SO	0.15	0.1	0.031		N/A	Yes
072SB-0026-0001-SO	CALCIUM	750	MG/KG	10	2.5	J-	072SB-0027-0001-SO	710	10	2.6		4	N/A
072SB-0026-0001-SO	CHROMIUM	13	MG/KG	0.2	0.04		072SB-0027-0001-SO	13	0.2	0.041		0	N/A
072SB-0026-0001-SO	COBALT	5.5	MG/KG	0.05	0.01		072SB-0027-0001-SO	6.2	0.051	0.01		8	N/A
072SB-0026-0001-SO	COPPER	17	MG/KG	0.2	0.06	J-	072SB-0027-0001-SO	17	0.2	0.061		0	N/A
072SB-0026-0001-SO	IRON	11000	MG/KG	5	2		072SB-0027-0001-SO	12000	5.1	2		6	N/A
072SB-0026-0001-SO	LEAD	8.7	MG/KG	0.1	0.03		072SB-0027-0001-SO	10	0.1	0.031		9	N/A
072SB-0026-0001-SO	MAGNESIUM	2300	MG/KG	10	2		072SB-0027-0001-SO	2100	10	2		6	N/A
072SB-0026-0001-SO	MANGANESE	210	MG/KG	0.5	0.03		072SB-0027-0001-SO	84	0.51	0.031		50	N/A
072SB-0026-0001-SO	NICKEL	16	MG/KG	0.1	0.03		072SB-0027-0001-SO	25	0.1	0.031		32	N/A
072SB-0026-0001-SO	POTASSIUM	1300	MG/KG	10	6		072SB-0027-0001-SO	1100	10	6.1		11	N/A

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0026-0001-SO	SELENIUM	0.74	MG/KG	0.5	0.1	J-	072SB-0027-0001-SO	0.68	0.51	0.1		N/A	Yes
072SB-0026-0001-SO	SILVER	0.03	MG/KG	0.1	0.03	J+	072SB-0027-0001-SO	0.061	0.1	0.031	J	N/A	Yes
072SB-0026-0001-SO	SODIUM	71	MG/KG	10	5		072SB-0027-0001-SO	69	10	5.1		2	N/A
072SB-0026-0001-SO	THALLIUM	0.12	MG/KG	0.1	0.02	J-	072SB-0027-0001-SO	0.11	0.1	0.02		N/A	Yes
072SB-0026-0001-SO	VANADIUM	8.9	MG/KG	0.1	0.06		072SB-0027-0001-SO	9.7	0.1	0.061		6	N/A
072SB-0026-0001-SO	ZINC	45	MG/KG	0.5	0.2	J	072SB-0027-0001-SO	33	0.51	0.2		20	N/A
072SB-0026-0001-SO	C10-C20	9.6	MG/KG	17	9.6	U	072SB-0027-0001-SO	9.6	17	9.6	U	N/A	Yes
072SB-0026-0001-SO	C20-C34	9.6	MG/KG	17	9.6	U	072SB-0027-0001-SO	9.6	17	9.6	U	N/A	Yes
072SB-0026-0001-SO	C6-C12	40	UG/KG	80	40	U	072SB-0027-0001-SO	48	97	48	U	N/A	Yes
072SB-0026-0001-SO	MERCURY	0.032	MG/KG	0.097	0.032	U	072SB-0027-0001-SO	0.022	0.1	0.033	J	N/A	Yes
072SB-0026-0001-SO	BENZENE	0.51	UG/KG	5.1	0.51	UJ	072SB-0027-0001-SO	0.44	4.4	0.44	U	N/A	Yes
072SB-0026-0001-SO	ETHYLBENZENE	0.51	UG/KG	5.1	0.51	UJ	072SB-0027-0001-SO	0.44	4.4	0.44	U	N/A	Yes
072SB-0026-0001-SO	TOLUENE	0.51	UG/KG	5.1	0.51	UJ	072SB-0027-0001-SO	0.44	4.4	0.44	U	N/A	Yes
072SB-0026-0001-SO	XYLENES, TOTAL	1.5	UG/KG	10	1.5	UJ	072SB-0027-0001-SO	1.3	8.8	1.3	U	N/A	Yes
072SB-0026-0001-SO	ACENAPHTHENE	3.4	UG/KG	6.9	3.4	UJ	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	ACENAPHTHYLENE	3.4	UG/KG	6.9	3.4	UJ	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	ANTHRACENE	3.4	UG/KG	6.9	3.4	UJ	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	BENZO(A)ANTHRACENE	15	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	4.4	6.9	3.4	J	N/A	No
072SB-0026-0001-SO	BENZO(A)PYRENE	18	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	No
072SB-0026-0001-SO	BENZO(B)FLUORANTHENE	16	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	15	6.9	3.4		N/A	Yes
072SB-0026-0001-SO	BENZO(G,H,I)PERYLENE	140	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	42	6.9	3.4		61	N/A
072SB-0026-0001-SO	BENZO(K)FLUORANTHENE	5.8	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	CHRYSENE	9.1	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	9.1	6.9	3.4		N/A	Yes
072SB-0026-0001-SO	DIBENZ(A,H)ANTHRACENE	3.4	UG/KG	6.9	3.4	UJ	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	FLUORANTHENE	12	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	10	6.9	3.4		N/A	Yes
072SB-0026-0001-SO	FLUORENE	8.4	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	3.4	6.9	3.4	U	N/A	Yes
072SB-0026-0001-SO	INDENO(1,2,3-C,D)PYRENE	17	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	12	6.9	3.4		N/A	Yes
072SB-0026-0001-SO	NAPHTHALENE	29	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	14	6.9	3.4		N/A	No
072SB-0026-0001-SO	PHENANTHRENE	50	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	36	6.9	3.4		21	N/A
072SB-0026-0001-SO	PYRENE	16	UG/KG	6.9	3.4	J	072SB-0027-0001-SO	7.1	6.9	3.4		N/A	No
072SB-0035-0001-SO	ALUMINUM	11000	MG/KG	3.3	0.66	J	072SB-0036-0001-SO	9600	3.4	0.68		9	N/A
072SB-0035-0001-SO	ANTIMONY	0.11	MG/KG	0.22	0.11	J	072SB-0036-0001-SO	0.11	0.23	0.11	U	N/A	Yes
072SB-0035-0001-SO	ARSENIC	13	MG/KG	0.11	0.055		072SB-0036-0001-SO	15	0.11	0.056		10	N/A
072SB-0035-0001-SO	BARIUM	27	MG/KG	1.1	0.022		072SB-0036-0001-SO	23	1.1	0.023		10	N/A
072SB-0035-0001-SO	BERYLLIUM	0.58	MG/KG	0.11	0.011		072SB-0036-0001-SO	0.56	0.11	0.011		2	N/A
072SB-0035-0001-SO	CADMIUM	0.15	MG/KG	0.11	0.033		072SB-0036-0001-SO	0.15	0.11	0.034		N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0035-0001-SO	CALCIUM	7500	MG/KG	11	2.8		072SB-0036-0001-SO	6300	11	2.8		11	N/A
072SB-0035-0001-SO	CHROMIUM	16	MG/KG	0.22	0.044		072SB-0036-0001-SO	14	0.23	0.045		9	N/A
072SB-0035-0001-SO	COBALT	11	MG/KG	0.055	0.011		072SB-0036-0001-SO	9.9	0.056	0.011		7	N/A
072SB-0035-0001-SO	COPPER	18	MG/KG	0.22	0.066		072SB-0036-0001-SO	16	0.23	0.068		8	N/A
072SB-0035-0001-SO	IRON	26000	MG/KG	5.5	2.2	J	072SB-0036-0001-SO	25000	5.6	2.3		3	N/A
072SB-0035-0001-SO	LEAD	11	MG/KG	0.11	0.033		072SB-0036-0001-SO	9.1	0.11	0.034		12	N/A
072SB-0035-0001-SO	MAGNESIUM	6000	MG/KG	11	2.2		072SB-0036-0001-SO	5200	11	2.3		9	N/A
072SB-0035-0001-SO	MANGANESE	290	MG/KG	0.55	0.033		072SB-0036-0001-SO	280	0.56	0.034		2	N/A
072SB-0035-0001-SO	NICKEL	26	MG/KG	0.11	0.033		072SB-0036-0001-SO	24	0.11	0.034		5	N/A
072SB-0035-0001-SO	POTASSIUM	2300	MG/KG	11	6.6		072SB-0036-0001-SO	1800	11	6.8		16	N/A
072SB-0035-0001-SO	SELENIUM	0.28	MG/KG	0.55	0.11	J	072SB-0036-0001-SO	0.71	0.56	0.11		N/A	Yes
072SB-0035-0001-SO	SILVER	0.036	MG/KG	0.11	0.033	J	072SB-0036-0001-SO	0.031	0.11	0.034	J	N/A	Yes
072SB-0035-0001-SO	SODIUM	97	MG/KG	11	5.5		072SB-0036-0001-SO	78	11	5.6		14	N/A
072SB-0035-0001-SO	THALLIUM	0.15	MG/KG	0.11	0.022		072SB-0036-0001-SO	0.11	0.11	0.023		N/A	Yes
072SB-0035-0001-SO	VANADIUM	18	MG/KG	0.11	0.066		072SB-0036-0001-SO	14	0.11	0.068		16	N/A
072SB-0035-0001-SO	ZINC	54	MG/KG	0.55	0.22		072SB-0036-0001-SO	67	0.56	0.23		15	N/A
072SB-0035-0001-SO	C10-C20	17	MG/KG	20	11	J	072SB-0036-0001-SO	20	19	10		N/A	Yes
072SB-0035-0001-SO	C20-C34	30	MG/KG	20	11		072SB-0036-0001-SO	27	19	10		N/A	Yes
072SB-0035-0001-SO	C6-C12	48	UG/KG	96	48	U	072SB-0036-0001-SO	65	130	65	U	N/A	Yes
072SB-0035-0001-SO	MERCURY	0.045	MG/KG	0.14	0.045	U	072SB-0036-0001-SO	0.036	0.11	0.036	U	N/A	Yes
072SB-0035-0001-SO	BENZENE	0.52	UG/KG	5.2	0.52	U	072SB-0036-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0035-0001-SO	ETHYLBENZENE	0.52	UG/KG	5.2	0.52	U	072SB-0036-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0035-0001-SO	Methyl tert-butyl ether	0.52	UG/KG	5.2	0.52	U	072SB-0036-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0035-0001-SO	TOLUENE	0.52	UG/KG	5.2	0.52	U	072SB-0036-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0035-0001-SO	Xylenes, Total	1.6	UG/KG	10	1.6	U	072SB-0036-0001-SO	1.4	9.6	1.4	U	N/A	Yes
072SB-0035-0001-SO	1,2,4-TRICHLOROBENZENE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	1,2-DICHLOROBENZENE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	1,3-DICHLOROBENZENE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	1,4-DICHLOROBENZENE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	2,2'-Dichlorodiisopropyl ether	4	UG/KG	120	4	U	072SB-0036-0001-SO	3.8	110	3.8	U	N/A	Yes
072SB-0035-0001-SO	2,4,5-TRICHLOROPHENOL	32	UG/KG	180	32	U	072SB-0036-0001-SO	31	170	31	U	N/A	Yes
072SB-0035-0001-SO	2,4,6-TRICHLOROPHENOL	96	UG/KG	180	96	U	072SB-0036-0001-SO	92	170	92	U	N/A	Yes
072SB-0035-0001-SO	2,4-DICHLOROPHENOL	32	UG/KG	180	32	U	072SB-0036-0001-SO	31	170	31	U	N/A	Yes
072SB-0035-0001-SO	2,4-DIMETHYLPHENOL	96	UG/KG	180	96	U	072SB-0036-0001-SO	92	170	92	U	N/A	Yes
072SB-0035-0001-SO	2,4-DINITROPHENOL	96	UG/KG	400	96	U	072SB-0036-0001-SO	92	380	92	U	N/A	Yes
072SB-0035-0001-SO	2,4-DINITROTOLUENE	32	UG/KG	240	32	U	072SB-0036-0001-SO	31	230	31	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0035-0001-SO	2,6-DINITROTOLUENE	32	UG/KG	240	32	U	072SB-0036-0001-SO	31	230	31	U	N/A	Yes
072SB-0035-0001-SO	2-CHLORONAPHTHALENE	4	UG/KG	60	4	U	072SB-0036-0001-SO	3.8	57	3.8	U	N/A	Yes
072SB-0035-0001-SO	2-CHLOROPHENOL	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	2-METHYLNAPHTHALENE	13	UG/KG	8	4		072SB-0036-0001-SO	27	7.6	3.8		N/A	No
072SB-0035-0001-SO	2-Methylphenol	96	UG/KG	240	96	U	072SB-0036-0001-SO	92	230	92	U	N/A	Yes
072SB-0035-0001-SO	2-NITROANILINE	32	UG/KG	240	32	U	072SB-0036-0001-SO	31	230	31	U	N/A	Yes
072SB-0035-0001-SO	2-NITROPHENOL	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	3 & 4 Methylphenol	96	UG/KG	480	96	U	072SB-0036-0001-SO	92	460	92	U	N/A	Yes
072SB-0035-0001-SO	3,3'-DICHLOROBENZIDINE	96	UG/KG	120	96	U	072SB-0036-0001-SO	92	110	92	U	N/A	Yes
072SB-0035-0001-SO	3-NITROANILINE	96	UG/KG	240	96	U	072SB-0036-0001-SO	92	230	92	U	N/A	Yes
072SB-0035-0001-SO	4,6-DINITRO-2-METHYLPHENOL	96	UG/KG	180	96	U	072SB-0036-0001-SO	92	170	92	U	N/A	Yes
072SB-0035-0001-SO	4-BROMOPHENYL PHENYL ETHER	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	4-CHLORO-3-METHYLPHENOL	32	UG/KG	180	32	U	072SB-0036-0001-SO	31	170	31	U	N/A	Yes
072SB-0035-0001-SO	4-CHLOROANILINE	32	UG/KG	180	32	U	072SB-0036-0001-SO	31	170	31	U	N/A	Yes
072SB-0035-0001-SO	4-CHLOROPHENYL PHENYL ETHER	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	4-NITROANILINE	32	UG/KG	240	32	U	072SB-0036-0001-SO	31	230	31	U	N/A	Yes
072SB-0035-0001-SO	4-NITROPHENOL	96	UG/KG	400	96	U	072SB-0036-0001-SO	92	380	92	U	N/A	Yes
072SB-0035-0001-SO	ACENAPHTHENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	ACENAPHTHYLENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	ANTHRACENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	Benzo[a]anthracene	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	Benzo[a]pyrene	4	UG/KG	8	4	U	072SB-0036-0001-SO	13	7.6	3.8		N/A	No
072SB-0035-0001-SO	Benzo[b]fluoranthene	4.9	UG/KG	8	4	J	072SB-0036-0001-SO	7.8	7.6	3.8		N/A	Yes
072SB-0035-0001-SO	Benzo[g,h,i]perylene	11	UG/KG	8	4		072SB-0036-0001-SO	17	7.6	3.8		N/A	Yes
072SB-0035-0001-SO	Benzo[k]fluoranthene	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	BENZOIC ACID	400	UG/KG	790	400	U	072SB-0036-0001-SO	380	760	380	U	N/A	Yes
072SB-0035-0001-SO	BENZYL ALCOHOL	32	UG/KG	400	32	U	072SB-0036-0001-SO	31	380	31	U	N/A	Yes
072SB-0035-0001-SO	BENZYL BUTYL PHTHALATE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	BIS(2-CHLOROETHOXY) METHANE	32	UG/KG	120	32	U	072SB-0036-0001-SO	31	110	31	U	N/A	Yes
072SB-0035-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	32	UG/KG	120	32	U	072SB-0036-0001-SO	31	110	31	U	N/A	Yes
072SB-0035-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	43	UG/KG	60	32	J	072SB-0036-0001-SO	30	57	31	J	N/A	Yes
072SB-0035-0001-SO	CARBAZOLE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	CHRYSENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	DIBENZ(A,H)ANTHRACENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	DIBENZOFURAN	8.4	UG/KG	60	4		072SB-0036-0001-SO	20	57	3.8	J	N/A	Yes
072SB-0035-0001-SO	DIETHYL PHTHALATE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0035-0001-SO	DIMETHYL PHTHALATE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	DI-N-BUTYL PHTHALATE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	DI-N-OCTYLPHTHALATE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	FLUORANTHENE	6.4	UG/KG	8	4	J	072SB-0036-0001-SO	6.5	7.6	3.8	J	N/A	Yes
072SB-0035-0001-SO	FLUORENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	7.2	7.6	3.8	J	N/A	Yes
072SB-0035-0001-SO	HEXACHLOROBENZENE	4	UG/KG	8	4	U	072SB-0036-0001-SO	3.8	7.6	3.8	U	N/A	Yes
072SB-0035-0001-SO	HEXACHLOROBUTADIENE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	HEXACHLOROCYCLOPENTADIENE	32	UG/KG	400	32	U	072SB-0036-0001-SO	31	380	31	U	N/A	Yes
072SB-0035-0001-SO	HEXACHLOROETHANE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	Indeno[1,2,3-cd]pyrene	4	UG/KG	8	4	U	072SB-0036-0001-SO	9.8	7.6	3.8		N/A	Yes
072SB-0035-0001-SO	ISOPHORONE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	NAPHTHALENE	7	UG/KG	8	4	J	072SB-0036-0001-SO	9.8	7.6	3.8		N/A	Yes
072SB-0035-0001-SO	NITROBENZENE	4	UG/KG	120	4	U	072SB-0036-0001-SO	3.8	110	3.8	U	N/A	Yes
072SB-0035-0001-SO	N-NITROSODI-N-PROPYLAMINE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	N-NITROSODIPHENYLAMINE	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	PENTACHLOROPHENOL	96	UG/KG	180	96	U	072SB-0036-0001-SO	92	170	92	U	N/A	Yes
072SB-0035-0001-SO	PHENANTHRENE	13	UG/KG	8	4		072SB-0036-0001-SO	32	7.6	3.8		N/A	No
072SB-0035-0001-SO	PHENOL	32	UG/KG	60	32	U	072SB-0036-0001-SO	31	57	31	U	N/A	Yes
072SB-0035-0001-SO	PYRENE	10	UG/KG	8	4		072SB-0036-0001-SO	10	7.6	3.8		N/A	Yes
072SB-0063-0001-SO	ALUMINUM	5400	MG/KG	3.1	0.62		072SB-0064-0001-SO	5500	2.7	0.54		1	N/A
072SB-0063-0001-SO	ANTIMONY	0.069	MG/KG	0.21	0.1	J	072SB-0064-0001-SO	0.061	0.18	0.09	J	N/A	Yes
072SB-0063-0001-SO	ARSENIC	11	MG/KG	0.1	0.052	J-	072SB-0064-0001-SO	10	0.09	0.045		6	N/A
072SB-0063-0001-SO	BARIUM	21	MG/KG	1	0.021	J	072SB-0064-0001-SO	23	0.9	0.018		6	N/A
072SB-0063-0001-SO	BERYLLIUM	0.4	MG/KG	0.1	0.01		072SB-0064-0001-SO	0.38	0.09	0.009		N/A	Yes
072SB-0063-0001-SO	CADMIUM	0.15	MG/KG	0.1	0.031	J	072SB-0064-0001-SO	0.19	0.09	0.027		N/A	Yes
072SB-0063-0001-SO	CALCIUM	1200	MG/KG	10	2.6	J+	072SB-0064-0001-SO	1100	9	2.2		6	N/A
072SB-0063-0001-SO	CHROMIUM	9.2	MG/KG	0.21	0.041	J-	072SB-0064-0001-SO	9	0.18	0.036		1	N/A
072SB-0063-0001-SO	COBALT	7.7	MG/KG	0.052	0.01	J-	072SB-0064-0001-SO	7.6	0.045	0.009		1	N/A
072SB-0063-0001-SO	COPPER	15	MG/KG	0.21	0.062	J-	072SB-0064-0001-SO	14	0.18	0.054		5	N/A
072SB-0063-0001-SO	IRON	17000	MG/KG	5.2	2.1		072SB-0064-0001-SO	18000	4.5	1.8		4	N/A
072SB-0063-0001-SO	LEAD	11	MG/KG	0.1	0.031		072SB-0064-0001-SO	9.7	0.09	0.027		8	N/A
072SB-0063-0001-SO	MAGNESIUM	1600	MG/KG	10	2.1		072SB-0064-0001-SO	1700	9	1.8		4	N/A
072SB-0063-0001-SO	MANGANESE	270	MG/KG	0.52	0.031	J	072SB-0064-0001-SO	420	0.45	0.027		31	N/A
072SB-0063-0001-SO	NICKEL	16	MG/KG	0.1	0.031		072SB-0064-0001-SO	19	0.09	0.027		12	N/A
072SB-0063-0001-SO	POTASSIUM	950	MG/KG	10	6.2	J-	072SB-0064-0001-SO	960	9	5.4		1	N/A
072SB-0063-0001-SO	SELENIUM	0.38	MG/KG	0.52	0.1	J	072SB-0064-0001-SO	0.21	0.45	0.09	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0063-0001-SO	SILVER	0.024	MG/KG	0.1	0.031	J	072SB-0064-0001-SO	0.028	0.09	0.027	J	N/A	Yes
072SB-0063-0001-SO	SODIUM	32	MG/KG	10	5.2	J-	072SB-0064-0001-SO	27	9	4.5		N/A	Yes
072SB-0063-0001-SO	THALLIUM	0.12	MG/KG	0.1	0.021		072SB-0064-0001-SO	0.13	0.09	0.018		N/A	Yes
072SB-0063-0001-SO	VANADIUM	9.8	MG/KG	0.1	0.062		072SB-0064-0001-SO	9.6	0.09	0.054		1	N/A
072SB-0063-0001-SO	ZINC	59	MG/KG	0.52	0.21		072SB-0064-0001-SO	52	0.45	0.18		8	N/A
072SB-0063-0001-SO	C10-C20	10	MG/KG	19	10	U	072SB-0064-0001-SO	10	18	10	U	N/A	Yes
072SB-0063-0001-SO	C20-C34	10	MG/KG	19	10	U	072SB-0064-0001-SO	10	18	10	U	N/A	Yes
072SB-0063-0001-SO	C6-C12	44	UG/KG	88	44	U	072SB-0064-0001-SO	42	83	42	U	N/A	Yes
072SB-0063-0001-SO	MERCURY	0.017	MG/KG	0.12	0.041	J	072SB-0064-0001-SO	0.024	0.12	0.04	J	N/A	Yes
072SB-0063-0001-SO	BENZENE	0.58	UG/KG	5.8	0.58	U	072SB-0064-0001-SO	0.42	4.2	0.42	U	N/A	Yes
072SB-0063-0001-SO	ETHYLBENZENE	0.58	UG/KG	5.8	0.58	U	072SB-0064-0001-SO	0.42	4.2	0.42	U	N/A	Yes
072SB-0063-0001-SO	TOLUENE	0.58	UG/KG	5.8	0.58	U	072SB-0064-0001-SO	0.94	4.2	0.42	J	N/A	Yes
072SB-0063-0001-SO	XYLENES, TOTAL	1.8	UG/KG	12	1.8	U	072SB-0064-0001-SO	1.3	8.4	1.3	U	N/A	Yes
072SB-0063-0001-SO	ACENAPHTHENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	ACENAPHTHYLENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	ANTHRACENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	BENZO(A)ANTHRACENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	BENZO(A)PYRENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	BENZO(B)FLUORANTHENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	BENZO(G,H,I)PERYLENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	BENZO(K)FLUORANTHENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	CHRYSENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	DIBENZ(A,H)ANTHRACENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	FLUORANTHENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	FLUORENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	INDENO(1,2,3-C,D)PYRENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	NAPHTHALENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	PHENANTHRENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0063-0001-SO	PYRENE	3.7	UG/KG	7.6	3.7	U	072SB-0064-0001-SO	3.7	7.4	3.7	U	N/A	Yes
072SB-0076-0001-SO	ALUMINUM	12000	MG/KG	3.3	0.66		072SB-0077-0001-SO	11000	3.3	0.67		6	N/A
072SB-0076-0001-SO	ANTIMONY	0.11	MG/KG	0.22	0.11	U	072SB-0077-0001-SO	0.11	0.22	0.11	U	N/A	Yes
072SB-0076-0001-SO	ARSENIC	14	MG/KG	0.11	0.055		072SB-0077-0001-SO	15	0.11	0.055		5	N/A
072SB-0076-0001-SO	BARIUM	56	MG/KG	1.1	0.022		072SB-0077-0001-SO	95	1.1	0.022		38	N/A
072SB-0076-0001-SO	BERYLLIUM	0.55	MG/KG	0.11	0.011		072SB-0077-0001-SO	0.56	0.11	0.011		N/A	Yes
072SB-0076-0001-SO	CADMIUM	0.18	MG/KG	0.11	0.033		072SB-0077-0001-SO	0.22	0.11	0.033		N/A	Yes
072SB-0076-0001-SO	CALCIUM	1300	MG/KG	11	2.7		072SB-0077-0001-SO	1400	11	2.8		5	N/A

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0076-0001-SO	CHROMIUM	14	MG/KG	0.22	0.044		072SB-0077-0001-SO	13	0.22	0.044		5	N/A
072SB-0076-0001-SO	COBALT	9.2	MG/KG	0.055	0.011		072SB-0077-0001-SO	15	0.055	0.011		35	N/A
072SB-0076-0001-SO	COPPER	14	MG/KG	0.22	0.066		072SB-0077-0001-SO	9.9	0.22	0.067		22	N/A
072SB-0076-0001-SO	IRON	24000	MG/KG	5.5	2.2		072SB-0077-0001-SO	24000	5.5	2.2		0	N/A
072SB-0076-0001-SO	LEAD	20	MG/KG	0.11	0.033		072SB-0077-0001-SO	19	0.11	0.033		3	N/A
072SB-0076-0001-SO	MAGNESIUM	2600	MG/KG	11	2.2		072SB-0077-0001-SO	2000	11	2.2		17	N/A
072SB-0076-0001-SO	MANGANESE	330	MG/KG	0.55	0.033		072SB-0077-0001-SO	1700	0.55	0.033		116	N/A
072SB-0076-0001-SO	NICKEL	19	MG/KG	0.11	0.033		072SB-0077-0001-SO	15	0.11	0.033		15	N/A
072SB-0076-0001-SO	POTASSIUM	1200	MG/KG	11	6.6		072SB-0077-0001-SO	820	11	6.7		24	N/A
072SB-0076-0001-SO	SELENIUM	0.56	MG/KG	0.55	0.11		072SB-0077-0001-SO	0.7	0.55	0.11		N/A	Yes
072SB-0076-0001-SO	SILVER	0.037	MG/KG	0.11	0.033	J	072SB-0077-0001-SO	0.045	0.11	0.033	J	N/A	Yes
072SB-0076-0001-SO	SODIUM	45	MG/KG	11	5.5		072SB-0077-0001-SO	36	11	5.5		N/A	Yes
072SB-0076-0001-SO	THALLIUM	0.15	MG/KG	0.11	0.022		072SB-0077-0001-SO	0.16	0.11	0.022		N/A	Yes
072SB-0076-0001-SO	VANADIUM	19	MG/KG	0.11	0.066		072SB-0077-0001-SO	21	0.11	0.067		7	N/A
072SB-0076-0001-SO	ZINC	52	MG/KG	0.55	0.22		072SB-0077-0001-SO	45	0.55	0.22		9	N/A
072SB-0076-0001-SO	C10-C20	11	MG/KG	20	11	U	072SB-0077-0001-SO	11	20	11	U	N/A	Yes
072SB-0076-0001-SO	C20-C34	11	MG/KG	20	11	U	072SB-0077-0001-SO	11	20	11	U	N/A	Yes
072SB-0076-0001-SO	C6-C12	70	UG/KG	94	47	J	072SB-0077-0001-SO	2900	5000	2500	J	N/A	Yes
072SB-0076-0001-SO	2,4 DB	40	UG/KG	95	40	U	072SB-0077-0001-SO	40	96	40	U	N/A	Yes
072SB-0076-0001-SO	2,4,5-T	9.9	UG/KG	24	9.9	U	072SB-0077-0001-SO	10	24	10	U	N/A	Yes
072SB-0076-0001-SO	2,4-D	40	UG/KG	95	40	U	072SB-0077-0001-SO	40	96	40	U	N/A	Yes
072SB-0076-0001-SO	DALAPON	20	UG/KG	48	20	U	072SB-0077-0001-SO	20	48	20	U	N/A	Yes
072SB-0076-0001-SO	DICAMBA	20	UG/KG	48	20	U	072SB-0077-0001-SO	20	48	20	U	N/A	Yes
072SB-0076-0001-SO	DICHLOROPROP	79	UG/KG	95	79	U	072SB-0077-0001-SO	80	96	80	U	N/A	Yes
072SB-0076-0001-SO	DINOSEB	12	UG/KG	14	12	U	072SB-0077-0001-SO	12	14	12	U	N/A	Yes
072SB-0076-0001-SO	MCPA	4000	UG/KG	9500	4000	U	072SB-0077-0001-SO	4000	9600	4000	U	N/A	Yes
072SB-0076-0001-SO	MCPP	4000	UG/KG	9500	4000	U	072SB-0077-0001-SO	4000	9600	4000	U	N/A	Yes
072SB-0076-0001-SO	PENTACHLOROPHENOL	9.9	UG/KG	12	9.9	U	072SB-0077-0001-SO	10	12	10	U	N/A	Yes
072SB-0076-0001-SO	SILVEX (2,4,5-TP)	9.9	UG/KG	24	9.9	U	072SB-0077-0001-SO	10	24	10	U	N/A	Yes
072SB-0076-0001-SO	MERCURY	0.045	MG/KG	0.14	0.045	U	072SB-0077-0001-SO	0.044	0.13	0.044	U	N/A	Yes
072SB-0076-0001-SO	BENZENE	9.9	UG/KG	4	0.4		072SB-0077-0001-SO	1.8	4.6	0.46	J	N/A	No
072SB-0076-0001-SO	ETHYLBENZENE	22	UG/KG	4	0.4		072SB-0077-0001-SO	0.71	4.6	0.46	J	N/A	No
072SB-0076-0001-SO	Methyl tert-butyl ether	0.4	UG/KG	4	0.4	U	072SB-0077-0001-SO	0.46	4.6	0.46	U	N/A	Yes
072SB-0076-0001-SO	TOLUENE	52	UG/KG	4	0.4		072SB-0077-0001-SO	6.7	4.6	0.46		N/A	No
072SB-0076-0001-SO	Xylenes, Total	150	UG/KG	8	1.2		072SB-0077-0001-SO	5.4	9.2	1.4	J	N/A	No
072SB-0076-0001-SO	1,2,4-TRICHLOROBENZENE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0076-0001-SO	1,2-DICHLOROBENZENE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	1,3-DICHLOROBENZENE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	1,4-DICHLOROBENZENE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	2,4,5-TRICHLOROPHENOL	32	UG/KG	180	32	U	072SB-0077-0001-SO	33	180	33	U	N/A	Yes
072SB-0076-0001-SO	2,4,6-TRICHLOROPHENOL	95	UG/KG	180	95	U	072SB-0077-0001-SO	98	180	98	U	N/A	Yes
072SB-0076-0001-SO	2,4-DICHLOROPHENOL	32	UG/KG	180	32	U	072SB-0077-0001-SO	33	180	33	U	N/A	Yes
072SB-0076-0001-SO	2,4-DIMETHYLPHENOL	95	UG/KG	180	95	U	072SB-0077-0001-SO	98	180	98	U	N/A	Yes
072SB-0076-0001-SO	2,4-DINITROPHENOL	95	UG/KG	390	95	U	072SB-0077-0001-SO	98	410	98	U	N/A	Yes
072SB-0076-0001-SO	2,4-DINITROTOLUENE	32	UG/KG	240	32	U	072SB-0077-0001-SO	33	250	33	U	N/A	Yes
072SB-0076-0001-SO	2,6-DINITROTOLUENE	32	UG/KG	240	32	U	072SB-0077-0001-SO	33	250	33	U	N/A	Yes
072SB-0076-0001-SO	2-CHLORONAPHTHALENE	3.9	UG/KG	59	3.9	U	072SB-0077-0001-SO	4.1	61	4.1	U	N/A	Yes
072SB-0076-0001-SO	2-CHLOROPHENOL	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	2-METHYLNAPHTHALENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	2-Methylphenol	95	UG/KG	240	95	U	072SB-0077-0001-SO	98	250	98	U	N/A	Yes
072SB-0076-0001-SO	2-NITROANILINE	32	UG/KG	240	32	U	072SB-0077-0001-SO	33	250	33	U	N/A	Yes
072SB-0076-0001-SO	2-NITROPHENOL	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	3 & 4 Methylphenol	95	UG/KG	480	95	U	072SB-0077-0001-SO	98	490	98	U	N/A	Yes
072SB-0076-0001-SO	3,3'-DICHLOROBENZIDINE	95	UG/KG	120	95	U	072SB-0077-0001-SO	98	120	98	U	N/A	Yes
072SB-0076-0001-SO	3-NITROANILINE	95	UG/KG	240	95	U	072SB-0077-0001-SO	98	250	98	U	N/A	Yes
072SB-0076-0001-SO	4,6-DINITRO-2-METHYLPHENOL	95	UG/KG	180	95	U	072SB-0077-0001-SO	98	180	98	U	N/A	Yes
072SB-0076-0001-SO	4-BROMOPHENYL PHENYL ETHER	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	4-CHLORO-3-METHYLPHENOL	32	UG/KG	180	32	U	072SB-0077-0001-SO	33	180	33	U	N/A	Yes
072SB-0076-0001-SO	4-CHLOROANILINE	32	UG/KG	180	32	U	072SB-0077-0001-SO	33	180	33	U	N/A	Yes
072SB-0076-0001-SO	4-CHLOROPHENYL PHENYL ETHER	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	4-NITROANILINE	32	UG/KG	240	32	U	072SB-0077-0001-SO	33	250	33	U	N/A	Yes
072SB-0076-0001-SO	4-NITROPHENOL	95	UG/KG	390	95	U	072SB-0077-0001-SO	98	410	98	U	N/A	Yes
072SB-0076-0001-SO	ACENAPHTHENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	ACENAPHTHYLENE	7.6	UG/KG	7.9	3.9	J	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	ANTHRACENE	5.8	UG/KG	7.9	3.9	J	072SB-0077-0001-SO	4.8	8.2	4.1	J	N/A	Yes
072SB-0076-0001-SO	Benzo[a]anthracene	55	UG/KG	7.9	3.9		072SB-0077-0001-SO	24	8.2	4.1		N/A	No
072SB-0076-0001-SO	Benzo[a]pyrene	40	UG/KG	7.9	3.9		072SB-0077-0001-SO	16	8.2	4.1		N/A	No
072SB-0076-0001-SO	Benzo[b]fluoranthene	65	UG/KG	7.9	3.9		072SB-0077-0001-SO	22	8.2	4.1		N/A	No
072SB-0076-0001-SO	Benzo[g,h,i]perylene	34	UG/KG	7.9	3.9		072SB-0077-0001-SO	20	8.2	4.1		N/A	No
072SB-0076-0001-SO	Benzo[k]fluoranthene	22	UG/KG	7.9	3.9		072SB-0077-0001-SO	8.9	8.2	4.1		N/A	No
072SB-0076-0001-SO	BENZOIC ACID	400	UG/KG	780	400	U	072SB-0077-0001-SO	410	810	410	U	N/A	Yes
072SB-0076-0001-SO	BENZYL ALCOHOL	32	UG/KG	390	32	U	072SB-0077-0001-SO	33	410	33	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0076-0001-SO	BENZYL BUTYL PHTHALATE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	BIS(2-CHLOROETHOXY) METHANE	32	UG/KG	120	32	U	072SB-0077-0001-SO	33	120	33	U	N/A	Yes
072SB-0076-0001-SO	BIS(2-CHLOROETHYL) ETHER	3.9	UG/KG	120	3.9	U	072SB-0077-0001-SO	4.1	120	4.1	U	N/A	Yes
072SB-0076-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	32	UG/KG	120	32	U	072SB-0077-0001-SO	33	120	33	U	N/A	Yes
072SB-0076-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	24	UG/KG	59	32	J	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	CARBAZOLE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	CHRYSENE	41	UG/KG	7.9	3.9		072SB-0077-0001-SO	17	8.2	4.1		N/A	No
072SB-0076-0001-SO	DIBENZ(A,H)ANTHRACENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	DIBENZOFURAN	3.9	UG/KG	59	3.9	U	072SB-0077-0001-SO	4.1	61	4.1	U	N/A	Yes
072SB-0076-0001-SO	DIETHYL PHTHALATE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	DIMETHYL PHTHALATE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	DI-N-BUTYL PHTHALATE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	DI-N-OCTYLPHTHALATE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	FLUORANTHENE	96	UG/KG	7.9	3.9		072SB-0077-0001-SO	34	8.2	4.1		N/A	No
072SB-0076-0001-SO	FLUORENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	HEXACHLOROBENZENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	HEXACHLOROBUTADIENE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	HEXACHLOROCYCLOPENTADIENE	32	UG/KG	390	32	U	072SB-0077-0001-SO	33	410	33	U	N/A	Yes
072SB-0076-0001-SO	HEXACHLOROETHANE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	Indeno[1,2,3-cd]pyrene	22	UG/KG	7.9	3.9		072SB-0077-0001-SO	10	8.2	4.1		N/A	No
072SB-0076-0001-SO	ISOPHORONE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	NAPHTHALENE	3.9	UG/KG	7.9	3.9	U	072SB-0077-0001-SO	4.1	8.2	4.1	U	N/A	Yes
072SB-0076-0001-SO	NITROBENZENE	3.9	UG/KG	120	3.9	U	072SB-0077-0001-SO	4.1	120	4.1	U	N/A	Yes
072SB-0076-0001-SO	N-NITROSODI-N-PROPYLAMINE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	N-NITROSODIPHENYLAMINE	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	PENTACHLOROPHENOL	95	UG/KG	180	95	U	072SB-0077-0001-SO	98	180	98	U	N/A	Yes
072SB-0076-0001-SO	PHENANTHRENE	47	UG/KG	7.9	3.9		072SB-0077-0001-SO	21	8.2	4.1		N/A	No
072SB-0076-0001-SO	PHENOL	32	UG/KG	59	32	U	072SB-0077-0001-SO	33	61	33	U	N/A	Yes
072SB-0076-0001-SO	PYRENE	77	UG/KG	7.9	3.9		072SB-0077-0001-SO	26	8.2	4.1		N/A	No
072SB-0085-0001-SO	C10-C20	11	MG/KG	20	11	U	072SB-0086-0001-SO	11	19	11	U	N/A	Yes
072SB-0085-0001-SO	C20-C34	11	MG/KG	20	11	U	072SB-0086-0001-SO	11	19	11	U	N/A	Yes
072SB-0085-0001-SO	C6-C12	63	UG/KG	130	63	U	072SB-0086-0001-SO	43	87	43	U	N/A	Yes
072SB-0085-0001-SO	BENZENE	0.6	UG/KG	6	0.6	U	072SB-0086-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0085-0001-SO	ETHYLBENZENE	0.6	UG/KG	6	0.6	U	072SB-0086-0001-SO	0.48	4.8	0.48	U	N/A	Yes
072SB-0085-0001-SO	TOLUENE	4.3	UG/KG	6	0.6	J	072SB-0086-0001-SO	2.6	4.8	0.48	J	N/A	Yes
072SB-0085-0001-SO	XYLENES, TOTAL	1.8	UG/KG	12	1.8	U	072SB-0086-0001-SO	1.4	9.6	1.4	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0086-0001-SO	ALUMINUM	8900	MG/KG	3	0.61		072SB-0085-0001-SO	9600	3.4	0.68		5	N/A
072SB-0086-0001-SO	ANTIMONY	0.1	MG/KG	0.2	0.1	U	072SB-0085-0001-SO	0.077	0.23	0.11	J	N/A	Yes
072SB-0086-0001-SO	ARSENIC	13	MG/KG	0.1	0.051		072SB-0085-0001-SO	18	0.11	0.056		23	N/A
072SB-0086-0001-SO	BARIUM	27	MG/KG	1	0.02		072SB-0085-0001-SO	32	1.1	0.023		12	N/A
072SB-0086-0001-SO	BERYLLIUM	0.35	MG/KG	0.1	0.01		072SB-0085-0001-SO	0.44	0.11	0.011		N/A	Yes
072SB-0086-0001-SO	CADMIUM	0.092	MG/KG	0.1	0.03	J	072SB-0085-0001-SO	0.13	0.11	0.034		N/A	Yes
072SB-0086-0001-SO	CALCIUM	5200	MG/KG	10	2.5		072SB-0085-0001-SO	8400	11	2.8		34	N/A
072SB-0086-0001-SO	CHROMIUM	11	MG/KG	0.2	0.04		072SB-0085-0001-SO	13	0.23	0.045		11	N/A
072SB-0086-0001-SO	COBALT	8.5	MG/KG	0.051	0.01		072SB-0085-0001-SO	11	0.056	0.011		18	N/A
072SB-0086-0001-SO	COPPER	15	MG/KG	0.2	0.061		072SB-0085-0001-SO	19	0.23	0.068		16	N/A
072SB-0086-0001-SO	IRON	22000	MG/KG	5.1	2		072SB-0085-0001-SO	25000	5.6	2.3		9	N/A
072SB-0086-0001-SO	LEAD	9.3	MG/KG	0.1	0.03		072SB-0085-0001-SO	13	0.11	0.034		23	N/A
072SB-0086-0001-SO	MAGNESIUM	4200	MG/KG	10	2		072SB-0085-0001-SO	5300	11	2.3		16	N/A
072SB-0086-0001-SO	MANGANESE	260	MG/KG	0.51	0.03		072SB-0085-0001-SO	380	0.56	0.034		27	N/A
072SB-0086-0001-SO	NICKEL	19	MG/KG	0.1	0.03		072SB-0085-0001-SO	23	0.11	0.034		13	N/A
072SB-0086-0001-SO	POTASSIUM	1400	MG/KG	10	6.1		072SB-0085-0001-SO	1600	11	6.8		9	N/A
072SB-0086-0001-SO	SELENIUM	0.4	MG/KG	0.51	0.1	J	072SB-0085-0001-SO	0.46	0.56	0.11	J	N/A	Yes
072SB-0086-0001-SO	SILVER	0.022	MG/KG	0.1	0.03	J	072SB-0085-0001-SO	0.03	0.11	0.034	J	N/A	Yes
072SB-0086-0001-SO	SODIUM	63	MG/KG	10	5.1		072SB-0085-0001-SO	72	11	5.6		9	N/A
072SB-0086-0001-SO	THALLIUM	0.1	MG/KG	0.1	0.02		072SB-0085-0001-SO	0.14	0.11	0.023		N/A	Yes
072SB-0086-0001-SO	VANADIUM	13	MG/KG	0.1	0.061		072SB-0085-0001-SO	15	0.11	0.068		10	N/A
072SB-0086-0001-SO	ZINC	44	MG/KG	0.51	0.2		072SB-0085-0001-SO	52	0.56	0.23		11	N/A
072SB-0086-0001-SO	MERCURY	0.04	MG/KG	0.12	0.04	U	072SB-0085-0001-SO	0.044	0.13	0.044	U	N/A	Yes
072SB-0086-0001-SO	1,2,4-TRICHLOROBENZENE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	1,2-DICHLOROBENZENE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	1,3-DICHLOROBENZENE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	1,4-DICHLOROBENZENE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	2,4,5-TRICHLOROPHENOL	31	UG/KG	170	31	U	072SB-0085-0001-SO	32	180	32		N/A	Yes
072SB-0086-0001-SO	2,4,6-TRICHLOROPHENOL	92	UG/KG	170	92	U	072SB-0085-0001-SO	94	180	94		N/A	Yes
072SB-0086-0001-SO	2,4-DICHLOROPHENOL	31	UG/KG	170	31	U	072SB-0085-0001-SO	32	180	32		N/A	Yes
072SB-0086-0001-SO	2,4-DIMETHYLPHENOL	92	UG/KG	170	92	U	072SB-0085-0001-SO	94	180	94		N/A	Yes
072SB-0086-0001-SO	2,4-DINITROPHENOL	92	UG/KG	380	92	U	072SB-0085-0001-SO	94	390	94		N/A	Yes
072SB-0086-0001-SO	2,4-DINITROTOLUENE	31	UG/KG	230	31	U	072SB-0085-0001-SO	32	230	32		N/A	Yes
072SB-0086-0001-SO	2,6-DINITROTOLUENE	31	UG/KG	230	31	U	072SB-0085-0001-SO	32	230	32		N/A	Yes
072SB-0086-0001-SO	2-CHLORONAPHTHALENE	3.8	UG/KG	58	3.8	U	072SB-0085-0001-SO	3.9	58	3.9		N/A	Yes
072SB-0086-0001-SO	2-CHLOROPHENOL	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0086-0001-SO	2-METHYLNAPHTHALENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	2-Methylphenol	92	UG/KG	230	92	U	072SB-0085-0001-SO	94	230	94		N/A	Yes
072SB-0086-0001-SO	2-NITROANILINE	31	UG/KG	230	31	U	072SB-0085-0001-SO	32	230	32		N/A	Yes
072SB-0086-0001-SO	2-NITROPHENOL	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	3 & 4 Methylphenol	92	UG/KG	460	92	U	072SB-0085-0001-SO	94	470	94		N/A	Yes
072SB-0086-0001-SO	3,3'-DICHLOROBENZIDINE	92	UG/KG	120	92	U	072SB-0085-0001-SO	94	120	94		N/A	Yes
072SB-0086-0001-SO	3-NITROANILINE	92	UG/KG	230	92	U	072SB-0085-0001-SO	94	230	94		N/A	Yes
072SB-0086-0001-SO	4,6-DINITRO-2-METHYLPHENOL	92	UG/KG	170	92	U	072SB-0085-0001-SO	94	180	94		N/A	Yes
072SB-0086-0001-SO	4-BROMOPHENYL PHENYL ETHER	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	4-CHLORO-3-METHYLPHENOL	31	UG/KG	170	31	U	072SB-0085-0001-SO	32	180	32		N/A	Yes
072SB-0086-0001-SO	4-CHLOROANILINE	31	UG/KG	170	31	U	072SB-0085-0001-SO	32	180	32		N/A	Yes
072SB-0086-0001-SO	4-CHLOROPHENYL PHENYL ETHER	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	4-NITROANILINE	31	UG/KG	230	31	U	072SB-0085-0001-SO	32	230	32		N/A	Yes
072SB-0086-0001-SO	4-NITROPHENOL	92	UG/KG	380	92	U	072SB-0085-0001-SO	94	390	94		N/A	Yes
072SB-0086-0001-SO	ACENAPHTHENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	ACENAPHTHYLENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	ANTHRACENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	Benzo[a]anthracene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	Benzo[a]pyrene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	Benzo[b]fluoranthene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	Benzo[g,h,i]perylene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	Benzo[k]fluoranthene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	BENZOIC ACID	380	UG/KG	760	380	U	072SB-0085-0001-SO	390	770	390		N/A	Yes
072SB-0086-0001-SO	BENZYL ALCOHOL	31	UG/KG	380	31	U	072SB-0085-0001-SO	32	390	32		N/A	Yes
072SB-0086-0001-SO	BENZYL BUTYL PHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	BIS(2-CHLOROETHOXY) METHANE	31	UG/KG	120	31	U	072SB-0085-0001-SO	32	120	32		N/A	Yes
072SB-0086-0001-SO	BIS(2-CHLOROETHYL) ETHER	3.8	UG/KG	120	3.8	U	072SB-0085-0001-SO	3.9	120	3.9		N/A	Yes
072SB-0086-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	31	UG/KG	120	31	U	072SB-0085-0001-SO	32	120	32		N/A	Yes
072SB-0086-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	CARBAZOLE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	CHRYSENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	DIBENZ(A,H)ANTHRACENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	DIBENZOFURAN	3.8	UG/KG	58	3.8	U	072SB-0085-0001-SO	3.9	58	3.9		N/A	Yes
072SB-0086-0001-SO	DIETHYL PHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	DIMETHYL PHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	DI-N-BUTYL PHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
072SB-0086-0001-SO	DI-N-OCTYLPHTHALATE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	FLUORANTHENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	FLUORENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	HEXACHLOROBENZENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	HEXACHLOROBUTADIENE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	HEXACHLOROCYCLOPENTADIENE	31	UG/KG	380	31	U	072SB-0085-0001-SO	32	390	32		N/A	Yes
072SB-0086-0001-SO	HEXACHLOROETHANE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	Indeno[1,2,3-cd]pyrene	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	ISOPHORONE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	NAPHTHALENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	NITROBENZENE	3.8	UG/KG	120	3.8	U	072SB-0085-0001-SO	3.9	120	3.9		N/A	Yes
072SB-0086-0001-SO	N-NITROSODI-N-PROPYLAMINE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	N-NITROSODIPHENYLAMINE	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	PENTACHLOROPHENOL	92	UG/KG	170	92	U	072SB-0085-0001-SO	94	180	94		N/A	Yes
072SB-0086-0001-SO	PHENANTHRENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
072SB-0086-0001-SO	PHENOL	31	UG/KG	58	31	U	072SB-0085-0001-SO	32	58	32		N/A	Yes
072SB-0086-0001-SO	PYRENE	3.8	UG/KG	7.7	3.8	U	072SB-0085-0001-SO	3.9	7.8	3.9		N/A	Yes
076SB-0126-0001-SO	Hexavalent chromium	0.31	MG/KG	0.89	0.89	J-	076SB-0127-0001-SO	0.89	0.89	0.89	U	N/A	Yes
076SB-0076-0001-SO	Hexavalent chromium	0.33	MG/KG	0.8	0.8	J	076SB-0089-0001-SO	0.45	0.8	0.8	J	N/A	Yes
076SB-0132-0001-SO	Hexavalent chromium	0.99	MG/KG	0.99	0.99	U	076SB-0133-0001-SO	0.39	0.98	0.98	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
075SD-0002-0001-SD	NITROCELLULOSE	28	MG/KG	78	28		075SD-0003-0001-SD	28	76	28	U	N/A	Yes
075SD-0002-0001-SD	ALUMINUM	12000	MG/KG	4.4	0.88	J	075SD-0003-0001-SD	16000	4.6	0.91		29	N/A
075SD-0002-0001-SD	ANTIMONY	0.21	MG/KG	0.29	0.15	J-	075SD-0003-0001-SD	0.43	0.3	0.15		N/A	Yes
075SD-0002-0001-SD	ARSENIC	9.5	MG/KG	0.15	0.074	J-	075SD-0003-0001-SD	9	0.15	0.076		5	N/A
075SD-0002-0001-SD	BARIUM	110	MG/KG	1.5	0.029	J-	075SD-0003-0001-SD	130	1.5	0.03		17	N/A
075SD-0002-0001-SD	BERYLLIUM	0.89	MG/KG	0.15	0.015		075SD-0003-0001-SD	1.7	0.15	0.015		63	N/A
075SD-0002-0001-SD	CADMIUM	0.63	MG/KG	0.15	0.044		075SD-0003-0001-SD	0.76	0.15	0.046		N/A	Yes
075SD-0002-0001-SD	CALCIUM	6400	MG/KG	15	3.7		075SD-0003-0001-SD	50000	15	3.8		155	N/A
075SD-0002-0001-SD	CHROMIUM	15	MG/KG	0.29	0.059	J-	075SD-0003-0001-SD	21	0.3	0.061		33	N/A
075SD-0002-0001-SD	COBALT	9.6	MG/KG	0.074	0.015		075SD-0003-0001-SD	11	0.076	0.015		14	N/A
075SD-0002-0001-SD	COPPER	17	MG/KG	0.29	0.088		075SD-0003-0001-SD	21	0.3	0.091		21	N/A
075SD-0002-0001-SD	IRON	20000	MG/KG	7.4	2.9		075SD-0003-0001-SD	19000	7.6	3		5	N/A
075SD-0002-0001-SD	LEAD	22	MG/KG	0.15	0.044		075SD-0003-0001-SD	32	0.15	0.046		37	N/A
075SD-0002-0001-SD	MAGNESIUM	2800	MG/KG	15	2.9	J-	075SD-0003-0001-SD	5600	15	3		67	N/A
075SD-0002-0001-SD	MANGANESE	2200	MG/KG	0.74	0.044		075SD-0003-0001-SD	4100	7.6	0.46		60	N/A
075SD-0002-0001-SD	NICKEL	21	MG/KG	0.15	0.044	J-	075SD-0003-0001-SD	21	0.15	0.046		0	N/A
075SD-0002-0001-SD	POTASSIUM	1400	MG/KG	15	8.8	J-	075SD-0003-0001-SD	1200	15	9.1		15	N/A
075SD-0002-0001-SD	SELENIUM	1.3	MG/KG	0.74	0.15	J-	075SD-0003-0001-SD	1.4	0.76	0.15		N/A	Yes
075SD-0002-0001-SD	SILVER	1.5	MG/KG	0.15	0.044		075SD-0003-0001-SD	2.3	0.15	0.046		42	N/A
075SD-0002-0001-SD	SODIUM	75	MG/KG	15	7.4	J	075SD-0003-0001-SD	310	15	7.6		N/A	No
075SD-0002-0001-SD	THALLIUM	0.21	MG/KG	0.15	0.029		075SD-0003-0001-SD	0.15	0.15	0.03		N/A	Yes
075SD-0002-0001-SD	VANADIUM	20	MG/KG	0.15	0.088	J-	075SD-0003-0001-SD	15	0.15	0.091		29	N/A
075SD-0002-0001-SD	ZINC	140	MG/KG	0.74	0.29		075SD-0003-0001-SD	130	0.76	0.3		7	N/A
075SD-0002-0001-SD	ALDRIN	42	UG/KG	130	42		075SD-0003-0001-SD	21	63	21	U	N/A	Yes
075SD-0002-0001-SD	ALPHA BHC	42	UG/KG	80	42		075SD-0003-0001-SD	21	39	21	U	N/A	Yes
075SD-0002-0001-SD	ALPHA ENDOSULFAN	21	UG/KG	54	21		075SD-0003-0001-SD	10	27	10	U	N/A	Yes
075SD-0002-0001-SD	ALPHA-CHLORDANE	42	UG/KG	96	42		075SD-0003-0001-SD	21	47	21	U	N/A	Yes
075SD-0002-0001-SD	BETA BHC	42	UG/KG	110	42		075SD-0003-0001-SD	21	55	21	U	N/A	Yes
075SD-0002-0001-SD	BETA ENDOSULFAN	42	UG/KG	80	42		075SD-0003-0001-SD	21	39	21	U	N/A	Yes
075SD-0002-0001-SD	DELTA BHC	42	UG/KG	130	42		075SD-0003-0001-SD	21	63	21	U	N/A	Yes
075SD-0002-0001-SD	DIELDRIN	21	UG/KG	54	21		075SD-0003-0001-SD	10	27	10	U	N/A	Yes
075SD-0002-0001-SD	ENDOSULFAN SULFATE	42	UG/KG	96	42		075SD-0003-0001-SD	21	47	21	U	N/A	Yes
075SD-0002-0001-SD	ENDRIN	21	UG/KG	54	21		075SD-0003-0001-SD	10	27	10	U	N/A	Yes
075SD-0002-0001-SD	ENDRIN ALDEHYDE	42	UG/KG	96	42		075SD-0003-0001-SD	21	47	21	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
075SD-0002-0001-SD	ENDRIN KETONE	21	UG/KG	64	21		075SD-0003-0001-SD	10	31	10	U	N/A	Yes
075SD-0002-0001-SD	GAMMA BHC (LINDANE)	42	UG/KG	80	42		075SD-0003-0001-SD	21	39	21	U	N/A	Yes
075SD-0002-0001-SD	GAMMA-CHLORDANE	21	UG/KG	54	21		075SD-0003-0001-SD	10	27	10	U	N/A	Yes
075SD-0002-0001-SD	HEPTACHLOR	42	UG/KG	110	42		075SD-0003-0001-SD	21	55	21	U	N/A	Yes
075SD-0002-0001-SD	HEPTACHLOR EPOXIDE	42	UG/KG	80	42		075SD-0003-0001-SD	21	39	21	U	N/A	Yes
075SD-0002-0001-SD	METHOXYCHLOR	110	UG/KG	160	110		075SD-0003-0001-SD	52	78	52	U	N/A	Yes
075SD-0002-0001-SD	P,P'-DDD	21	UG/KG	64	21		075SD-0003-0001-SD	10	31	10	U	N/A	Yes
075SD-0002-0001-SD	P,P'-DDE	13	UG/KG	54	21		075SD-0003-0001-SD	10	27	10	U	N/A	Yes
075SD-0002-0001-SD	P,P'-DDT	29	UG/KG	64	21		075SD-0003-0001-SD	10	31	10	U	N/A	Yes
075SD-0002-0001-SD	TOXAPHENE	640	UG/KG	2100	640		075SD-0003-0001-SD	310	1000	310	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1016	40	UG/KG	100	40	U	075SD-0003-0001-SD	39	100	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1221	40	UG/KG	80	40	U	075SD-0003-0001-SD	39	78	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1232	40	UG/KG	72	40	U	075SD-0003-0001-SD	39	70	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1242	40	UG/KG	64	40	U	075SD-0003-0001-SD	39	63	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1248	40	UG/KG	88	40	U	075SD-0003-0001-SD	39	86	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1254	40	UG/KG	88	40	U	075SD-0003-0001-SD	39	86	39	U	N/A	Yes
075SD-0002-0001-SD	Aroclor-1260	40	UG/KG	88	40	U	075SD-0003-0001-SD	39	86	39	U	N/A	Yes
075SD-0002-0001-SD	1,3,5-TRINITROBENZENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	1,3-DINITROBENZENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	2,4,6-TRINITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	2,4-DINITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	2,6-DINITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	2-AMINO-4,6-DINITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	2-NITROTOLUENE	0.049	MG/KG	0.25	0.049	UJ	075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	3-NITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	4-AMINO-2,6-DINITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	4-NITROTOLUENE	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	HMX	0.049	MG/KG	0.25	0.049		075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	NITROBENZENE	0.049	MG/KG	0.25	0.049	R	075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	N/A
075SD-0002-0001-SD	NITROGLYCERIN	0.25	MG/KG	0.49	0.25		075SD-0003-0001-SD	0.25	0.5	0.25	U	N/A	Yes
075SD-0002-0001-SD	PETN	0.25	MG/KG	0.49	0.25		075SD-0003-0001-SD	0.25	0.5	0.25	U	N/A	Yes
075SD-0002-0001-SD	RDX	0.049	MG/KG	0.25	0.049	UJ	075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	TETRYL	0.029	MG/KG	0.25	0.049	NJ	075SD-0003-0001-SD	0.05	0.25	0.05	U	N/A	Yes
075SD-0002-0001-SD	MERCURY	0.47	MG/KG	0.15	0.05	J-	075SD-0003-0001-SD	1.1	0.16	0.054		N/A	No

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
075SD-0002-0001-SD	1,1,1-TRICHLOROETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	1,1,2,2-TETRACHLOROETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	1,1,2-TRICHLOROETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	1,1-DICHLOROETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	1,1-DICHLOROETHENE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	1,2-DIBROMOETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	1,2-DICHLOROETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	1,2-DICHLOROETHENE, total	1.5	UG/KG	15	1.5	U	075SD-0003-0001-SD	1.6	16	1.6	U	N/A	Yes
075SD-0002-0001-SD	1,2-DICHLOROPROPANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	2-BUTANONE (MEK)	3.1	UG/KG	31	3.1	U	075SD-0003-0001-SD	3.2	32	3.2	U	N/A	Yes
075SD-0002-0001-SD	2-HEXANONE	1.6	UG/KG	31	1.5	J	075SD-0003-0001-SD	1.6	32	1.6	U	N/A	Yes
075SD-0002-0001-SD	4-METHYL-2-PENTANONE (MIBK)	1.5	UG/KG	31	1.5	U	075SD-0003-0001-SD	1.6	32	1.6	J	N/A	Yes
075SD-0002-0001-SD	ACETONE	9.6	UG/KG	31	9.6	U	075SD-0003-0001-SD	10	32	10	U	N/A	Yes
075SD-0002-0001-SD	BENZENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	BROMOCHLOROMETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	BROMODICHLOROMETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	BROMOFORM	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	BROMOMETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	CARBON DISULFIDE	1.3	UG/KG	7.6	0.76	J	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	CARBON TETRACHLORIDE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	CHLOROBENZENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	CHLOROETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	CHLOROFORM	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	CHLOROMETHANE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	CIS-1,3-DICHLOROPROPENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	DIBROMOCHLOROMETHANE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	ETHYLBENZENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	Methyl tert-butyl ether	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	METHYLENE CHLORIDE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	4.1	8	1.6	J	N/A	Yes
075SD-0002-0001-SD	STYRENE	7.6	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	J	N/A	Yes
075SD-0002-0001-SD	TETRACHLOROETHYLENE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	TOLUENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	TRANS-1,3-DICHLOROPROPENE	1.5	UG/KG	7.6	1.5	U	075SD-0003-0001-SD	1.6	8	1.6	U	N/A	Yes
075SD-0002-0001-SD	TRICHLOROETHYLENE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
075SD-0002-0001-SD	VINYL CHLORIDE	0.76	UG/KG	7.6	0.76	U	075SD-0003-0001-SD	0.8	8	0.8	U	N/A	Yes
075SD-0002-0001-SD	XYLENES, TOTAL	2.3	UG/KG	15	2.3	U	075SD-0003-0001-SD	2.4	16	2.4	U	N/A	Yes
075SD-0002-0001-SD	1,2,4-TRICHLOROBENZENE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	1,2-DICHLOROBENZENE	140	UG/KG	80	43		075SD-0003-0001-SD	42	78	42	J	N/A	No
075SD-0002-0001-SD	1,3-DICHLOROBENZENE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	1,4-DICHLOROBENZENE	50	UG/KG	80	43	J	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	2,4,5-TRICHLOROPHENOL	43	UG/KG	240	43	U	075SD-0003-0001-SD	42	240	42	U	N/A	Yes
075SD-0002-0001-SD	2,4,6-TRICHLOROPHENOL	130	UG/KG	240	130	U	075SD-0003-0001-SD	130	240	130	U	N/A	Yes
075SD-0002-0001-SD	2,4-DICHLOROPHENOL	43	UG/KG	240	43	U	075SD-0003-0001-SD	42	240	42	U	N/A	Yes
075SD-0002-0001-SD	2,4-DIMETHYLPHENOL	130	UG/KG	240	130	U	075SD-0003-0001-SD	130	240	130	U	N/A	Yes
075SD-0002-0001-SD	2,4-DINITROPHENOL	130	UG/KG	530	130	UJ	075SD-0003-0001-SD	130	520	130	U	N/A	Yes
075SD-0002-0001-SD	2,4-DINITROTOLUENE	43	UG/KG	320	43	R	075SD-0003-0001-SD	42	310	42	U	N/A	N/A
075SD-0002-0001-SD	2,6-DINITROTOLUENE	43	UG/KG	320	43	R	075SD-0003-0001-SD	42	310	42	U	N/A	N/A
075SD-0002-0001-SD	2-CHLORONAPHTHALENE	5.3	UG/KG	80	5.3	U	075SD-0003-0001-SD	5.2	78	5.2	U	N/A	Yes
075SD-0002-0001-SD	2-CHLOROPHENOL	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	2-METHYLNAPHTHALENE	18	UG/KG	11	5.3		075SD-0003-0001-SD	15	10	5.2		N/A	Yes
075SD-0002-0001-SD	2-METHYLPHENOL	130	UG/KG	320	130	U	075SD-0003-0001-SD	130	310	130	U	N/A	Yes
075SD-0002-0001-SD	2-NITROANILINE	43	UG/KG	320	43	U	075SD-0003-0001-SD	42	310	42	U	N/A	Yes
075SD-0002-0001-SD	2-NITROPHENOL	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	3 & 4 Methylphenol	130	UG/KG	640	130	U	075SD-0003-0001-SD	130	630	130	U	N/A	Yes
075SD-0002-0001-SD	3,3'-DICHLOROBENZIDINE	130	UG/KG	160	130	R	075SD-0003-0001-SD	130	160	130	U	N/A	N/A
075SD-0002-0001-SD	3-NITROANILINE	130	UG/KG	320	130	U	075SD-0003-0001-SD	130	310	130	U	N/A	Yes
075SD-0002-0001-SD	4,6-DINITRO-2-METHYLPHENOL	130	UG/KG	240	130	UJ	075SD-0003-0001-SD	130	240	130	U	N/A	Yes
075SD-0002-0001-SD	4-BROMOPHENYL PHENYL ETHER	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	4-CHLORO-3-METHYLPHENOL	43	UG/KG	240	43	U	075SD-0003-0001-SD	42	240	42	U	N/A	Yes
075SD-0002-0001-SD	4-CHLOROANILINE	43	UG/KG	240	43	U	075SD-0003-0001-SD	42	240	42	U	N/A	Yes
075SD-0002-0001-SD	4-CHLOROPHENYL PHENYL ETHER	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	4-NITROANILINE	43	UG/KG	320	43	UJ	075SD-0003-0001-SD	42	310	42	U	N/A	Yes
075SD-0002-0001-SD	4-NITROPHENOL	130	UG/KG	530	130	U	075SD-0003-0001-SD	130	520	130	U	N/A	Yes
075SD-0002-0001-SD	ACENAPHTHENE	19	UG/KG	11	5.3		075SD-0003-0001-SD	14	10	5.2		N/A	Yes
075SD-0002-0001-SD	ACENAPHTHYLENE	13	UG/KG	11	5.3		075SD-0003-0001-SD	12	10	5.2		N/A	Yes
075SD-0002-0001-SD	ANTHRACENE	57	UG/KG	11	5.3		075SD-0003-0001-SD	33	10	5.2		N/A	No
075SD-0002-0001-SD	Benzo[a]anthracene	230	UG/KG	11	5.3		075SD-0003-0001-SD	150	10	5.2		42	N/A
075SD-0002-0001-SD	Benzo[a]pyrene	250	UG/KG	11	5.3		075SD-0003-0001-SD	160	10	5.2		44	N/A

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
075SD-0002-0001-SD	Benzo[b]fluoranthene	360	UG/KG	11	5.3		075SD-0003-0001-SD	210	10	5.2		53	N/A
075SD-0002-0001-SD	Benzo[g,h,i]perylene	120	UG/KG	11	5.3	J	075SD-0003-0001-SD	80	10	5.2		40	N/A
075SD-0002-0001-SD	Benzo[k]fluoranthene	140	UG/KG	11	5.3		075SD-0003-0001-SD	100	10	5.2		33	N/A
075SD-0002-0001-SD	BENZOIC ACID	530	UG/KG	1100	530	U	075SD-0003-0001-SD	520	1000	520	U	N/A	Yes
075SD-0002-0001-SD	BENZYL ALCOHOL	43	UG/KG	530	43	U	075SD-0003-0001-SD	34	520	42	J	N/A	Yes
075SD-0002-0001-SD	BENZYL BUTYL PHTHALATE	43	UG/KG	80	43	U	075SD-0003-0001-SD	41	78	42	J	N/A	Yes
075SD-0002-0001-SD	BIS(2-CHLOROETHOXY) METHANE	43	UG/KG	160	43	U	075SD-0003-0001-SD	42	160	42	U	N/A	Yes
075SD-0002-0001-SD	BIS(2-CHLOROETHYL) ETHER	5.3	UG/KG	160	5.3	U	075SD-0003-0001-SD	5.2	160	5.2	U	N/A	Yes
075SD-0002-0001-SD	BIS(2-ETHYLHEXYL) PHTHALATE	43	UG/KG	80	43	UJ	075SD-0003-0001-SD	41	78	42	J	N/A	Yes
075SD-0002-0001-SD	CARBAZOLE	44	UG/KG	80	43	J	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	CHRYSENE	270	UG/KG	11	5.3		075SD-0003-0001-SD	160	10	5.2		51	N/A
075SD-0002-0001-SD	DIBENZ(A,H)ANTHRACENE	5.3	UG/KG	11	5.3	UJ	075SD-0003-0001-SD	5.2	10	5.2	U	N/A	Yes
075SD-0002-0001-SD	DIBENZOFURAN	17	UG/KG	80	5.3	J	075SD-0003-0001-SD	15	78	5.2	J	N/A	Yes
075SD-0002-0001-SD	DIETHYL PHTHALATE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	DIMETHYL PHTHALATE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	DI-N-BUTYL PHTHALATE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	DI-N-OCTYLPHTHALATE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	FLUORANTHENE	510	UG/KG	11	5.3		075SD-0003-0001-SD	310	10	5.2		49	N/A
075SD-0002-0001-SD	FLUORENE	5.3	UG/KG	11	5.3	U	075SD-0003-0001-SD	17	10	5.2		N/A	No
075SD-0002-0001-SD	HEXACHLOROBENZENE	5.3	UG/KG	11	5.3	U	075SD-0003-0001-SD	5.2	10	5.2	U	N/A	Yes
075SD-0002-0001-SD	HEXACHLOROBUTADIENE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	HEXACHLOROCYCLOPENTADIENE	43	UG/KG	530	43	U	075SD-0003-0001-SD	42	520	42	U	N/A	Yes
075SD-0002-0001-SD	HEXACHLOROETHANE	43	UG/KG	80	43	UJ	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	Indeno[1,2,3-cd]pyrene	120	UG/KG	11	5.3	J	075SD-0003-0001-SD	77	10	5.2		44	N/A
075SD-0002-0001-SD	ISOPHORONE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	NAPHTHALENE	18	UG/KG	11	5.3		075SD-0003-0001-SD	12	10	5.2		N/A	Yes
075SD-0002-0001-SD	NITROBENZENE	5.3	UG/KG	160	5.3	U	075SD-0003-0001-SD	5.2	160	5.2	U	N/A	Yes
075SD-0002-0001-SD	N-NITROSODI-N-PROPYLAMINE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	N-NITROSODIPHENYLAMINE	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	PENTACHLOROPHENOL	130	UG/KG	240	130	U	075SD-0003-0001-SD	130	240	130	U	N/A	Yes
075SD-0002-0001-SD	PHENANTHRENE	260	UG/KG	11	5.3		075SD-0003-0001-SD	140	10	5.2		60	N/A
075SD-0002-0001-SD	PHENOL	43	UG/KG	80	43	U	075SD-0003-0001-SD	42	78	42	U	N/A	Yes
075SD-0002-0001-SD	PYRENE	390	UG/KG	11	5.3		075SD-0003-0001-SD	240	10	5.2		48	N/A
075SD-0002-0001-SD	NITROGUANIDINE	0.039	MG/KG	0.24	0.039	UJ	075SD-0003-0001-SD	0.039	0.25	0.039	U	N/A	Yes
075TR-0002-0001-SO	MERCURY	0.046	MG/KG	0.14	0.046	U	075TR-0003-0001-SO	0.046	0.14	0.046	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
077SS-0001M-0001-SO	NITROCELLULOSE	17	MG/KG	45	17	UJ	077SS-0002M-0001-SO	18	49	18	U	N/A	Yes
077SS-0001M-0001-SO	ALUMINUM	8200	MG/KG	2.5	0.5		077SS-0002M-0001-SO	7700	2.7	0.54		2	N/A
077SS-0001M-0001-SO	ANTIMONY	0.2	MG/KG	0.17	0.083	J	077SS-0002M-0001-SO	0.17	0.18	0.089	J	N/A	Yes
077SS-0001M-0001-SO	ARSENIC	12	MG/KG	0.08	0.041	J-	077SS-0002M-0001-SO	14	0.09	0.045		4	N/A
077SS-0001M-0001-SO	BARIUM	49	MG/KG	0.83	0.017	J	077SS-0002M-0001-SO	48	0.89	0.018		1	N/A
077SS-0001M-0001-SO	BERYLLIUM	0.46	MG/KG	0.08	0.008		077SS-0002M-0001-SO	0.42	0.09	0.009		N/A	Yes
077SS-0001M-0001-SO	CADMIUM	0.19	MG/KG	0.08	0.025	J	077SS-0002M-0001-SO	0.2	0.09	0.027		N/A	Yes
077SS-0001M-0001-SO	CALCIUM	4500	MG/KG	8.3	2.1	J	077SS-0002M-0001-SO	5200	8.9	2.2		4	N/A
077SS-0001M-0001-SO	CHROMIUM	18	MG/KG	0.17	0.033		077SS-0002M-0001-SO	15	0.18	0.036		5	N/A
077SS-0001M-0001-SO	COBALT	7.4	MG/KG	0.04	0.008		077SS-0002M-0001-SO	7.7	0.05	0.009		1	N/A
077SS-0001M-0001-SO	COPPER	16	MG/KG	0.17	0.05	J	077SS-0002M-0001-SO	17	0.18	0.054		2	N/A
077SS-0001M-0001-SO	IRON	22000	MG/KG	4.1	1.7		077SS-0002M-0001-SO	20000	4.5	1.8		2	N/A
077SS-0001M-0001-SO	LEAD	22	MG/KG	0.08	0.025		077SS-0002M-0001-SO	21	0.09	0.027		1	N/A
077SS-0001M-0001-SO	MAGNESIUM	2800	MG/KG	8.3	1.7	J+	077SS-0002M-0001-SO	2700	8.9	1.8		1	N/A
077SS-0001M-0001-SO	MANGANESE	540	MG/KG	0.41	0.025		077SS-0002M-0001-SO	520	0.45	0.027		1	N/A
077SS-0001M-0001-SO	NICKEL	24	MG/KG	0.08	0.025		077SS-0002M-0001-SO	28	0.09	0.027		4	N/A
077SS-0001M-0001-SO	POTASSIUM	830	MG/KG	8.3	5	J+	077SS-0002M-0001-SO	740	8.9	5.4		3	N/A
077SS-0001M-0001-SO	SELENIUM	0.56	MG/KG	0.41	0.083	J-	077SS-0002M-0001-SO	0.53	0.45	0.089		N/A	Yes
077SS-0001M-0001-SO	SILVER	0.027	MG/KG	0.08	0.025	J+	077SS-0002M-0001-SO	0.03	0.09	0.027	J	N/A	Yes
077SS-0001M-0001-SO	SODIUM	29	MG/KG	8.3	4.1	UJ	077SS-0002M-0001-SO	32	8.9	4.5		N/A	Yes
077SS-0001M-0001-SO	THALLIUM	0.13	MG/KG	0.08	0.017		077SS-0002M-0001-SO	0.14	0.09	0.018		N/A	Yes
077SS-0001M-0001-SO	VANADIUM	16	MG/KG	0.08	0.05		077SS-0002M-0001-SO	15	0.09	0.054		2	N/A
077SS-0001M-0001-SO	ZINC	63	MG/KG	0.41	0.17		077SS-0002M-0001-SO	62	0.45	0.18		0	N/A
077SS-0001M-0001-SO	ALDRIN	13	UG/KG	40	13	U	077SS-0002M-0001-SO	13	39	13	U	N/A	Yes
077SS-0001M-0001-SO	ALPHA BHC	13	UG/KG	25	13	U	077SS-0002M-0001-SO	13	25	13	U	N/A	Yes
077SS-0001M-0001-SO	ALPHA ENDOSULFAN	6.7	UG/KG	17	6.7	U	077SS-0002M-0001-SO	6.6	17	6.6	U	N/A	Yes
077SS-0001M-0001-SO	ALPHA-CHLORDANE	13	UG/KG	30	13	U	077SS-0002M-0001-SO	13	30	13	U	N/A	Yes
077SS-0001M-0001-SO	BETA BHC	13	UG/KG	35	13	U	077SS-0002M-0001-SO	13	34	13	U	N/A	Yes
077SS-0001M-0001-SO	BETA ENDOSULFAN	13	UG/KG	13	17	U	077SS-0002M-0001-SO	13	25	13	U	N/A	Yes
077SS-0001M-0001-SO	DELTA BHC	13	UG/KG	40	13	U	077SS-0002M-0001-SO	13	39	13	U	N/A	Yes
077SS-0001M-0001-SO	DIELDRIN	6.7	UG/KG	17	6.7	U	077SS-0002M-0001-SO	6.6	17	6.6	U	N/A	Yes
077SS-0001M-0001-SO	ENDOSULFAN SULFATE	13	UG/KG	30	13	U	077SS-0002M-0001-SO	13	30	13	U	N/A	Yes
077SS-0001M-0001-SO	ENDRIN	6.7	UG/KG	17	6.7	U	077SS-0002M-0001-SO	6.6	17	6.6	U	N/A	Yes
077SS-0001M-0001-SO	ENDRIN ALDEHYDE	13	UG/KG	30	13	U	077SS-0002M-0001-SO	13	30	13	U	N/A	Yes
077SS-0001M-0001-SO	ENDRIN KETONE	6.7	UG/KG	20	6.7	U	077SS-0002M-0001-SO	6.6	20	6.6	U	N/A	Yes
077SS-0001M-0001-SO	GAMMA BHC (LINDANE)	13	UG/KG	25	13	U	077SS-0002M-0001-SO	13	25	13	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
077SS-0001M-0001-SO	GAMMA-CHLORDANE	6.7	UG/KG	17	6.7	U	077SS-0002M-0001-SO	6.6	17	6.6	U	N/A	Yes
077SS-0001M-0001-SO	HEPTACHLOR	13	UG/KG	35	13	U	077SS-0002M-0001-SO	13	34	13	U	N/A	Yes
077SS-0001M-0001-SO	HEPTACHLOR EPOXIDE	31.7	UG/KG	25	13	U	077SS-0002M-0001-SO	13	25	13	U	N/A	Yes
077SS-0001M-0001-SO	METHOXYCHLOR	33	UG/KG	50	33	U	077SS-0002M-0001-SO	32	49	32	U	N/A	Yes
077SS-0001M-0001-SO	P,P'-DDD	6.7	UG/KG	20	6.7	U	077SS-0002M-0001-SO	6.6	20	6.6	U	N/A	Yes
077SS-0001M-0001-SO	P,P'-DDE	5.2	UG/KG	17	6.7	J	077SS-0002M-0001-SO	8.6	17	6.6		N/A	Yes
077SS-0001M-0001-SO	P,P'-DDT	6.7	UG/KG	20	6.7	U	077SS-0002M-0001-SO	6.6	20	6.6	U	N/A	Yes
077SS-0001M-0001-SO	TOXAPHENE	200	UG/KG	670	200	UJ	077SS-0002M-0001-SO	200	660	200	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1016	25	UG/KG	65	25	U	077SS-0002M-0001-SO	24	64	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1221	25	UG/KG	50	25	U	077SS-0002M-0001-SO	24	49	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1232	25	UG/KG	45	25	U	077SS-0002M-0001-SO	24	44	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1242	25	UG/KG	40	25	U	077SS-0002M-0001-SO	24	39	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1248	25	UG/KG	55	25	U	077SS-0002M-0001-SO	24	54	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1254	25	UG/KG	55	25	U	077SS-0002M-0001-SO	24	54	24	U	N/A	Yes
077SS-0001M-0001-SO	Aroclor-1260	25	UG/KG	55	25	U	077SS-0002M-0001-SO	24	54	24	U	N/A	Yes
077SS-0001M-0001-SO	1,3,5-TRINITROBENZENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	1,3-DINITROBENZENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	2,4,6-TRINITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	2,4-DINITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	2,6-DINITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	2-AMINO-4,6-DINITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	2-NITROTOLUENE	0.05	MG/KG	0.25	0.05	UJ	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	3-NITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	4-AMINO-2,6-DINITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	4-NITROTOLUENE	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	HMX	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	NITROBENZENE	0.05	MG/KG	0.25	0.05	R	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	NITROGLYCERIN	0.25	MG/KG	0.5	0.25	U	077SS-0002M-0001-SO	0.083	0.5	0.25	J	N/A	Yes
077SS-0001M-0001-SO	PETN	0.25	MG/KG	0.5	0.25	U	077SS-0002M-0001-SO	0.25	0.5	0.25	U	N/A	Yes
077SS-0001M-0001-SO	RDX	0.05	MG/KG	0.25	0.05	UJ	077SS-0002M-0001-SO	0.05	0.25	0.05	U	N/A	Yes
077SS-0001M-0001-SO	TETRYL	0.05	MG/KG	0.25	0.05	U	077SS-0002M-0001-SO	0.028	0.25	0.05	J	N/A	Yes
077SS-0001M-0001-SO	MERCURY	0.045	MG/KG	0.1	0.033	J	077SS-0002M-0001-SO	0.041	0.1	0.032	J	N/A	Yes
077SS-0001M-0001-SO	1,1,1-TRICHLOROETHANE	0.99	UG/KG	4.9	0.99	U	077SS-0002M-0001-SO	0.75	3.7	0.75	U	N/A	Yes
077SS-0001M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	1,1,2-TRICHLOROETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	1,1-DICHLOROETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
077SS-0001M-0001-SO	1,1-DICHLOROETHENE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	1,2-DIBROMOETHANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	1,2-DICHLOROETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	1,2-Dichloroethene, Total	1	UG/KG	10	1	U	077SS-0002M-0001-SO	0.92	9.2	0.92	U	N/A	Yes
077SS-0001M-0001-SO	1,2-DICHLOROPROPANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	2-Butanone (MEK)	2.1	UG/KG	21	2.1	U	077SS-0002M-0001-SO	1.8	18	1.8	U	N/A	Yes
077SS-0001M-0001-SO	2-HEXANONE	1	UG/KG	21	1	U	077SS-0002M-0001-SO	0.92	18	0.92	J	N/A	Yes
077SS-0001M-0001-SO	4-Methyl-2-pentanone (MIBK)	1	UG/KG	21	1	U	077SS-0002M-0001-SO	0.9	18	0.92	J	N/A	Yes
077SS-0001M-0001-SO	ACETONE	6.2	UG/KG	20	6.2	U	077SS-0002M-0001-SO	4.7	15	4.7	U	N/A	Yes
077SS-0001M-0001-SO	BENZENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	BROMOCHLOROMETHANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	BROMODICHLOROMETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	BROMOFORM	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	BROMOMETHANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	CARBON DISULFIDE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	CARBON TETRACHLORIDE	0.49	UG/KG	4.9	0.49	U	077SS-0002M-0001-SO	0.37	3.7	0.37	U	N/A	Yes
077SS-0001M-0001-SO	CHLOROBENZENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	CHLOROETHANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	CHLOROFORM	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	CHLOROMETHANE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	DIBROMOCHLOROMETHANE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	ETHYLBENZENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	METHYLENE CHLORIDE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	STYRENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	Methyl tert-butyl ether	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	TETRACHLOROETHYLENE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	TOLUENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	TRANS-1,3-DICHLOROPROPENE	1	UG/KG	5.1	1	U	077SS-0002M-0001-SO	0.92	4.6	0.92	U	N/A	Yes
077SS-0001M-0001-SO	TRICHLOROETHYLENE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	VINYL CHLORIDE	0.51	UG/KG	5.1	0.51	U	077SS-0002M-0001-SO	0.46	4.6	0.46	U	N/A	Yes
077SS-0001M-0001-SO	XYLENES, TOTAL	1.5	UG/KG	10	1.5	U	077SS-0002M-0001-SO	1.4	9.2	1.4	U	N/A	Yes
077SS-0001M-0001-SO	1,2,4-TRICHLOROBENZENE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	1,2-DICHLOROBENZENE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	1,3-DICHLOROBENZENE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	1,4-DICHLOROBENZENE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
077SS-0001M-0001-SO	2,4,5-TRICHLOROPHENOL	110	UG/KG	610	110	U	077SS-0002M-0001-SO	67	370	67	U	N/A	Yes
077SS-0001M-0001-SO	2,4,6-TRICHLOROPHENOL	320	UG/KG	610	320	U	077SS-0002M-0001-SO	200	370	200	U	N/A	Yes
077SS-0001M-0001-SO	2,4-DICHLOROPHENOL	110	UG/KG	610	110	U	077SS-0002M-0001-SO	67	370	67	U	N/A	Yes
077SS-0001M-0001-SO	2,4-DIMETHYLPHENOL	320	UG/KG	610	320	U	077SS-0002M-0001-SO	200	370	200	U	N/A	Yes
077SS-0001M-0001-SO	2,4-DINITROPHENOL	320	UG/KG	1300	320	U	077SS-0002M-0001-SO	200	820	200	U	N/A	Yes
077SS-0001M-0001-SO	2,4-DINITROTOLUENE	110	UG/KG	810	110	R	077SS-0002M-0001-SO	67	500	67	U	N/A	N/A
077SS-0001M-0001-SO	2,6-DINITROTOLUENE	110	UG/KG	810	110	R	077SS-0002M-0001-SO	67	500	67	U	N/A	N/A
077SS-0001M-0001-SO	2-CHLORONAPHTHALENE	13	UG/KG	200	13	U	077SS-0002M-0001-SO	8.2	120	8.2	U	N/A	Yes
077SS-0001M-0001-SO	2-CHLOROPHENOL	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	2-METHYLNAPHTHALENE	54	UG/KG	27	13		077SS-0002M-0001-SO	60	17	8.2		N/A	Yes
077SS-0001M-0001-SO	2-METHYLPHENOL	320	UG/KG	810	320	U	077SS-0002M-0001-SO	200	500	200	U	N/A	Yes
077SS-0001M-0001-SO	2-NITROANILINE	110	UG/KG	810	110	U	077SS-0002M-0001-SO	67	500	67	U	N/A	Yes
077SS-0001M-0001-SO	2-NITROPHENOL	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	3 & 4 Methylphenol	320	UG/KG	1600	320	U	077SS-0002M-0001-SO	200	1000	200	U	N/A	Yes
077SS-0001M-0001-SO	3,3'-DICHLOROBENZIDINE	320	UG/KG	410	320	UJ	077SS-0002M-0001-SO	200	250	200	U	N/A	Yes
077SS-0001M-0001-SO	3-NITROANILINE	320	UG/KG	810	320	U	077SS-0002M-0001-SO	200	500	200	U	N/A	Yes
077SS-0001M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	320	UG/KG	610	320	U	077SS-0002M-0001-SO	200	370	200	U	N/A	Yes
077SS-0001M-0001-SO	4-BROMOPHENYL PHENYL ETHER	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	4-CHLORO-3-METHYLPHENOL	110	UG/KG	610	110	U	077SS-0002M-0001-SO	67	370	67	U	N/A	Yes
077SS-0001M-0001-SO	4-CHLOROANILINE	110	UG/KG	610	110	U	077SS-0002M-0001-SO	67	370	67	U	N/A	Yes
077SS-0001M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	4-NITROANILINE	110	UG/KG	810	110	U	077SS-0002M-0001-SO	67	500	67	U	N/A	Yes
077SS-0001M-0001-SO	4-NITROPHENOL	320	UG/KG	1300	320	U	077SS-0002M-0001-SO	200	820	200	U	N/A	Yes
077SS-0001M-0001-SO	ACENAPHTHENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	8.2	17	8.2	U	N/A	Yes
077SS-0001M-0001-SO	ACENAPHTHYLENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	8.2	17	8.2	U	N/A	Yes
077SS-0001M-0001-SO	ANTHRACENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	11	17	8.2	J	N/A	Yes
077SS-0001M-0001-SO	Benzo[a]anthracene	57	UG/KG	27	13		077SS-0002M-0001-SO	48	17	8.2		N/A	Yes
077SS-0001M-0001-SO	Benzo[a]pyrene	88	UG/KG	27	13		077SS-0002M-0001-SO	65	17	8.2		N/A	Yes
077SS-0001M-0001-SO	Benzo[b]fluoranthene	91	UG/KG	27	13		077SS-0002M-0001-SO	81	17	8.2		N/A	Yes
077SS-0001M-0001-SO	Benzo[g,h,i]perylene	47	UG/KG	27	13		077SS-0002M-0001-SO	37	17	8.2		N/A	Yes
077SS-0001M-0001-SO	Benzo[k]fluoranthene	18	UG/KG	27	13	J	077SS-0002M-0001-SO	17	17	8.2		N/A	Yes
077SS-0001M-0001-SO	BENZOIC ACID	1400	UG/KG	2700	1400	R	077SS-0002M-0001-SO	830	1600	830	U	N/A	N/A
077SS-0001M-0001-SO	BENZYL ALCOHOL	110	UG/KG	1300	110	U	077SS-0002M-0001-SO	67	820	67	U	N/A	Yes
077SS-0001M-0001-SO	BENZYL BUTYL PHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	110	UG/KG	410	110	U	077SS-0002M-0001-SO	67	250	67	U	N/A	Yes
077SS-0001M-0001-SO	BIS(2-CHLOROETHYL) ETHER	13	UG/KG	410	13	U	077SS-0002M-0001-SO	8.2	250	8.2	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
077SS-0001M-0001-SO	BIS(2-CHLOROISOPROPYL) ETHER	110	UG/KG	410	110	U	077SS-0002M-0001-SO	67	250	67	U	N/A	Yes
077SS-0001M-0001-SO	BIS(2-ETHYLHEXYL) PHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	J	N/A	Yes
077SS-0001M-0001-SO	CARBAZOLE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	CHRYSENE	66	UG/KG	27	13		077SS-0002M-0001-SO	57	17	8.2		N/A	Yes
077SS-0001M-0001-SO	DIBENZ(A,H)ANTHRACENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	8.2	17	8.2	U	N/A	Yes
077SS-0001M-0001-SO	DIBENZOFURAN	14	UG/KG	200	13	J	077SS-0002M-0001-SO	14	120	8.2		N/A	Yes
077SS-0001M-0001-SO	DIETHYL PHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	DIMETHYL PHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	DI-N-BUTYL PHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	DI-N-OCTYLPHTHALATE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	FLUORANTHENE	120	UG/KG	27	13		077SS-0002M-0001-SO	99	17	8.2		N/A	Yes
077SS-0001M-0001-SO	FLUORENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	9.6	17	8.2		N/A	Yes
077SS-0001M-0001-SO	HEXACHLOROBENZENE	13	UG/KG	27	13	U	077SS-0002M-0001-SO	8.2	17	8.2	U	N/A	Yes
077SS-0001M-0001-SO	HEXACHLOROBUTADIENE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	HEXACHLOROCYCLOPENTADIENE	110	UG/KG	1300	110	U	077SS-0002M-0001-SO	67	820	67	U	N/A	Yes
077SS-0001M-0001-SO	HEXACHLOROETHANE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	Indeno[1,2,3-cd]pyrene	55	UG/KG	27	13		077SS-0002M-0001-SO	44	17	8.2		N/A	Yes
077SS-0001M-0001-SO	ISOPHORONE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	NAPHTHALENE	44	UG/KG	27	13		077SS-0002M-0001-SO	54	17	8.2		N/A	Yes
077SS-0001M-0001-SO	NITROBENZENE	13	UG/KG	410	13	U	077SS-0002M-0001-SO	8.2	250	8.2	U	N/A	Yes
077SS-0001M-0001-SO	N-NITROSODI-N-PROPYLAMINE	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	N-NITROSODIPHENYLAMINE	110	UG/KG	200	110	R	077SS-0002M-0001-SO	67	120	67	U	N/A	N/A
077SS-0001M-0001-SO	PENTACHLOROPHENOL	320	UG/KG	610	320	U	077SS-0002M-0001-SO	200	370	200	U	N/A	Yes
077SS-0001M-0001-SO	PHENANTHRENE	77	UG/KG	27	13		077SS-0002M-0001-SO	64	17	8.2		N/A	Yes
077SS-0001M-0001-SO	PHENOL	110	UG/KG	200	110	U	077SS-0002M-0001-SO	67	120	67	U	N/A	Yes
077SS-0001M-0001-SO	PYRENE	95	UG/KG	27	13		077SS-0002M-0001-SO	74	17	8.2		N/A	Yes
077SS-0001M-0001-SO	NITROGUANIDINE	0.04	MG/KG	0.25	0.04	U	077SS-0002M-0001-SO	0.055	0.24	0.039	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
083SB-0005M-0001-SO	NITROCELLULOSE	100	mg/kg	200	100	U	083SB-0006M-0001-SO	100	200	100	U	N/A	Yes
083SB-0005M-0001-SO	1,3,5-TRINITROBENZENE	0.3	mg/kg	0.5	0.3	U	083SB-0006M-0001-SO	0.3	0.5	0.3	U	N/A	Yes
083SB-0005M-0001-SO	1,3-DINITROBENZENE	0.2	mg/kg	0.3	0.2	U	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	Yes
083SB-0005M-0001-SO	2,4,6-TRINITROTOLUENE	0.2	mg/kg	0.5	0.2	U	083SB-0006M-0001-SO	0.2	0.5	0.2	U	N/A	Yes
083SB-0005M-0001-SO	2,4-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	R	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	N/A
083SB-0005M-0001-SO	2,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	R	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	N/A
083SB-0005M-0001-SO	2-AMINO-4,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	U	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	Yes
083SB-0005M-0001-SO	2-NITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	Yes
083SB-0005M-0001-SO	3,5-DINITROANILINE	0.2	mg/kg	0.3	0.2	R	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	N/A
083SB-0005M-0001-SO	3-NITROTOLUENE	0.3	mg/kg	0.5	0.3	U	083SB-0006M-0001-SO	0.3	0.5	0.3	U	N/A	Yes
083SB-0005M-0001-SO	4-AMINO-2,6-DINITROTOLUENE	0.2	mg/kg	0.3	0.2	UJ	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	Yes
083SB-0005M-0001-SO	4-NITROTOLUENE	0.2	mg/kg	0.5	0.2	U	083SB-0006M-0001-SO	0.2	0.5	0.2	U	N/A	Yes
083SB-0005M-0001-SO	HMX	0.3	mg/kg	0.5	0.3	U	083SB-0006M-0001-SO	0.3	0.5	0.3	U	N/A	Yes
083SB-0005M-0001-SO	NITROBENZENE	0.2	mg/kg	0.5	0.2	R	083SB-0006M-0001-SO	0.2	0.5	0.2	U	N/A	N/A
083SB-0005M-0001-SO	NITROGLYCERIN	1.2	mg/kg	2	1.2	U	083SB-0006M-0001-SO	1.2	2	1.2	U	N/A	Yes
083SB-0005M-0001-SO	PETN	1.2	mg/kg	2	1.2	U	083SB-0006M-0001-SO	1.2	2	1.2	U	N/A	Yes
083SB-0005M-0001-SO	RDX	0.3	mg/kg	0.5	0.3	U	083SB-0006M-0001-SO	0.3	0.5	0.3	U	N/A	Yes
083SB-0005M-0001-SO	TETRYL	0.2	mg/kg	0.3	0.2	U	083SB-0006M-0001-SO	0.2	0.3	0.2	U	N/A	Yes
083SB-0005M-0001-SO	ALUMINUM	12500	mg/kg	1.2	0.62		083SB-0006M-0001-SO	10800	1.2	0.59		4	N/A
083SB-0005M-0001-SO	ANTIMONY	1.2	mg/kg	4.1	2.1	J-	083SB-0006M-0001-SO	1	4	2	J	N/A	Yes
083SB-0005M-0001-SO	ARSENIC	13.9	mg/kg	4.1	2.1	J-	083SB-0006M-0001-SO	12.6	4	2		N/A	Yes
083SB-0005M-0001-SO	BARIUM	78.1	mg/kg	0.26	0.13	J-	083SB-0006M-0001-SO	70.2	0.25	0.12		3	N/A
083SB-0005M-0001-SO	BERYLLIUM	0.68	mg/kg	0.21	0.062	J-	083SB-0006M-0001-SO	0.61	0.2	0.059		N/A	Yes
083SB-0005M-0001-SO	CADMIUM	0.1	mg/kg	0.21	0.1	UJ	083SB-0006M-0001-SO	0.046	0.2	0.099	J	N/A	Yes
083SB-0005M-0001-SO	CALCIUM	28900	mg/kg	7.3	3.6	J-	083SB-0006M-0001-SO	24400	6.9	3.5		4	N/A
083SB-0005M-0001-SO	CHROMIUM	18.3	mg/kg	0.73	0.36	J-	083SB-0006M-0001-SO	16.2	0.69	0.35		3	N/A
083SB-0005M-0001-SO	COBALT	11.8	mg/kg	1.2	0.62	J-	083SB-0006M-0001-SO	11	1.2	0.59		2	N/A
083SB-0005M-0001-SO	COPPER	21.3	mg/kg	2.1	1	J-	083SB-0006M-0001-SO	19.9	2	0.99		2	N/A
083SB-0005M-0001-SO	IRON	27200	mg/kg	9.3	4.7		083SB-0006M-0001-SO	23800	8.9	4.5		3	N/A
083SB-0005M-0001-SO	LEAD	11.8	mg/kg	1.3	0.65	J-	083SB-0006M-0001-SO	10.8	1.2	0.62		2	N/A
083SB-0005M-0001-SO	MAGNESIUM	7530	mg/kg	4.1	2.1	J-	083SB-0006M-0001-SO	6660	4	2		3	N/A
083SB-0005M-0001-SO	MANGANESE	428	mg/kg	0.78	0.39		083SB-0006M-0001-SO	380	0.74	0.37		3	N/A
083SB-0005M-0001-SO	NICKEL	29.2	mg/kg	0.62	0.31	J-	083SB-0006M-0001-SO	27	0.59	0.3		2	N/A
083SB-0005M-0001-SO	POTASSIUM	1300	mg/kg	68	34		083SB-0006M-0001-SO	1250	65	33		1	N/A
083SB-0005M-0001-SO	SELENIUM	0.24	mg/kg	0.41	0.24	UJ	083SB-0006M-0001-SO	0.2	0.4	0.2	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
083SB-0005M-0001-SO	SILVER	0.12	mg/kg	0.1	0.12	UJ	083SB-0006M-0001-SO	0.05	0.099	0.05	U	N/A	Yes
083SB-0005M-0001-SO	SODIUM	55.2	mg/kg	25	12		083SB-0006M-0001-SO	53.7	24	12		N/A	Yes
083SB-0005M-0001-SO	THALLIUM	0.79	mg/kg	2.5	1.2	UJ	083SB-0006M-0001-SO	0.24	0.48	0.24	U	N/A	Yes
083SB-0005M-0001-SO	VANADIUM	18.8	mg/kg	0.41	0.21	J-	083SB-0006M-0001-SO	16.7	0.4	0.2		3	N/A
083SB-0005M-0001-SO	ZINC	70.2	mg/kg	1.6	0.78	J-	083SB-0006M-0001-SO	64.1	1.5	0.74		2	N/A
083SB-0005M-0001-SO	MERCURY	0.013	mg/kg	0.009	0.005	J+	083SB-0006M-0001-SO	0.012	0.009	0.004		N/A	Yes
083SB-0005M-0001-SO	1,1,1-TRICHLOROETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,1,2,2-TETRACHLOROETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,1,2-TRICHLOROETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,1-DICHLOROETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,1-DICHLOROETHENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,2-DIBROMOETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,2-DICHLOROETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,2-Dichloroethene, Total	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	1,2-DICHLOROPROPANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	2-BUTANONE (MEK)	9	ug/kg	18	9	U	083SB-0006M-0001-SO	9.1	18	9.1	U	N/A	Yes
083SB-0005M-0001-SO	2-HEXANONE	18	ug/kg	36	18	U	083SB-0006M-0001-SO	18	36	18	U	N/A	Yes
083SB-0005M-0001-SO	4-Methyl-2-pentanone (MIBK)	9	ug/kg	18	9	U	083SB-0006M-0001-SO	9.1	18	9.1	U	N/A	Yes
083SB-0005M-0001-SO	ACETONE	9	ug/kg	18	9	U	083SB-0006M-0001-SO	9.1	18	9.1	U	N/A	Yes
083SB-0005M-0001-SO	BENZENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	BROMOCHLOROMETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	BROMODICHLOROMETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	BROMOFORM	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	BROMOMETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CARBON DISULFIDE	1.8	ug/kg	3.6	1.8	U	083SB-0006M-0001-SO	1.8	3.6	1.8	U	N/A	Yes
083SB-0005M-0001-SO	CARBON TETRACHLORIDE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CHLOROBENZENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CHLOROETHANE	0.9	ug/kg	1.8	0.9	UJ	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CHLOROFORM	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CHLOROMETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CIS-1,2-DICHLOROETHYLENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	CIS-1,3-DICHLOROPROPENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	DIBROMOCHLOROMETHANE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	ETHYLBENZENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	METHYLENE CHLORIDE	6.0	ug/kg	9	1.8	U	083SB-0006M-0001-SO	1.8	9.1	1.8	J	N/A	Yes
083SB-0005M-0001-SO	STYRENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
083SB-0005M-0001-SO	TETRACHLOROETHYLENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	TOLUENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	TRANS-1,2-DICHLOROETHENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	TRANS-1,3-DICHLOROPROPENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	TRICHLOROETHYLENE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	VINYL CHLORIDE	0.9	ug/kg	1.8	0.9	U	083SB-0006M-0001-SO	0.91	1.8	0.91	U	N/A	Yes
083SB-0005M-0001-SO	XYLENES, TOTAL	1.8	ug/kg	3.6	1.8	U	083SB-0006M-0001-SO	1.8	3.6	1.8	U	N/A	Yes
083SB-0005M-0001-SO	1,2,4-TRICHLOROBENZENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	1,2-DICHLOROBENZENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	1,3-DICHLOROBENZENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	1,4-DICHLOROBENZENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2,2'-OXYBIS(1-CHLORO)PROPANE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2,4,5-TRICHLOROPHENOL	320	ug/kg	640	320	U	083SB-0006M-0001-SO	310	620	310	U	N/A	Yes
083SB-0005M-0001-SO	2,4,6-TRICHLOROPHENOL	320	ug/kg	640	320	U	083SB-0006M-0001-SO	310	620	310	U	N/A	Yes
083SB-0005M-0001-SO	2,4-DICHLOROPHENOL	320	ug/kg	640	320	U	083SB-0006M-0001-SO	310	620	310	U	N/A	Yes
083SB-0005M-0001-SO	2,4-DIMETHYLPHENOL	320	ug/kg	640	320	U	083SB-0006M-0001-SO	310	620	310	U	N/A	Yes
083SB-0005M-0001-SO	2,4-DINITROPHENOL	320	ug/kg	1100	320	U	083SB-0006M-0001-SO	310	1000	310	U	N/A	Yes
083SB-0005M-0001-SO	2,4-DINITROTOLUENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2,6-DINITROTOLUENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2-CHLORONAPHTHALENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2-CHLOROPHENOL	640	ug/kg	2100	640	U	083SB-0006M-0001-SO	620	2100	620	U	N/A	Yes
083SB-0005M-0001-SO	2-METHYLNAPHTHALENE	1.9	ug/kg	1.6	0.85		083SB-0006M-0001-SO	2	1.5	0.82		N/A	Yes
083SB-0005M-0001-SO	2-METHYLPHENOL	640	ug/kg	2100	640	U	083SB-0006M-0001-SO	620	2100	620	U	N/A	Yes
083SB-0005M-0001-SO	2-NITROANILINE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	2-NITROPHENOL	320	ug/kg	1100	320	U	083SB-0006M-0001-SO	310	1000	310	U	N/A	Yes
083SB-0005M-0001-SO	3 & 4 Methylphenol	1100	ug/kg	3800	1100	U	083SB-0006M-0001-SO	1100	3700	1100	U	N/A	Yes
083SB-0005M-0001-SO	3,3'-DICHLOROBENZIDINE	160	ug/kg	530	160	U	083SB-0006M-0001-SO	150	520	150	U	N/A	Yes
083SB-0005M-0001-SO	3-NITROANILINE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	4,6-DINITRO-2-METHYLPHENOL	320	ug/kg	1100	320	U	083SB-0006M-0001-SO	310	1000	310	U	N/A	Yes
083SB-0005M-0001-SO	4-BROMOPHENYL PHENYL ETHER	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	4-CHLORO-3-METHYLPHENOL	640	ug/kg	2100	640	U	083SB-0006M-0001-SO	620	2100	620	U	N/A	Yes
083SB-0005M-0001-SO	4-CHLOROANILINE	64	ug/kg	210	64	U	083SB-0006M-0001-SO	62	210	62	U	N/A	Yes
083SB-0005M-0001-SO	4-CHLOROPHENYL PHENYL ETHER	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	4-NITROANILINE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	4-NITROPHENOL	640	ug/kg	2100	640	U	083SB-0006M-0001-SO	620	2100	620	U	N/A	Yes
083SB-0005M-0001-SO	ACENAPHTHENE	0.78	ug/kg	1.6	0.85	J	083SB-0006M-0001-SO	0.71	1.5	0.82	J	N/A	Yes

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
083SB-0005M-0001-SO	ACENAPHTHYLENE	0.85	ug/kg	1.6	0.85	U	083SB-0006M-0001-SO	0.82	1.5	0.82	U	N/A	Yes
083SB-0005M-0001-SO	ANTHRACENE	2.1	ug/kg	1.6	0.85		083SB-0006M-0001-SO	7.5	1.5	0.82		N/A	No
083SB-0005M-0001-SO	Benzo[a]anthracene	7.3	ug/kg	1.6	0.85		083SB-0006M-0001-SO	11	1.5	0.82		N/A	No
083SB-0005M-0001-SO	Benzo[a]pyrene	3.2	ug/kg	1.6	0.85		083SB-0006M-0001-SO	1.4	1.5	0.82	J	N/A	No
083SB-0005M-0001-SO	Benzo[b]fluoranthene	8.9	ug/kg	1.6	0.85		083SB-0006M-0001-SO	5.1	1.5	0.82		N/A	No
083SB-0005M-0001-SO	Benzo[g,h,i]perylene	0.85	ug/kg	1.6	0.85		083SB-0006M-0001-SO	3.8	1.5	0.82		N/A	No
083SB-0005M-0001-SO	Benzo[k]fluoranthene	1.9	ug/kg	1.6	0.85		083SB-0006M-0001-SO	0.98	1.5	0.82	J	N/A	Yes
083SB-0005M-0001-SO	BENZOIC ACID	1600	ug/kg	3200	1600	UJ	083SB-0006M-0001-SO	1500	3100	1500	U	N/A	Yes
083SB-0005M-0001-SO	BENZYL ALCOHOL	130	ug/kg	420	130	R	083SB-0006M-0001-SO	120	410	120	U	N/A	N/A
083SB-0005M-0001-SO	BENZYL BUTYL PHTHALATE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	BIS(2-CHLOROETHOXY) METHANE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	BIS(2-CHLOROETHYL) ETHER	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	CARBAZOLE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	CHRYSENE	8.3	ug/kg	1.6	0.85		083SB-0006M-0001-SO	8.3	1.5	0.82		0	N/A
083SB-0005M-0001-SO	DIBENZ(A,H)ANTHRACENE	1.2	ug/kg	1.6	0.85	J	083SB-0006M-0001-SO	0.75	1.5	0.82	J	N/A	Yes
083SB-0005M-0001-SO	DIBENZOFURAN	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	DIETHYL PHTHALATE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	DIMETHYL PHTHALATE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	DI-N-BUTYL PHTHALATE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	DI-N-OCTYLPHTHALATE	64	ug/kg	210	64	U	083SB-0006M-0001-SO	62	210	62	U	N/A	Yes
083SB-0005M-0001-SO	FLUORANTHENE	10	ug/kg	1.6	0.85		083SB-0006M-0001-SO	4.1	1.5	0.82		N/A	No
083SB-0005M-0001-SO	FLUORENE	0.93	ug/kg	1.6	0.85	J	083SB-0006M-0001-SO	0.74	1.5	0.82	J	N/A	Yes
083SB-0005M-0001-SO	HEXACHLOROBENZENE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	HEXACHLOROBUTADIENE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	HEXACHLOROCYCLOPENTADIENE	64	ug/kg	210	64	UJ	083SB-0006M-0001-SO	62	210	62	U	N/A	Yes
083SB-0005M-0001-SO	HEXACHLOROETHANE	64	ug/kg	130	64	U	083SB-0006M-0001-SO	62	120	62	U	N/A	Yes
083SB-0005M-0001-SO	Indeno[1,2,3-cd]pyrene	3.6	ug/kg	1.6	0.85		083SB-0006M-0001-SO	1.8	1.5	0.82		N/A	No
083SB-0005M-0001-SO	ISOPHORONE	64	ug/kg	210	64	U	083SB-0006M-0001-SO	62	210	62	U	N/A	Yes
083SB-0005M-0001-SO	NAPHTHALENE	2	ug/kg	1.6	0.85		083SB-0006M-0001-SO	2.6	1.5	0.82		N/A	Yes
083SB-0005M-0001-SO	NITROBENZENE	64	ug/kg	210	64	U	083SB-0006M-0001-SO	62	210	62	U	N/A	Yes
083SB-0005M-0001-SO	N-NITROSODI-N-PROPYLAMINE	130	ug/kg	420	130	U	083SB-0006M-0001-SO	120	410	120	U	N/A	Yes
083SB-0005M-0001-SO	N-NITROSODIPHENYLAMINE	130	ug/kg	250	130	U	083SB-0006M-0001-SO	120	250	120	U	N/A	Yes
083SB-0005M-0001-SO	PENTACHLOROPHENOL	320	ug/kg	1100	320	U	083SB-0006M-0001-SO	310	1000	310	U	N/A	Yes
083SB-0005M-0001-SO	PHENANTHRENE	11	ug/kg	1.6	0.85		083SB-0006M-0001-SO	7.7	1.5	0.82		9	N/A
083SB-0005M-0001-SO	PHENOL	320	ug/kg	640	320	U	083SB-0006M-0001-SO	310	620	310	U	N/A	Yes
083SB-0005M-0001-SO	PYRENE	8.1	ug/kg	1.6	0.85		083SB-0006M-0001-SO	3.6	1.5	0.82		N/A	No

Sample	Analyte	Result	Units	LOQ	LOD	Qual	Sample	Result	LOQ	LOD	Qual	RPD	W/In LOQ
083SB-0005M-0001-SO	NITROGUANIDINE	0.12	mg/kg	0.25	0.12	U	083SB-0006M-0001-SO	0.12	0.25	0.12	U	N/A	Yes

APPENDIX D

Validator Checklists

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

07055-0006M-0001-SO +prep -6

0705B-044M-0001-SO -3

Project Name: RVAAP CR Site 70

Laboratory: TA

Batch Number(s): _____

Sample Delivery Group: 240-17230, 18581-1

	Yes	No
1. Holding Time: Were samples analyzed within holding time?	[N]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[N]	[ ]
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[ ]	[N]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[N]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[N]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[N]	[ ]
• Was the percentage "D" for QC/MRL ≤ 30%?	[N]	[ ]
5. Initial Calibration Verification (ICV):	[N]	[ ]

	Yes	No
• Was the ICV made of a 2nd source?	N	[ ]
• Was the mid level (2nd source) recovery within 85 - 115%?		
6. Continuing Calibration Verification (CCV): {Daily calibration}		
• Was midpoint calibration standard conducted at the beginning of the day?	N	[ ]
• Was midpoint calibration standard conducted every ten samples or every twelve hours?	N	[ ]
• Was midpoint calibration standard conducted after the last sample of the day?	N	[ ]
• Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)?	N	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	N	[ ]
• Were all identified hits, above the initial calibration curve, diluted and reanalyzed? N/A	[ ]	[ ]
• Were all identified hits confirmed on a second column?	N	[ ]
• Was RPD of target analyte confirmation ≤ 40? N/A	[ ]	[ ]
• Was there a shoulder on the 2,4,6-TNT peak? N/A	[ ]	[ ]
If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? If the answer is "No", then check for tetryl decomposition, and qualify hits with **"J"** accordingly.	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	N	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	N	[ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits?	[ ]	[N]
Were the RPDs within control limits?		
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[N]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks Date: 3/12/13

Name: Patti Meeks

MS/D 0006M for Nitroguanidine w/in lab limits 72-121%
+ EX 4-amino ↑ 124/135% 80-125%
~~NG~~ NG ↓ 63/62 lab limits 76-116%
~~tetryl~~ ↓ ~~43/46~~ w/in QSM

~~044M for nitroguanidine - OK~~
~~EX - OK~~

8330B 1° ICAL RDX %RSD 20%
2NT 16%
} 006M + 044M

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

~~0835B-0005m-0001-~~
0715B-0017m-0001-50

Project Name: RVAAP on Site 71

Laboratory: CT

Batch Number(s): _____

Sample Delivery Group: 899236

	Yes	No	
1. Holding Time: Were samples analyzed within holding time?	[Y]	[ ]	
2. Initial Calibration:			
• Did the initial calibration consist of five standards?	[Y]	[ ]	
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[N]	[ ]	
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[N]	[ ]	
• Was the manual integration necessary?	[N]	[ ]	
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**			
3. QCMDL:			
• Was MDL Check performed?	[Y]	[ ]	all detected
4. QCMRL:			
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[Y]	[ ]	
• Was the percentage "D" for QC/MRL ≤ 30%?	[ ]	[N]	
5. Initial Calibration Verification (ICV):	[N]	[ ]	

	Yes	No
• Was the ICV made of a 2nd source?	[ ]	[ ]
• Was the mid level (2nd source) recovery within 85 - 115%?		
6. Continuing Calibration Verification (CCV): {Daily calibration}		
• Was midpoint calibration standard conducted at the beginning of the day?	[ ]	[ ]
• Was midpoint calibration standard conducted every ten samples or every twelve hours?	[ ]	[ ]
• Was midpoint calibration standard conducted after the last sample of the day?	[ ]	[ ]
• Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)?	[ ]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[ ] no detects	[ ]
• Were all identified hits, above the initial calibration curve, diluted and reanalyzed?	[ ]	[ ]
• Were all identified hits confirmed on a second column?	[ ]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[ ]	[ ]
• Was there a shoulder on the 2,4,6-TNT peak?	[ ]	[ ]
If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? If the answer is "No", then check for tetryl decomposition, and qualify hits with **"J"** accordingly.	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[ ]	[ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits? none	[ ]	[ ]
Were the RPDs within control limits?		
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[N]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks Date: 4/7/14

Name: Patti Meeks

MRL 8/27 9:49
4-amino 68%/60% (8/27 19:36)
2-NT 57%

3,5 DNA not usual analyte
MDL 0.044

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

0725B-6014-0001

Project Name: RVAAP GR Site 72

Laboratory: TA - N Canton

Batch Number(s): _____

Sample Delivery Group: 240+8297

	Yes	No
1. Holding Time: Were samples analyzed within holding time?	[N]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[N]	[ ]
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[ ]	[N]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[N]	[ ]
• Was the manual integration necessary?	[N]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[N]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[N]	[ ]
• Was the percentage "D" for QC/MRL ≤ 30%?	[NA]	[N]
5. Initial Calibration Verification (ICV):	[N]	[ ]

- Was the ICV made of a 2nd source? [ ] [ ]

- Was the mid level (2nd source) recovery within 85 - 115%?

6. Continuing Calibration Verification (CCV):
{Daily calibration}
   - Was midpoint calibration standard conducted at the beginning of the day? [ ] [ ]

   - Was midpoint calibration standard conducted every ten samples or every twelve hours? [ ] [ ]

   - Was midpoint calibration standard conducted after the last sample of the day? [ ] [ ]

   - Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)? [ ] [ ]

7. Sample Analysis:
   - Was the RRT of an identified component within the retention time window created as SW-846 requires? [ ] [ ] N/A

   - Were all identified hits, above the initial calibration curve, diluted and reanalyzed? [ ] [ ]

   - Were all identified hits confirmed on a second column? [ ] [ ]

   - Was RPD of target analyte confirmation ≤ 40? [ ] [ ]

   - Was there a shoulder on the 2,4,6-TNT peak? [ ] [ ]

   If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? [ ] [ ]
   If the answer is "No", then check for tetryl decomposition, and qualify hits with "**J**" accordingly.

8. Sample Quality Control:
   - Method Blanks: Were target analytes ≤ 1/2 MRL? [ ] [ ]

   - LCS: Were the percent recoveries for LCS within the limits? [ ] [ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits? none	[ ]	[ ]
Were the RPDs within control limits? ↓		
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[-]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks Date: 3/24/14

Name: Patti Meeks

8330 1° %RSD
20% RDX
16% 2-NT

Nitrocell
ICV 82% but ND

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

67550-0002-0001-SD

Project Name: RVAAP CR Site 75

Laboratory: TA N Canton

Batch Number(s): _____

Sample Delivery Group: 240-17467-1

	Yes	No
1. Holding Time: Were samples analyzed within holding time?	[X]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[X]	[ ]
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[ ]	[X]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[X]	[ ]
• Was the manual integration necessary?	[X]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[X]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[X]	[ ]
• Was the percentage "D" for QC/MRL ≤ 30%?	[X]	[ ]
5. Initial Calibration Verification (ICV):	[X]	[ ]

	Yes	No
• Was the ICV made of a 2nd source?	[N]	[ ]
• Was the mid level (2nd source) recovery within 85 - 115%?		
6. Continuing Calibration Verification (CCV): {Daily calibration}		
• Was midpoint calibration standard conducted at the beginning of the day?	[N]	[ ]
• Was midpoint calibration standard conducted every ten samples or every twelve hours?	[N]	[ ]
• Was midpoint calibration standard conducted after the last sample of the day?	[N]	[ ]
• Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)?	[N]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[N]	[ ]
• Were all identified hits, above the initial calibration curve, diluted and reanalyzed?	[N]	[ ]
• Were all identified hits confirmed on a second column?	[N]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[ ]	[N]
• Was there a shoulder on the 2,4,6-TNT peak?	[ ]	[N]
If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? If the answer is "No", then check for tetryl decomposition, and qualify hits with **"J"** accordingly.	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[N]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[N]	[ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits? Were the RPDs within control limits?	[ ]	[N]
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[ ]	[N]

↑ but w/ NDs

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks Date: 3/24/14

Name: Patti Meeks

Nitroguan MS/D
56/58% limits 72-121% "UJ"
EX MSD
~~Hmx 79/78%~~ ok NG limits 76-116%
Ex conf surr 310% used for 246 + NB
Tetryl intercdun 105%
1° ICAL %RSD RDX = 20%
2-NT = 16%

NC ICV
187%
but ND
MS/D w/in 34-115

No custody seals
Temps OK
overwritten, lined out, some initialed, none dated

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

07755-0001m-0001-SO

Project Name: RVAAP SR Site 77

Laboratory: TA-N Canton

Batch Number(s): _____

Sample Delivery Group: 240-17525

	Yes	No
1. Holding Time: Were samples analyzed within holding time?	[Y]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[Y]	[ ]
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[ ]	[N]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[N]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[ ]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[Y]	[ ]
• Was the percentage "D" for QC/MRL ≤ 30%?	[Y]	[ ]
5. Initial Calibration Verification (ICV):	[Y]	[ ]

	Yes	No
• Was the ICV made of a 2nd source?	[N]	[ ]
• Was the mid level (2nd source) recovery within 85 - 115%?		
6. Continuing Calibration Verification (CCV): {Daily calibration}		
• Was midpoint calibration standard conducted at the beginning of the day?	[N]	[ ]
• Was midpoint calibration standard conducted every ten samples or every twelve hours?	[N]	[ ]
• Was midpoint calibration standard conducted after the last sample of the day?	[N]	[ ]
• Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)?	[N]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires? N/A	[ ]	[ ]
• Were all identified hits, above the initial calibration curve, diluted and reanalyzed?	[ ]	[ ]
• Were all identified hits confirmed on a second column?	[ ]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[ ]	[ ]
• Was there a shoulder on the 2,4,6-TNT peak?	[ ]	[ ]
If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? If the answer is "No", then check for tetryl decomposition, and qualify hits with **"J"** accordingly.	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[N]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[N]	[ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits?	[ ]	[ ]
Were the RPDs within control limits?		
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[ ]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meek Date: 3/26/14

Name: Patti Meek

MS/D on 0001M

%RSD RDX (20%), 2-NT (16%)

Custody Seals used
0002m - no VO on COC - listed on sep

some T ↓ VERSION 5 June 2002
overwritten
no init or date

U.S. Army Corps of Engineers Louisville District - LCG

NITROAROMATICS & NITRAMINE DATA ANALYSIS (EXPLOSIVE RESIDUES) CHECKLIST

083 SB-0005m-0001

Project Name: RVAAP CR Site 83

Laboratory: CT

Batch Number(s): _____

Sample Delivery Group: 9921

	Yes	No
1. Holding Time: Were samples analyzed within holding time?	[X]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[X]	[ ]
• Did the RSD meet the criteria ≤ 20% for each individual Calibration Compound or r ≥ 0.99?	[X]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[X]	[ ]
• Was the manual integration necessary?	[N]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[N]	[ ]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[N]	[ ]
• Was the percentage "D" for QC/MRL ≤ 30%?	[N]	[ ]
5. Initial Calibration Verification (ICV):	[X]	[ ]

	Yes	No
• Was the ICV made of a 2nd source?	[ ]	[ ]
• Was the mid level (2nd source) recovery within 85 - 115%?		
6. Continuing Calibration Verification (CCV): {Daily calibration}		
• Was midpoint calibration standard conducted at the beginning of the day?	[ ]	[ ]
• Was midpoint calibration standard conducted every ten samples or every twelve hours?	[ ]	[ ]
• Was midpoint calibration standard conducted after the last sample of the day?	[ ]	[ ]
• Did the CCV meet the minimum requirements (D ≤ 15% with a maximum D ≤ 20% for a specific compound if the mean D ≤ 15%)?	[ ]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires? N/A	[ ]	[ ]
• Were all identified hits, above the initial calibration curve, diluted and reanalyzed?	[ ]	[ ]
• Were all identified hits confirmed on a second column?	[ ]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[ ]	[ ]
• Was there a shoulder on the 2,4,6-TNT peak?	[ ]	[ ]
If the answer is "Yes", then tetryl decomposition is suspected. Peak height rather than peak area should be used for calculating TNT concentration. If teryl was identified in aqueous samples, was pH adjusted to <3? If the answer is "No", then check for tetryl decomposition, and qualify hits with **"J"** accordingly.	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[ ]	[ ]

	Yes	No
• MS/MSD: Were the percent recoveries within limits? none	[ ]	[ ]
Were the RPDs within control limits?		
• System Monitoring Compounds (Surrogates): Were surrogate recoveries within QC limits?	[ ]	[ ] 64% w/in lab 50-150% 125% w/in lab 74-134% NG

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks Date: 3/31/14

Name: Patti Meeks

MRL 4-amino 68% ±60%
2-NT 57%

~~POLY CHLORINATED BIPHENYLS (PCB/AROCLORS)~~ Herbicides CHECKLIST

MC

Project Name: RVAAP CR Site 70

Laboratory: TA - North Canton

Batch Number(s): 64956, 69221

Sample Delivery Group: 17230, 18581

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• ~~Did Aroclors 1016 and 1260 meet the~~ RSD ≤ 20% or the r ≥ 0.99? MC	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R MC	[✓]	
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 – 115%~~ QSM ±20%?	[ ]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum %D < 20% for a specific compound?	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	N/A [ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[ ]	[ ]
• Was RPD of target analyte conformation ≤ 40?	N/A [ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? see comments	[ ]	[✓]
Were the RPDs within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):
See attached MRL and MS/SD qual. tables

Validated/Reviewed by:

Signature: M Calvin

Date: 3.18.2014

Name: L.S. Calvin

- MRL standard recoveries affecting sample data were within the reasonable control limit of ±30%, with exceptions noted in the table below. The sample results, all nondetects, were qualified as estimated, "UJ," and coded with a "C" qualification code.

Samples qualified for MRL %Recovery outliers		
Analyte	**%Recoveries**	**Qualified Samples**
MCPP	42% / 59%	070SS-0006M-0001-SO
MCPA	48% / 62%	
MCPP	53%	070SB-0044M-0001-SO
MCPA	56%	

- Blanks: The method blanks associated with the validated samples had no target compound detects above the control limit listed in the DoD QSM Table F-2 of one-half the RL.

- Blank Spikes and Laboratory Control Samples: Recoveries were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-9, or within laboratory-established control limits when no QSM limits were prescribed. Spiked analytes utilizing laboratory established control limits included dalapon (30-122%) and MCPA (25-132%). The reviewer noted MCPP and pentachlorophenol were not included in the LCS.

- Surrogate Recovery: Recoveries were within the laboratory-established control limits, as no QSM limits were prescribed.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on samples 070SS-0006M-0001-SO and 070SB-0044M-0001-SO. Recoveries affecting sample data were within the control limits listed in DoD QSM Tables G-2 (poor performers) and G-9, or within laboratory-established control limits when no QSM limits were prescribed (see Blank Spikes and Laboratory Control Samples section). Exceptions are noted in the table below. RPDs were within the control limit listed in the DoD QSM Table F-2 of ≤30%. The nondetected parent sample results for the outliers were qualified as estimated, "UJ," and coded with a "Q" qualification code.

Samples qualified for MS/MSD %Recovery outliers			
Analyte	**%Recoveries**	**Recovery Limits**	**Qualified Sample(s)**
Dicamba	45% / 51%	55-110%	070SS-0006M-0001-SO
Dichlorprop	57% / 66%	75-140%	

- Compound Identification: Compound identification was verified for the validated samples. Review of the sample chromatograms, standards, and retention times indicated no problems with target compound identification.

- Compound Quantification and Reported Detection Limits: Compound quantification was verified for the validated samples. The LOQs were supported by the low point of the

ICP METALS ANALYSIS ~~(6010)~~ 6020 + 7471A CHECKLIST

Project Name: RVAAP CR Site 70

Laboratory: TA North Canton

Batch Number(s): _____

Sample Delivery Group: 240-17230-1 and 240-18581-1

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[✓]	[ ]
three calibration standards and a blank?	[ ]	[ ]
• Was R ≥ 0.995	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[✓]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?	[✓]	[ ]
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[ ]	[Y] but okay

6. Interelement Check Standard:

• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[Y]	[ ]
• Was ICS-AB results within QC limits (80-120)?	[Y]	[ ]

7. Continuing calibration Blank (CCB):

• Was CCB conducted every 10 samples?	[Y]	[ ]
• Was CCB conducted at end of the analytical sequence?	[Y]	[ ]
• Were analytes ≤ 1/2 MRL?	[ ]	[Y] but okay

8. Continuing Calibration Verification (CCV):

• Was CCV conducted every 10 samples?	[Y]	[ ]
• Was CCV conducted at end of the analytical sequence?	[Y]	[ ]
• Was the %R between 90-110?	[Y]	[ ]

9. Sample Analysis:

• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[Y] Mn (5x)	[ ]

10. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[Y] but okay
• LCS: Were the percent recoveries for LCS within the limits?	[Y]	[ ]
• MS: Were the percent recoveries within limits?	[ ]	[Y]
• MD: Were the RPDs within control limits?	[ ] N/A	[ ]

11. Serial Dilution:

• Was serial dilution (1:4) conducted when needed?	[Y]	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[ ]	[ ]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)?	[ ] N/A	[ ]

13. Comments (attach additional sheets if necessary):

07055-0006M-0001-SO (0.66g : 0.1L and 1.08g : 6.1L)

07058-044M-0001-SO (0.54 : 0.1L and 1.03g : 6.1L)

Tune RSD for ^{78}Se = 20.43%

Tune RSD for ^{137}Ba = 24.31%
^{138}Ba = 9.85%

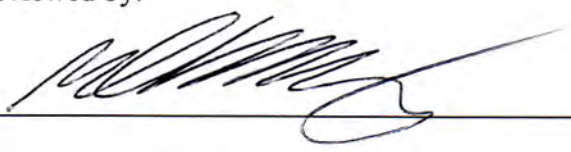
Dup outliers: (Cr, 42%) (Cd, 41%) (Pb, 94%)

Se in ICSA at 1.15 µg/L

MS outliers: (Sb, 19%) (Cr, 72%) (K, 136%) (Se, 199%) (V, 130%)

SD outliers: (Cu, 15%) (Pb, 12%) (Ni, 11%)

Validated/Reviewed by:

Signature: 

Date: 3/30/14

Name: Michael Cherny

ICP METALS ANALYSIS (6010)C CHECKLIST

Project Name: RVAAP Cr Site 71

Laboratory: CT Laboratories

Batch Number(s): _____

Sample Delivery Group: 99236

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[✓]	[ ]
three calibration standards and a blank?	[✓]	[ ]
• Was $R \geq 0.995$	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
	[✓]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[✓]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?		
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[Y]	[ ]

6. Interelement Check Standard:

• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[Y]	[ ]
• Was ICS-AB results within QC limits (80-120)?	[Y]	[ ]

7. Continuing calibration Blank (CCB):

• Was CCB conducted every 10 samples?	[Y]	[ ]
• Was CCB conducted at end of the analytical sequence?	[Y]	[ ]
• Were analytes ≤ 1/2 MRL?	[Y]	[ ]

8. Continuing Calibration Verification (CCV):

• Was CCV conducted every 10 samples?	[Y]	[ ]
• Was CCV conducted at end of the analytical sequence?	[Y]	[ ]
• Was the %R between 90-110?	[Y]	[ ]

9. Sample Analysis:

• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[Y] 5x	[ ]

10. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[Y]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[Y]	[ ]
• MS: Were the percent recoveries within limits?	[ ]	[Y]
• MD: Were the RPDs within control limits?	[Y]	[ ]

11. Serial Dilution:

• Was serial dilution (1:4) conducted when needed?	[Y]	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[✓]	[ ]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)?	[ ]	N/A	[ ]

13. Comments (attach additional sheets if necessary):

0715B-0018M-0001-SO 97.6% solid 5x dilution
0715B-0013M-0001-SO 97.5% solid .052±2.05g

MS/D outliers
-0003M-0001 (67%, 58%)
-0010M-0001 (57%, 60%)

PDS outliers
-0003M-0001 (74%)
-0010M-0001 (58%)

Validated/Reviewed by:

Signature: [signature]

Date: 4/14/14

Name: Michael Cherny

ICP METALS ANALYSIS (6010) CHECKLIST

0725B-0001 (0.61:100, 1.16:100) 83.8%
0725B-0012 (0.66:100, 1.06:100) 88.8%
0725B-0014 (0.69:100, 1.13:100) 88.7%

Project Name: RVAAP CR Site 72

Laboratory: TA-N Canton

Batch Number(s): _____

Sample Delivery Group: 240-18297

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[Y]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[Y]	[ ]
three calibration standards and a blank?	[ ]	[ ]
• Was R ≥ 0.995	[Y]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[Y]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[Y]	[ ]
	[ ]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[ ]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?		
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[ ]	~~[N]~~ insuff
6. Interelement Check Standard:		
• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	~~[N]~~	[ ]
• Was ICS-AB results within QC limits (80-120)?	~~[N]~~	[ ]
7. Continuing calibration Blank (CCB):		
• Was CCB conducted every 10 samples?	~~[N]~~	[ ]
• Was CCB conducted at end of the analytical sequence?	~~[N]~~	[ ]
• Were analytes ≤ 1/2 MRL?	[ ]	~~[N]~~ insuff
8. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 10 samples?	~~[N]~~	[ ]
• Was CCV conducted at end of the analytical sequence?	~~[N]~~	[ ]
• Was the %R between 90-110?	~~[N]~~	[ ]
9. Sample Analysis:		
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
10. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	PM ~~[N]~~	~~[N]~~ insuff
• LCS: Were the percent recoveries for LCS within the limits?	~~[N]~~	[ ]
• MS: Were the percent recoveries within limits?	[ ]	~~[N]~~
• MD: Were the RPDs within control limits?	[ ]	~~[N]~~
11. Serial Dilution:		
• Was serial dilution (1:4) conducted when needed?	~~[N]~~	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	~~[ ]~~	[ ]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)? N/A	[ ]	[ ]

13. Comments (attach additional sheets if necessary):

MS/~~D~~ 0725B-0001 As (77), Ba (127), Be (79), Ca (298), Cd (79), Ni (69), Sb (24), K (55), Se (68)
0725B-0012 Be (78), Cu (123), Pb (122), Sb (18), ~~K~~ (71), Se (74)

PDS - " OK

Dup 0725B-0001 Ca (28)
0725B-0012 As (29)

SD " OK

~~MB + Se = -0.983 w -0.0943 mg/kg J-~~

ICSA - ins off

Validated/Reviewed by:

Signature: Patti Meek Date: 3/25/14

Name: Patti Meek

ICP METALS ANALYSIS (~~6010~~) 6020+7471A CHECKLIST

Project Name: RVAAP CR Site 72

Laboratory: TA North Canton

Batch Number(s): _____

Sample Delivery Group: 240-18441-1, 240-18449-1 and 240-18544-1

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[Y]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[Y]	[ ]
three calibration standards and a blank?	[ ]	[ ]
• Was R ≥ 0.995	[Y]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[Y]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[Y]	[ ]
	[Y]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[Y]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?		
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[Y]	[ ]

6. Interelement Check Standard:

• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[Y]	[ ]
• Was ICS-AB results within QC limits (80-120)?	[Y]	[ ]

7. Continuing calibration Blank (CCB):

• Was CCB conducted every 10 samples?	[Y]	[ ]
• Was CCB conducted at end of the analytical sequence?	[Y]	[ ]
• Were analytes ≤ 1/2 MRL?	[ ]	[Y] but okay

8. Continuing Calibration Verification (CCV):

• Was CCV conducted every 10 samples?	[Y]	[ ]
• Was CCV conducted at end of the analytical sequence?	[Y]	[ ]
• Was the %R between 90-110?	[Y]	[ ]

9. Sample Analysis:

• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[ ] N/A	[ ]

10. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[Y] but okay
• LCS: Were the percent recoveries for LCS within the limits?	[Y]	[ ]
• MS: Were the percent recoveries within limits?	[ ]	[Y]
• MD: Were the RPDs within control limits?	[ ] N/A	[ ]

11. Serial Dilution:

• Was serial dilution (1:4) conducted when needed?	[Y]	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[ ]	[✓]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)?	[ ] N/A	[ ]

13. Comments (attach additional sheets if necessary):

-SDG 240-18441-1 0725B-0026-0001-SO
.64g : .1L : 1.03g 96.8% solid
Tune RSD for ^{137}Ba = 35.981%
ICSA detects: Cd @ 0.315 µg/L
As @ 0.098 µg/L
MS outliers: (As, 69%) (Ca, 74%) (Cu, 75%) (Sb, 20%)* (Tl, 75%) (Se, 73%)
SD outliers: (Zn, 11%)

-SDG 240-18449-1
0725B-0039-0001-SO
.61g : .1L : 1.07g 83.7% solid
Same ICSA detects ↑ Same Tune RSD ↑
Dup outlier: (K, 24%) MS outliers: (As, 64%) (Ba, 32%) (Be, 76%) (Cr, 73%) (Ni, 79%) (Pb, 159%) *(Sb, 23%) (U, 61%) (K, 5%) (Se, 68%)
↳ Sample: 0725B-0035-0001
(see next page)

Validated/Reviewed by:

Signature: [signature]

Date: 4/2/14

Name: Michael Cheny

SDG 240-18544-1

072SB-0063-0001-SO

.55g : .1L : 1.09g 88.8% solid

Tune RSD outliers : (^{137}Ba, 19.32%)
(^{138}Ba, 7.81%)

Dup outlier : (Mn, 36%)

MS outliers : (Ag, 39%), (~~As~~, 0%),
(Ca, 193%), (Cd, 60%),
(Cr, 79%), (Co, 52%),
(Cu, 16%), (Na, 39%),
(Sb, 28%), (K, 70%),
(Sc, 25%)

ICSA detects : (Sb, 0.32 µg/L)
(Cd, 0.385 ")
(Se, 0.912 ")
(Ag, 0.15 ")

There were a few matching MS outliers in other spiked samples in this SDG.

ICP METALS ANALYSIS (6010) CHECKLIST

0755D-0002-0001

Project Name: RVAAP CR Site 75

Laboratory: TA-N Canton

Batch Number(s): _____

Sample Delivery Group: ~~20~~ 240-17467-1

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[N]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[ ]	[ ]
three calibration standards and a blank?	[ ]	[ ]
• Was $R \geq 0.995$	[ ]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[ ]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[ ]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[ ]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?	[ ]	[ ]
5. Initial Calibration Blank (ICP):		

	Yes	No	
• Were analytes in the blank ≤ 1/2 MRL?	[ ]	[N]	insuff
6. Interelement Check Standard:			
• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[N]	[ ]	
• Was ICS-AB results within QC limits (80-120)?	[N]	[ ]	
7. Continuing calibration Blank (CCB):			
• Was CCB conducted every 10 samples?	[N]	[ ]	
• Was CCB conducted at end of the analytical sequence?	[N]	[ ]	
• Were analytes ≤ 1/2 MRL?	[ ]	[N]	insuff
8. Continuing Calibration Verification (CCV):			
• Was CCV conducted every 10 samples?	[N]	[ ]	
• Was CCV conducted at end of the analytical sequence?	[ ]	[ ]	
• Was the %R between 90-110?	[ ]	[ ]	
9. Sample Analysis:			
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]	
10. Sample Quality Control:			
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[N]	but insuff.
• LCS: Were the percent recoveries for LCS within the limits?	[N]	[ ]	
• MS: Were the percent recoveries within limits?	[ ]	[N]	
• MD: Were the RPDs within control limits?	[ ]	[N]	
11. Serial Dilution:			
• Was serial dilution (1:4) conducted when needed?	[N]	[ ]	

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[ ]	[ ]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect ($R \geq 0.995$)? N/A	[ ]	[ ]

13. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeker Date: 3/24/14

Name: Patti Meeker

MS PDS Dup SD
As (76,) OK Al (26) OK
Ba (57,)
Cr (73,) Cr (21)
Mg (69,) Na (32)
Ni (77,) V (24)
Sb (25,) K (42)
V (66,)
K (56,)
Se (74

MS
ltg = 60%
dup OK

ICP METALS ANALYSIS (~~6010~~) CHECKLIST 6020 + 7471A

Project Name: RVAAP CR Site 77

Laboratory: TA North Canton

Batch Number(s): _____

Sample Delivery Group: 240-17525-1/2

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[✓]	[ ]
three calibration standards and a blank?	[ ]	[ ]
• Was $R \geq 0.995$	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
	[✓]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	[✓]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2^{nd} source) recovery within 90 - 110%?		
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[✓]	[ ]

6. Interelement Check Standard:

• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[✓]	[ ]
• Was ICS-AB results within QC limits (80-120)?	[✓]	[ ]

7. Continuing calibration Blank (CCB):

• Was CCB conducted every 10 samples?	[✓]	[ ]
• Was CCB conducted at end of the analytical sequence?	[✓]	[ ]
• Were analytes ≤ 1/2 MRL?	[✓]	[ ]

8. Continuing Calibration Verification (CCV):

• Was CCV conducted every 10 samples?	[✓]	[ ]
• Was CCV conducted at end of the analytical sequence?	[✓]	[ ]
• Was the %R between 90-110?	[✓]	[ ]

9. Sample Analysis:

• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[ ]	N/A	[ ]

10. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS: Were the percent recoveries within limits?	[ ]	[✓]
• MD: Were the RPDs within control limits?	[ ] N/A	[ ]

11. Serial Dilution:

• Was serial dilution (1:4) conducted when needed?	[✓]	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[ ]	[✓]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)?	[ ]	N/A	[ ]

13. Comments (attach additional sheets if necessary):

0775S-0001M-0001-SD
0.6g : 0.1L : 1.21g Tune RSD outlier: ^{137}Ba - 15.47%

Detects in ICSA:
Sb - 0.259 µg/L
Cd - 0.249 "
Ag - 0.095 "

Dup outliers:
(Ca, 21%) - 0695S-0001M
(Ca, 21%) (Na 7±1QQ) > 0775S-0001M

MS outliers
(As, 72%) (Cd, 79%), (Cu, 75%),
(Sb, 22%) (Se, 64%) - 0695S-0001

(As, 78%) (Cd, 79%) (Cu, 317%)
(Mg, 132%) (Sb, 21%) (K, 172%)
(Se, 72%) - 0775S-0001M

SD outliers:
(Ca, 11%) - 0695S-0001M
(Ca, 12%) - 0775S-0001M

Validated/Reviewed by:

Signature: [signature] Date: 4/7/14

Name: Michael Cherny

ICP METALS ANALYSIS (6010) + 7471B CHECKLIST

Project Name: RVAAP Cr site 83

Laboratory: CT Laboratories

Batch Number(s): _____

Sample Delivery Group: 99211

	Yes	No
1. Holding Time:		
• Were samples analyzed within holding time (6-Months)?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of		
One calibration standard and a blank?	[✓]	[ ]
three calibration standards and a blank?	[✓]	[ ]
• Was R ≥ 0.995	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
	[✓]	[ ]
• Was the QC/MRL between 70-130% R? Common Elements can be between the MRL and 2X MRL level (Fe, Al, Mg and Ca)	> 10x LOQ	
	[✓]	[ ]
4. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 90 - 110%?		
5. Initial Calibration Blank (ICP):		

	Yes	No
• Were analytes in the blank ≤ 1/2 MRL?	[Y]	[ ]

6. Interelement Check Standard:

• Was ICS-A (interferents only) conducted at the beginning of analytical sequence?	[Y]	[ ]
• Was ICS-AB results within QC limits (80-120)?	[Y]	[ ]

7. Continuing calibration Blank (CCB):

• Was CCB conducted every 10 samples?	[Y]	[ ]
• Was CCB conducted at end of the analytical sequence?	[Y]	[ ]
• Were analytes ≤ 1/2 MRL?	[Y]	[ ]

8. Continuing Calibration Verification (CCV):

• Was CCV conducted every 10 samples?	[Y]	[ ]
• Was CCV conducted at end of the analytical sequence?	[Y]	[ ]
• Was the %R between 90-110?	[Y]	[ ]

9. Sample Analysis:

• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[Y] 5X	[ ]

10. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[Y]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[Y]	[ ]
• MS: Were the percent recoveries within limits?	[ ]	[Y]
• MD: Were the RPDs within control limits?	[ ]	[Y]

11. Serial Dilution:

• Was serial dilution (1:4) conducted when needed?	[Y]	[ ]

	Yes	No
• Was there an agreement between diluted and undiluted results (<10%)?	[ ]	[✓]

12. Method of Standard Addition (MSA):

• Was MSA performed on samples suspected of matrix effect (R ≥ 0.995)?	[ ]	N/A	[ ]

13. Comments (attach additional sheets if necessary):

0835B-0005M-0001-SO 94.1% solid
Hg -> 0.58g & 0.025L MT -> 2.05g & 0.05L

MS/MSD outliers: -0835B-0004M
(As, 72%, 65%), (Ba, 74%, 56%), (Be, 75%, 64%),
(Cr, 64%, 47%), (Co, 68%, 54%), (Cu, 77%, 65%),
(Pb, 61%, 51%), (Mg, 78%, 54%), (Ni, 71%, 57%),
(V, 66%, 57%), (Zn, 73%, 56%), (Sb, 27%, 5%),
(Se, 400%, 79%), (Ag, 43%, OK), (Cd, 62%, 59%),
(Hg, 123%, OK), (Tl, 68%, 53%)

PDS outliers: -0835B-0004M
(Ba, 66%), (Be, 71%), (Ca, 0%) (Cr, 55%),
(Co, 70%), (Pd, 64%), (Mg, 0%), (Ni, 72%),
(V, 67%), (Zn, 68%), (Cd, 68%), (Tl, 61%)

SD outliers: -0835B-0004M
(Ba, 13%), (Mg, 40%)

Negative sample Results:
As: -4.60µg/L
Se: -9.18µg/L

Validated/Reviewed by:

Signature: [signature] Date: 4/7/14

Name: Michael Cherny

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 70

Laboratory: TA North Canton

Batch Number(s): 165555, 169415

Sample Delivery Group: 17230, 18581

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary? If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	DIC [✓]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV): Is the mid level (2nd source) recovery within ~~85 - 115%~~ QSM ± 20%?	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
QSM ≤20%		
• Was Drift or D~~≤ 15%~~ from the initial calibration with a maximum %D < 20% for a specific compound?	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[✓]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[✓]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[✓]	[ ]
• Was RPD of target analyte conformation ≤ 40? Av. 1242 44.1% J/*M	[ ]	[✓]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? Av. 1016 155/149% (40-140) -000QM	[ ]	[✓]
Were the RPDs within control limits? Av. 1242 J/Q	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):
Sample 07055-00016M-0001-50/5X dilution

Validated/Reviewed by:

Signature: L S Calvin

Date: 3.19.2014

Name: L.S. Calvin

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 71

Laboratory: CT Labs

Batch Number(s): 44519

Sample Delivery Group: 99236

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[ ]	[✓]
• Was the manual integration necessary? N/A	[ ]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 - 115%~~ RSM ± 20%?	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ~~≤ 15%~~ from the initial calibration with a maximum %D < 20% for a specific compound? (DOC QSM ≤ 20%)	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[✓]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[✓]	[ ]
• Was RPD of target analyte conformation ≤ 40? (QC)	[✓]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPDs within control limits? ↓	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: L.S. Calvin

Date: 4.7.2014

Name: L.S. Calvin

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 72 0725B-0014-0001

Laboratory: TA-N Canton

Batch Number(s): _____

Sample Delivery Group: 240-18297

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[N]	[ ]
(b) Were samples analyzed within holding time?	[ ]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[N]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[ ]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[ ]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[N]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[ ]	[ ]
• Was the QC/MRL between 70-130% R	[N]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within 85 - 115%?	[N]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[N]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum %D < 20% for a specific compound?	[ ]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires? NA	[ ]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[N]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[ ]	[ ]
• Was RPD of target analyte conformation ≤ 40? N/A	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[ ]	[ ]
• MS/MSD: Were the percent recoveries within limits? 10 of 12	[ ]	[ ]
Were the RPDs within control limits?	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[N]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meek

Date: 3/24/14

Name: Patti Meeks

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 75

Laboratory: TA-North Canton

Batch Number(s): 45753

Sample Delivery Group: 17467

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary? If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**	[✓]	[ ]
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 - 115%~~ QSM ± 20%?	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours? QSM ≤ 20%	[✓]	[ ]
• Was Drift or D ~~≤ 15%~~ from the initial calibration with a maximum %D < 20% for a specific compound?	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column? sample ND N/A	[ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[✓]	[ ]
• Was RPD of target analyte conformation ≤ 40? N/A	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPDs within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: D A Calvin Date: 3-20-2014

Name: D.S. Calvin

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 77

Laboratory: TA - N. Canton

Batch Number(s): 165753

Sample Delivery Group: 17525

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 – 115%~~ 'QSM ±20%?	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum %D < 20% for a specific compound?	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[✓]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[✓]	[ ]
• Was RPD of target analyte conformation ≤ 40? (MS/MSD) Sample ND	[✓]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPDs within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: [signature] Date: 3.28.2014

Name: L.S. Calvin

POLY CHLORINATED BIPHENYLS (PCB/AROCLORS) CHECKLIST

Project Name: RVAAP CR Site 83

Laboratory: CT Labs

Batch Number(s): 45487

Sample Delivery Group: 99211

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 - 115%?~~ @SM ± 20%	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ~~≤ 15%~~ QSM ≤ 20% from the initial calibration with a maximum %D < 20% for a specific compound? NC	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	N/A [ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[✓]	[ ]
• Was RPD of target analyte conformation ≤ 40? (LCS)	[✓]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? N/D	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? NC N/A	[✓]	[ ]
Were the RPDs within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: L.S. Calvin

Date: 4.4.2014 ~~4.4~~ MC

Name: L.S. Calvin

ORGANOCHLORINE PESTICIDES ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 72 07258-0014-0001

Laboratory: TA- N. Canton

Batch Number(s): _____

Sample Delivery Group: 240-18297

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[X]	[ ]
(b) Were samples analyzed within holding time?	[X]	[ ]
2. DDT/Endrin Breakdown:		
• Was breakdown ≤ 15%?	[X]	[ ]
3. Initial Calibration:		
• Did the initial calibration consist of five standards?	[X]	[ ]
• Did all compounds meet the RSD ≤ 20% or r ≥ 0.99?	[X]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[X]	[ ]
• Was the manual integration necessary? If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**	[X]	[ ]
4. QCMDL:		
• Was MDL Check performed?	[ ]	[X]
5. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[X]	[ ]
• Was the QC/MRL between 70-130% R	[X]	[ ]

	Yes	No
6. Initial Calibration Verification (ICV):		
• Is the mid level (2nd source) recovery within 85 - 115%?	[ ]	[N]
7. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[N]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum D ≤ 20% for a specific compound?	[ ]	[ ]
8. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires? N/A	[ ]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed?	[ ]	[ ]
• Were identified compounds confirmed on a second GC column?	[ ]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[ ]	[ ]
9. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[N]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[N]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[ ]	[N]
Were the RPD within control limits?	[ ]	[N]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[N]	[ ]

10. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: Patti Meeks

Date: 3/25/14

Name: Patti Meeks

MS/D on 0014 limits

DDE (66%, 45) 70-125%

Sulfate (57, 39) 60-135%

γ BHC (58%, 39) 60-125%

δ-ch (62%, 41%) 65-125%

methoxy (55%, 40%) 55-145%

MSD out: DDT (40, 45-140)
α-BHC (44, 60-125)

ICV CLP-1
Tox -43.2, -24.2, 49.8 + 2 ok

ICV CLP-2
Tox -39.1, -32.9 + 30%

ORGANOCHLORINE PESTICIDES ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 77

Laboratory: TA-North Canton

Batch Number(s): 165753

Sample Delivery Group: 17525

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[ ] ✓	[ ]
2. DDT/Endrin Breakdown:		
• Was breakdown ≤ 15%?	[✓]	[ ]
3. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did all compounds meet the RSD ≤ 20% or r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary? If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**	[✓]	[ ]
4. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
5. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R (those affecting sa sample data)	[✓]	[ ]

	Yes	No
6. Initial Calibration Verification (ICV): QSM ± 20 % • Is the mid level (2nd source) recovery within ~~85 - 115%~~?	[✓]	[ ]
7. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum D ≤ 20% for a specific compound?	[ ]	[✓]

toxaphene CLP1 -20.9/53.7 CLP2 -34.0/88.2 UJ/C

8. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified compounds confirmed on a second GC column?	[✓]	[ ]
• Was RPD of target analyte confirmation ≤ 40?	[✓]	[ ]
9. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? N/D	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A (not evaluated at 10X dilution)	[ ]	[ ]
Were the RPD within control limits?	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits? not evaluated @ 10X dilution	[ ]	[ ]

10. Comments (attach additional sheets if necessary):
10X dilution – sample matrix

Validated/Reviewed by:

Signature: L.A Calvin

Date: 3.28.2014

Name: L.S. Calvin

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 70

Laboratory: TA- North Canton

Batch Number(s): 65169, 69432

Sample Delivery Group: 17230, 18548

	Yes	No
1. Sample Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Instrument Tuning:		
Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Ion Mass Assignments:		
Was mass assignment based on m/z 198?	[✓]	[ ]
4. Ion Abundance:		
Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		
m/z — Acceptance Criteria		
51 — 30.0 - 60.0 %	[✓]	[ ]
68 — < 2% of mass 69	[✓]	[ ]
70 — < 2% of mass 69	[✓]	[ ]
127 — 40-60%	[✓]	[ ]
197 — < 1%	[✓]	[ ]
198 — 100%, Base peak	[✓]	[ ]
199 — 5-9%	[✓]	[ ]
275 — 10 - 30%	[✓]	[ ]
365 — > 1%	[✓]	[ ]
441 — present but < mass 443	[✓]	[ ]
442 — > 40%	[✓]	[ ]
443 — 17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds more	[ ] [✓]	[ ] [ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%?		[✓]	[ ]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%?		N/A [ ] ↓ [ ]	[ ] [ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		

6. QCMDL:

• Was MDL Check performed?	[ ]	[✓]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R see comments	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)? N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within ~~70-130%~~ @SM ±20% for contaminants of concern ? 3,3'-DCB 73.5% ULJ/C in 0003 M	[ ]	[✓]
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)? N/A	[ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? [✓] [ ]
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [✓] [ ]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[ ]	[✓]
Were the RPD within control limits? see comments ↓	[ ]	[✓]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

Pentachlorophenol R/D - reported from 8151 analysis (8270 R/D) ↓
2,4-DNT and 2,6-DNT reported from 8330 analysis
MS/MSD 0006M: 4-CA and 3,3-DCB not recovered R/Q
3-NA ↓ 16%, 13% (25-110%) UJ/Q
RPDs: 4&2NP, 4NA (200%) UJ/Q
0004
-0006M 5X DL | all 2 ml final extract volume
remaining 10X ↓
MRL outliers: see attached

Validated/Reviewed by:

Signature: M Calvin Date: 3.17.2014

Name: L.S. Calvin

SV

Samples qualified for MRL %R outliers		
Analyte	**%R**	**Qualified Samples**
2,4-dinitrophenol	42%	070SS-0003M-0001-SO
4,6-dinitro-2-methylphenol	47%	070SS-0006M-0001-SO
2,4-dinitrophenol	57%	070SB-0044M-0001-SO 070SB-0046M-0001-SO
benzo(g,h,i)perylene	62%	
n-nitrosodiphenylamine	**0%**	

All UJ/C in affected samples.

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 71

Laboratory: CT Labs

Batch Number(s): 45514, 45513

Sample Delivery Group: 99236

	Yes	No
1. Sample Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Instrument Tuning: Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Ion Mass Assignments: Was mass assignment based on m/z 198?	[✓]	[ ]
4. Ion Abundance: Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
51	30.0 - 60.0 %	[✓]	[ ]
68	< 2% of mass 69	[✓]	[ ]
70	< 2% of mass 69	[✓]	[ ]
127	40-60%	[✓]	[ ]
197	< 1%	[✓]	[ ]
198	**100%, Base peak**	[✓]	[ ]
199	5-9%	[✓]	[ ]
275	10 - 30%	[✓]	[ ]
365	> 1%	[✓]	[ ]
441	present but < mass 443	[✓]	[ ]
442	> 40%	[✓]	[ ]
443	17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds	[✓]	[ ]
	more	[ ]	[ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%? see comments		[ ]	[✓]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%?	N/A	[ ]	[ ]
		[ ]	[ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		

6. QCMDL:

• Was MDL Check performed?	[ ]	[✓]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R see comments	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)? N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within ~~70-130%~~ QSM ±20% for contaminants of concern ?	[✓]	[ ]
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)? N/A	[ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? ~~see comments~~ ✓ YES [X] JAC [X] JAC
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [✓] [ ]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits? ~~(those affecting~~ MC	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPD within control limits?	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

R/C MRLs: benzyl alcohol 0%
NJ/C 4,6DN-2-MP 60%

ICAL %RSD: benzyl alcohol 15.2
benzoic acid 17.7 NJ/C
hexachlorocyclopentadiene 15.5
(benzyl alcohol not retained - MRL)

Validated/Reviewed by:

Signature: M A Calvin Date: 04.08.2014

Name: L.S. Calvin

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 72

Laboratory: TA - North Canton

Batch Number(s): 68168, 68363, 69035, 69176, 69432

Sample Delivery Group: 18297, 18441, 18449, 18544

		Yes	No
1.	Sample Holding Time:		
	(a) Were samples extracted within holding time?	[✓]	[ ]
	(b) Were samples analyzed within holding time?	[✓]	[ ]
2.	Instrument Tuning:		
	Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3.	Ion Mass Assignments:		
	Was mass assignment based on m/z 198?	[✓]	[ ]
4.	Ion Abundance:		
	Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
51	30.0 - 60.0 %	[✓]	[ ]
68	< 2% of mass 69	[✓]	[ ]
70	< 2% of mass 69	[✓]	[ ]
127	40-60%	[✓]	[ ]
197	< 1%	[✓]	[ ]
198	**100%, Base peak**	[✓]	[ ]
199	5-9%	[✓]	[ ]
275	10 - 30%	[✓]	[ ]
365	> 1%	[✓]	[ ]
441	present but < mass 443	[✓]	[ ]
442	> 40%	[✓]	[ ]
443	17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds	[✓]	[ ]
	more	[ ]	[ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%?		[✓]	[ ]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%?		N/A [ ]	[ ]
		↓ [ ]	[ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		

6. QCMDL:

• Was MDL Check performed?	[✓]	[ ]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R see comments	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)? N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within ~~70-130%~~ QSM ± 20% for contaminants of concern ? 3,3'-DCB-21.1% UJ/C in-0014	[ ]	[✓]
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)? N/A	[ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[ ]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? [✓] [ ]
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [✓] [ ]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? bis 19.2J u/B @ RL 54 in-0014	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPD within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[ ]	[ ]

2-Fluorobiphenyl 44% (45-105) in-0026
Re-extr. out of HT. RB R/D, orig J, UJ/S

12. Comments (attach additional sheets if necessary):

MRL assoc w/ full list - 0014 4-NA 0% R/C
24DN2MP 69% } UJ/C
24DNP 55% }

- 2,4- and 2,6-dinitrotoluene rejected R/D (reported only from 5330B analysis)

Validated/Reviewed by:

Signature: L A Calvin Date: 3-21-2014

Name: Lisa Calvin

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 75

Laboratory: TA - North Canton

Batch Number(s): 65933, 67436 (re-extr.)

Sample Delivery Group: 17467

		Yes	No
1.	Sample Holding Time: RE out / bis UJ/H		
	(a) Were samples extracted within holding time?	[✓]	[ ]
	(b) Were samples analyzed within holding time?	[✓]	[ ]
2.	Instrument Tuning:		
	Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3.	Ion Mass Assignments:		
	Was mass assignment based on m/z 198?	[✓]	[ ]
4.	Ion Abundance:		
	Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		
	m/z — Acceptance Criteria		
	51 — 30.0 - 60.0 %	[✓]	[ ]
	68 — < 2% of mass 69	[✓]	[ ]
	70 — < 2% of mass 69	[✓]	[ ]
	127 — 40-60%	[✓]	[ ]
	197 — < 1%	[✓]	[ ]
	198 — 100%, Base peak	[✓]	[ ]
	199 — 5-9%	[✓]	[ ]
	275 — 10 - 30%	[✓]	[ ]
	365 — > 1%	[✓]	[ ]
	441 — present but < mass 443	[✓]	[ ]
	442 — > 40%	[✓]	[ ]
	443 — 17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds	[✓]	[ ]
	more	[✓]	[ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%? (those affecting sample data)		[✓]	[ ]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%?		N/A [ ]	[ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		

6. QCMDL:

• Was MDL Check performed?	[ ]	[✓]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R see comments	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)? N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within ~~70-130%~~ QSM ±20% for contaminants of concern ?	[✓]	[ ]
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)? N/A	[ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? [✓] [ ]
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [ ] [✓]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? see comments	[ ]	[✓]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? (R/Q) 3,3' DCB 5%/Q, +- N/A 30/25% (35-115) (UJ/Q)	[ ]	[✓]
Were the RPD within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

- Original MS: bis-2(ethylhexyl) phthalate >10Q @ 90.1 ug/kg RE for bis only. Bis reported out of HT from re-extr.
- 2,4-DNT and 2,6-DNT reported from 8330 analysis

MRLs

benzo(g,h,i)perylene	58%	J/C
dibenz(a,h)anthracene	68%	UJ/C
4,6-dinitro-2-methylphenol	46%	UJ/C
2,4-dinitrophenol	37%	UJ/C
hexachloroethane	58%	UJ/C
indeno(1,2,3-cd)pyrene	167%	J/C

Validated/Reviewed by:

Signature: L.S. Calvin Date: 3·20·2014

Name: L.S. Calvin

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 77

Laboratory: TA - North Canton

Batch Number(s): 465931

Sample Delivery Group: 17525

		Yes	No
1.	Sample Holding Time:		
	(a) Were samples extracted within holding time?	[✓]	[ ]
	(b) Were samples analyzed within holding time?	[✓]	[ ]
2.	Instrument Tuning:		
	Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3.	Ion Mass Assignments:		
	Was mass assignment based on m/z 198?	[✓]	[ ]
4.	Ion Abundance:		
	Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		
	m/z — Acceptance Criteria		
	51 — 30.0 - 60.0 %	[✓]	[ ]
	68 — < 2% of mass 69	[✓]	[ ]
	70 — < 2% of mass 69	[✓]	[ ]
	127 — 40-60%	[✓]	[ ]
	197 — < 1%	[✓]	[ ]
	198 — 100%, Base peak	[✓]	[ ]
	199 — 5-9%	[✓]	[ ]
	275 — 10 - 30%	[✓]	[ ]
	365 — > 1%	[✓]	[ ]
	441 — present but < mass 443	[✓]	[ ]
	442 — > 40%	[✓]	[ ]
	443 — 17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds	[✓]	[ ]
	more	[✓]	[ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%?		[✓]	[ ]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%?		N/A [ ]	[ ]
		[ ]	[ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		

6. QCMDL:

• Was MDL Check performed?	[ ]	[✓]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130%R	[ ]	[✓]
N-nitrosodiphenylamine not recovered/closing R/C		
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)?	N/A [ ]	[ ]

8. Initial Calibration Verification (ICV):

	[✓] NC	[✓]
QSM ±20%		
• Is the mid level (2nd source) recovery within ~~70-130%~~ for contaminants of concern ? 3,3'-DCB -21.1 NC		
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)? N/A	[ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? [✓] [ ]
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [✓] [ ]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? bis 30.7J / ND in sample	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? benzoic acid not recovered R/Q	[ ]	[✓]
Were the RPD within control limits?	[✓]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: M Calvin Date: 3·28·2014

Name: L.S. Calvin

SEMIVOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 83

Laboratory: CT Labs

Batch Number(s): 45489, 45490

Sample Delivery Group: 99211

	Yes	No
1. Sample Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Instrument Tuning:		
Was the DFTPP tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Ion Mass Assignments:		
Was mass assignment based on m/z 198?	[✓]	[ ]
4. Ion Abundance:		
Indicate if DFTPP ions abundance relative to m/z 198 base peak met the ions abundance criteria:		
m/z — Acceptance Criteria		
51 — 30.0 - 60.0 %	[✓]	[ ]
68 — < 2% of mass 69	[✓]	[ ]
70 — < 2% of mass 69	[✓]	[ ]
127 — 40-60%	[✓]	[ ]
197 — < 1%	[✓]	[ ]
198 — 100%, Base peak	[✓]	[ ]
199 — 5-9%	[✓]	[ ]
275 — 10 - 30%	[✓]	[ ]
365 — > 1%	[✓]	[ ]
441 — present but < mass 443	[✓]	[ ]
442 — > 40%	[✓]	[ ]
443 — 17-23% of mass 442	[✓]	[ ]

		Yes	No
5.0 Initial Calibration:			
• Did the initial calibration consist of five or more standards?	5-stds	[✓]	[ ]
	more	[✓]	[ ]
If the calibration curve consists of 5-standards, check validity of the calibration model.			
Was the linear model applied?		[✓]	[ ]
• Did the followings System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?			
	RF		
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for the followings each individual Calibration Check Compound (CCC)?			
Base/Neutral Fraction:			
Acenaphthene		[✓]	[ ]
1,4-Dichlorobenzene		[✓]	[ ]
Hexachlorobutadiene		[✓]	[ ]
Diphenylamine		[✓]	[ ]
Di-n-octylphthalate		[✓]	[ ]
Fluoranthene		[✓]	[ ]
Benzo(a)pyrene		[✓]	[ ]
Acid Fraction:			
4-Chloro-3-methylphenol		[✓]	[ ]
2,4-Dichlorophenol		[✓]	[ ]
2-Nitrophenol		[✓]	[ ]
Phenol		[✓]	[ ]
Pentachlorophenol		[✓]	[ ]
2,4,6-Trichlorophenol		[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15%? see comments		[ ]	[✓]
• If the answer is "No", are the mean RSDs ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 30%? yes		[ ] N/A	[ ]

	Yes	No
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.		
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		

6. QCMDL:

• Was MDL Check performed?	[ ]	[✓]

7. QCMRL:

• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R (see comments)	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 50-150% (Sporadic Marginal Failure)?	N/A [ ]	[ ]

8. Initial Calibration Verification (ICV):

	[✓]	[ ]
• Is the mid level (2nd source) recovery within 70-130% for contaminants of concern ?		
• Is the mid level (2nd source) recovery within 50-150% for non-contaminants of concern (Sporadic Marginal Failure)?	N/A [ ]	[ ]

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did any of SPCC meet the minimum RF values?	[✓]	[ ]

		Yes	No
N-nitroso-di-n-propylamine	0.05	[✓]	[ ]
Hexachlorocyclopentadiene	0.05	[✓]	[ ]
2,4-dinitrophenol	0.05	[✓]	[ ]
4-nitrophenol	0.05	[✓]	[ ]

- Did the CCC meet the minimum requirements (D ≤ 20%) for the followings?

Base/Neutral Fraction:

Acenaphthene	[✓]	[ ]
1,4-Dichlorobenzene	[✓]	[ ]
Hexachlorobutadiene	[✓]	[ ]
Diphenylamine	[✓]	[ ]
Di-n-octylphthalate	[✓]	[ ]
Fluoranthene	[✓]	[ ]
Benzo(a)pyrene	[✓]	[ ]

Acid Fraction:

4-Chloro-3-methylphenol	[✓]	[ ]
2,4-Dichlorophenol	[✓]	[ ]
2-Nitrophenol	[✓]	[ ]
Phenol	[✓]	[ ]
Pentachlorophenol	[✓]	[ ]
2,4,6-Trichlorophenol	[✓]	[ ]

- Primary Evaluation: Was Drift or D ≤ 20% calculated from the initial calibration? [✓] [ ]
- Alternative Evaluation: Maximum allowable Drift/D for each target analyte is ≤ 30%. N/A [ ] [ ]

10. Sample Analysis:

- Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? [✓] [ ]
- Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra? [✓] [ ]
- Were the internal standard areas within the QC limits (from -50% to +200%)? [✓] [ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[ ] ✓	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPD within control limits?	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

MRL: benzyl alcohol, not recovered/beg+end R/C
hexachlorocyclopentadiene 69%/ending ~~R/NC~~ UJ/C

ICAL RSDs: benzyl alcohol 15.2 UJ/C
benzoic acid 17.7 (R/C for MRL)
hexachlorocyclopentadiene 15.5 UJ/C

NC ~~{2,4-dinitrotoluene 2,6-dinitrotoluene} reported from 8330/RPD in 8270C~~

Validated/Reviewed by:

Signature: A.S. Calvin Date: 4.4.2014

Name: L.S. Calvin

~~Total Petroleum Hydrocarbons (TPH)~~ ~~POLY CHLORINATED BIPHENYLS (PCB/AROCLORS)~~ CHECKLIST

Project Name: RVAAP CR Site 70

Laboratory: TA - North Canton

Batch Number(s): ~~65273, 69738~~ / 65134, 70013

Sample Delivery Group: ~~17230, 17317, 18581, 18735~~

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
NC • ~~Did Aroclors 1016 and 1260 meet the~~ RSD ≤ 20% or the r ≥ 0.99?	[ ]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents. TET - CARO	[✓]	[X] NC
• Was the manual integration necessary? NC A/A	[✓]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[ ]	[✓]
C4-C12 133% T/C in-0006M		
5. Initial Calibration Verification (ICV): QSM ±20%		
Is the mid level (2nd source) recovery within ~~85 - 115%?~~	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours? QSM ≤20%	[✓]	[ ]
• Was Drift or D ~~≤ 15%~~ from the initial calibration with a maximum %D < 20% for a specific compound?	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? 10X -0042M / DRO	[✓]	[ ]
• Were identified Aroclors confirmed on a second GC column?	N/A [ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[ ]	[ ]
• Was RPD of target analyte conformation ≤ 40?	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPDs within control limits? -0004M 35% (≤30%) J/Q	[ ]	[✓]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: L S Calvin Date: 3-19-2014

Name: L.S. Calvin

Total Petroleum Hydrocarbons (TPH) ~~POLY CHLORINATED BIPHENYLS (PCB/AROCLORS)~~ CHECKLIST

Project Name: RVAAP CR Site 71

Laboratory: CT Labs

Batch Number(s): 45509, 45515

Sample Delivery Group: 99236

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did Aroclors 1016 and 1260 meet the RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[ ]	[✓]
• Was the manual integration necessary? N/A	[ ]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 - 115%~~ QSM ±20% JC	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ~~≤ 15%~~ QSM ≥ 20% from the initial calibration with a maximum %D < 20% for a specific compound? NC	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column? N/A	[ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.)	[ ]	[ ]
• Was RPD of target analyte conformation ≤ 40? N/A	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPDs within control limits?	[ ]	[ ]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

Validated/Reviewed by:

Signature: L.S. Calvin Date: 4.7.2014

Name: L.S. Calvin

Total Petroleum Hydrocarbons (TPH) ~~POLY CHLORINATED BIPHENYLS~~ DRO ~~(PCB/AROCLORS)~~ CHECKLIST

Project Name: RVAAP CR Site 72

Laboratory: TA-North Canton

Batch Number(s): DRO: 68154, 68574, 69161, 69020
GRO: ~~68246, 68680~~, 69142, 69738

Sample Delivery Group: 18297, 18441, 18449, 18544, 18703

	Yes	No
1. Holding Time:		
(a) Were samples extracted within holding time?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• ~~Did Aroclors 1016 and 1260 meet the~~ RSD ≤ 20% or the r ≥ 0.99?	[✓]	[ ]
• Was manual integration "M" performed? If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "no", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
3. QCMDL:		
• Was MDL Check performed?	[ ]	[✓]
4. QCMRL:		
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours??	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
5. Initial Calibration Verification (ICV):		
Is the mid level (2nd source) recovery within ~~85 - 115%~~ QSM ±20%?	[✓]	[ ]

	Yes	No
6. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Was Drift or D ≤ 15% from the initial calibration with a maximum %D < 20% for a specific compound? those detecting sample data	[✓]	[ ]
7. Sample Analysis:		
• Was the RRT of an identified component within the retention time window created as SW-846 requires?	[✓]	[ ]
• Were samples with levels higher than the calibration range (E), diluted and re-analyzed? N/A	[ ]	[ ]
• Were identified Aroclors confirmed on a second GC column?	[ ]	[ ]
• Were individual Aroclor standards used to determine the pattern of the peaks? (Individual Aroclors are 1221, 1232, 1242, 1248, and 1254. Both Aroclor 1016, and 1260 can be used from the mixed calibration standards.) N/A	[ ]	[ ]
• Was RPD of target analyte conformation ≤ 40?	[ ]	[ ]
8. Sample Quality Control:		
• Method Blanks: Were target analytes ≤ 1/2 MRL? (ND)	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPDs within control limits? C_6-C_{12} 49% -0001 / 61% 0026	[ ]	[✓]
• System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits?	[✓]	[ ]

9. Comments (attach additional sheets if necessary):

One MPI + CCV had high recoveries due to sample carryover; however, associated samples were ND and not affected.

Validated/Reviewed by:

Signature: LS Calvin

Date: 3.25.2014

Name: LS Calvin

VERSION 5
June 2002

U.S. Army Corps of Engineers Louisville District - LCG

VOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 70

Laboratory: TA - North Canton

Batch Number(s): 168897, 168905

Sample Delivery Group (SDG): 17230, 18581

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Was mass assignment based on m/z 95?	[✓]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[✓]	[ ]
75	30.0 - 66.0 %	[✓]	[ ]
95	**100%, Base Peak**	[✓]	[ ]
96	5.0 - 9.0%	[✓]	[ ]
173	<2.0% of m/z 174	[✓]	[ ]
174	>50%	[✓]	[ ]
175	5.0 - 9.0% of mass 174	[✓]	[ ]
176	95.0 - 101.0% of m/z 174	[✓]	[ ]
177	5.0 - 9.0% of m/z 176	[✓]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[✓]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%? N/A	[ ]	[ ]
• Was manual integration "M" performed?	[ ]	[✓]
If the answer is "Yes", check for supporting documents. N/A	[ ]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		
6. QCMDL:	[ ]	[✓]
• Was MDL Check performed?		
7. QCMRL:	[✓]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R acetone 58% 0705-0006M-0001-SO 2-Hexanone 68% 0705B-0044M-0001-SO	[ ]	[✓] - WJ/C
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure) N/A	[ ]	[ ]
8. Initial Calibration Verification (ICV):	[✓]	[ ]
• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?		
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)?		
9. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did SPCC meet the RF values?	[✓]	[ ]
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the CCC meet the minimum requirements (D ≤ 20%)?	[✓]	[ ]
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[✓]	[ ]
• Alternative Evaluation: Maximum allowable Drift/D for		

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%? N/A	[ ]	[ ]

10. Sample Analysis:

• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[✓]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[✓]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[✓]	[ ]

11. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL? 2-hexanone, MIBK / U @ 2QQ in 0006M	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? (those affecting sample data	[✓]	[ ]
Were the RPD within control limits? 1,1,2,2,-TCA 51% UJ/Q in 0044M	[ ]	[✓]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits (50-150%)?	[ ]	[✓]

12. Comments (attach additional sheets if necessary):

BFB ↓ 75% (0006M) and 72% (0044M) results J or UJ/Q

Validated/Reviewed by:
Signature: L.S. Calvin

Date: 3.12.2014

Name: L.S. Calvin

VOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 71

Laboratory: CT Labs

Batch Number(s): 45500

Sample Delivery Group (SDG): 992316

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Was mass assignment based on m/z 95?	[✓]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[✓]	[ ]
75	30.0 - 66.0 %	[✓]	[ ]
95	**100%, Base Peak**	[✓]	[ ]
96	5.0 - 9.0%	[✓]	[ ]
173	<2.0% of m/z 174	[✓]	[ ]
174	>50%	[✓]	[ ]
175	5.0 - 9.0% of mass 174	[✓]	[ ]
176	95.0 - 101.0% of m/z 174	[✓]	[ ]
177	5.0 - 9.0% of m/z 176	[✓]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[✓]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%?	N/A [ ]	[ ]
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.		
6. QCMDL:	[ ]	[✓]
• Was MDL Check performed?		
7. QCMRL:	[✓]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R (applicable)	[✓]	[ ]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure) N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?	[✓]	[ ]
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)? N/A		

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?		[✓]	[ ]
• Did SPCC meet the RF values?		[✓]	[ ]
RF			
Chloromethane	0.1	[✓]	[ ]
1,1-Dichloroethane	0.1	[✓]	[ ]
Bromoform	0.1	[✓]	[ ]
Chlorobenzene	0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[✓]	[ ]
• Did the CCC meet the minimum requirements (D ≤ 20%)?		[✓]	[ ]
1,1-Dichloroethene		[✓]	[ ]
Chloroform		[✓]	[ ]
1,2-Dichloropropane		[✓]	[ ]
Toluene		[✓]	[ ]
Ethylbenzene		[✓]	[ ]
Vinyl chloride		[✓]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration? ↓ bromomethane 20.3, methylene chloride 44.8	[ ]	[✓]	
• Alternative Evaluation: Maximum allowable Drift/D for			

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%? N/A	[ ]	[ ]

10. Sample Analysis:

• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[✓]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[✓]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[✓]	[ ]

11. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL? ND	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPD within control limits? ↓	[ ]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits (50-150%)?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

Validated/Reviewed by:
Signature: M Calvin

Date: 4.8.2014

Name: L.S. Calvin

VOLATILE ORGANIC ANALYSIS CHECKLIST

07280-0001
-0012
-0014

Project Name: RVAAP CR Site 72

Laboratory: TA - N Canton

Batch Number(s): _____

Sample Delivery Group (SDG): 240-18291

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[Y]	[ ]
(b) Were samples analyzed within holding time?	[Y]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[Y]	[ ]
3. Was mass assignment based on m/z 95?	[Y]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[Y]	[ ]
75	30.0 - 66.0 %	[Y]	[ ]
95	**100%, Base Peak**	[Y]	[ ]
96	5.0 - 9.0%	[Y]	[ ]
173	<2.0% of m/z 174	[Y]	[ ]
174	>50%	[Y]	[ ]
175	5.0 - 9.0% of mass 174	[Y]	[ ]
176	95.0 - 101.0% of m/z 174	[Y]	[ ]
177	5.0 - 9.0% of m/z 176	[Y]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[ ]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
Chloromethane (RF 0.1)	[ ]	[ ]
1,1-Dichloroethane (RF 0.1)	[ ]	[ ]
Bromoform (RF 0.1)	[ ]	[ ]
Chlorobenzene (RF 0.3)	[ ]	[ ]
1,1,2,2-Tetrachloroethane (RF 0.3)	[ ]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[ ]	[ ]
Chloroform	[ ]	[ ]
1,2-Dichloropropane	[ ]	[ ]
Toluene	[ ]	[ ]
Ethylbenzene	[ ]	[ ]
Vinyl chloride	[ ]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[ ]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%?	[ ]	[ ]
• Was manual integration "M" performed?	[ ]	[ ]
If the answer is "Yes", check for supporting documents.	[ ]	
• Was the manual integration necessary?		
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**	[ ]	[ ]
6. QCMDL:		
• Was MDL Check performed?	[ ]	[ ]
7. QCMRL:	[ ]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[Y]	[ ]
• Was the QC/MRL between 70-130% R	[ ]	[N]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure)	[N]	[ ]

8. Initial Calibration Verification (ICV):

• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?	[N]	[ ]
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)?		

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[Y]	[ ]
• Did SPCC meet the RF values?	[Y]	[ ]

RF

Chloromethane	0.1	[Y]	[ ]
1,1-Dichloroethane	0.1	[Y]	[ ]
Bromoform	0.1	[Y]	[ ]
Chlorobenzene	0.3	[N]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[Y]	[ ]

• Did the CCC meet the minimum requirements (D ≤ 20%)?	[N]	[ ]
1,1-Dichloroethene	[Y]	[ ]
Chloroform	[Y]	[ ]
1,2-Dichloropropane	[Y]	[ ]
Toluene	[Y]	[ ]
Ethylbenzene	[N]	[ ]
Vinyl chloride	[Y]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[N]	[ ]
• Alternative Evaluation: Maximum allowable Drift/D for		

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%?	[ ]	[ ]

10. Sample Analysis:

• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component? N/A	[ ]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[ ]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[N]	[ ]

11. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[N] Sample ND
• LCS: Were the percent recoveries for LCS within the limits?	[N]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[N]	[ ]
Were the RPD within control limits?	[N]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits (50-150%)?	[ ]	[N]

12. Comments (attach additional sheets if necessary):

Surr: -0001 BFB 72% (85-120)
Tol-d8 73% (85-115%
-0012 BFB 76%

MB: 2-hex, but sample ND
TB: acetone, but " "

MS/D -0001
-0012 OK

MRL: acetone 61, 28
2-hex 65

Validated/Reviewed by:
Signature: Patti Meeks

Date: 3/25/14

Name: Patti Meeks

VOLATILE ORGANIC ANALYSIS CHECKLIST

-026
-030
~~-029~~
-039
-063
-083
-085

Project Name: RVAAP CR Site 72

Laboratory: TA-N Canton

Batch Number(s): _____

Sample Delivery Group (SDG): 240-18441-1, 18449, 18544, 18703

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[ ]	[ ]
(b) Were samples analyzed within holding time?	[X]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[X]	[ ]
3. Was mass assignment based on m/z 95?	[X]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[X]	[ ]
75	30.0 - 66.0 %	[X]	[ ]
95	**100%, Base Peak**	[X]	[ ]
96	5.0 - 9.0%	[X]	[ ]
173	<2.0% of m/z 174	[X]	[ ]
174	>50%	[X]	[ ]
175	5.0 - 9.0% of mass 174	[X]	[ ]
176	95.0 - 101.0% of m/z 174	[X]	[ ]
177	5.0 - 9.0% of m/z 176	[X]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[ ]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
Chloromethane (RF 0.1)	[ ]	[ ]
1,1-Dichloroethane (RF 0.1)	[ ]	[ ]
Bromoform (RF 0.1)	[ ]	[ ]
Chlorobenzene (RF 0.3)	[ ]	[ ]
1,1,2,2-Tetrachloroethane (RF 0.3)	[ ]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[ ]	[ ]
Chloroform	[ ]	[ ]
1,2-Dichloropropane	[ ]	[ ]
Toluene	[ ]	[ ]
Ethylbenzene	[ ]	[ ]
Vinyl chloride	[ ]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[ ]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%?	[ ]	[ ]
• Was manual integration "M" performed?	[ ]	[ ]
If the answer is "Yes", check for supporting documents.	[ ]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
6. QCMDL:	[ ]	[ ]
• Was MDL Check performed?		
7. QCMRL:	[ ]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[ ]	[ ]
• Was the QC/MRL between 70-130% R	[ ]	[ ]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure)	[ ]	[ ]
8. Initial Calibration Verification (ICV):	[ ]	[ ]
• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?		
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)?		
9. Continuing Calibration Verification (CCV):		
• Was CCV conducted every 12 hours?	[ ]	[ ]
• Did SPCC meet the RF values?	[ ]	[ ]

RF

Chloromethane	0.1	[ ]	[ ]
1,1-Dichloroethane	0.1	[ ]	[ ]
Bromoform	0.1	[ ]	[ ]
Chlorobenzene	0.3	[ ]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[ ]	[ ]

• Did the CCC meet the minimum requirements (D ≤ 20%)?	[ ]	[ ]
1,1-Dichloroethene	[ ]	[ ]
Chloroform	[ ]	[ ]
1,2-Dichloropropane	[ ]	[ ]
Toluene	[ ]	[ ]
Ethylbenzene	[ ]	[ ]
Vinyl chloride	[ ]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[ ]	[ ]
• Alternative Evaluation: Maximum allowable Drift/D for		

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%?	[ ]	[ ]

10. Sample Analysis:

• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[ ]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[ ]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[ ]	[ ]

11. Sample Quality Control:

• Method Blanks: Were target analytes ≤ 1/2 MRL?	[ ]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[ ]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[ ]	[ ]
Were the RPD within control limits?	[ ]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits (50-150%)?	[ ]	[ ]

12. Comments (attach additional sheets if necessary):

Surr:
BFB 47%, Td8 73% (-026)
BFB 58% (-030)
MS/D 0725B-0026-0001 ok
MRL acetone (61 + 28%) } -030
2-hex (65%)

IS DCB ↑ 41% in -30
~~CCV bromomethane -31%D~~

MRL (039)
2-hex 63%
~~4-methyl-2 69%~~

Validated/Reviewed by:
Signature:

Patti Meeks

Date: 3/26/14

Name: Patti Meeks

MS/D 0725B-0063-0001 ok - RPDs out, but diff spike amounts used

VOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 75

Laboratory: TA- North Canton

Batch Number(s): 65171

Sample Delivery Group (SDG): 17467

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Was mass assignment based on m/z 95?	[✓]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[✓]	[ ]
75	30.0 - 66.0 %	[✓]	[ ]
95	**100%, Base Peak**	[✓]	[ ]
96	5.0 - 9.0%	[✓]	[ ]
173	<2.0% of m/z 174	[✓]	[ ]
174	>50%	[✓]	[ ]
175	5.0 - 9.0% of mass 174	[✓]	[ ]
176	95.0 - 101.0% of m/z 174	[✓]	[ ]
177	5.0 - 9.0% of m/z 176	[✓]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Are the RSDs for the remaining target analytes ~~≤ 15%~~ or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[✓]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%? N/A	[ ]	[ ]
• Was manual integration "M" performed?	[ ]	[✓]
If the answer is "Yes", check for supporting documents. N/A	[ ]	[ ]
• Was the manual integration necessary?	[ ]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
6. QCMDL:	[ ]	[✓]
• Was MDL Check performed?		
7. QCMRL:	[✓]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R	[✓]	[ ]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure) N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

	[✓]	[ ]
• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?		
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)? N/A		

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did SPCC meet the RF values?	[✓]	[ ]

RF

Chloromethane	0.1	[✓]	[ ]
1,1-Dichloroethane	0.1	[✓]	[ ]
Bromoform	0.1	[✓]	[ ]
Chlorobenzene	0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[✓]	[ ]

• Did the CCC meet the minimum requirements (D ≤ 20%)?	[✓]	[ ]
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[✓]	[ ]
• Alternative Evaluation: Maximum allowable Drift/D for		

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%? N/A	[ ]	[ ]

10. Sample Analysis:

	Yes	No
• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[✓]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[✓]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[✓]	[ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? Styrene 0.151J / U/B@20Q in sample	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPD within control limits?	[✓]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits ~~(50-150%)?~~ QSM limits	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

Validated/Reviewed by:
Signature: L.S. Calvin

Date: 3.20.2014

Name: L.S. Calvin

77 HAC

VERSION 5
June 2002

U.S. Army Corps of Engineers Louisville District - LCG

VOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 77

Laboratory: TA - North Canton

Batch Number(s): 460014, 460020

Sample Delivery Group (SDG): 17525

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Was mass assignment based on m/z 95?	[✓]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[✓]	[ ]
75	30.0 - 66.0 %	[✓]	[ ]
95	**100%, Base Peak**	[✓]	[ ]
96	5.0 - 9.0%	[✓]	[ ]
173	<2.0% of m/z 174	[✓]	[ ]
174	>50%	[✓]	[ ]
175	5.0 - 9.0% of mass 174	[✓]	[ ]
176	95.0 - 101.0% of m/z 174	[✓]	[ ]
177	5.0 - 9.0% of m/z 176	[✓]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[✓]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%?	N/A [ ]	[ ]
• Was manual integration "M" performed?	[ ]	[ ]
If the answer is "Yes", check for supporting documents.	[ ]	[ ]
• Was the manual integration necessary?		
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons**.	[ ]	[ ]
6. QCMDL:	[ ]	[✓]
• Was MDL Check performed?		
7. QCMRL:	[✓]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R (those affecting sample data)	[✓]	[ ]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure) N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

	[✓]	[ ]
• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ?		
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)? N/A		

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did SPCC meet the RF values?	[✓]	[ ]

RF

Chloromethane	0.1	[✓]	[ ]
1,1-Dichloroethane	0.1	[✓]	[ ]
Bromoform	0.1	[✓]	[ ]
Chlorobenzene	0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[✓]	[ ]

• Did the CCC meet the minimum requirements (D ≤ 20%)?	[✓]	[ ]
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[ ]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[✓]	[ ]

• Alternative Evaluation: Maximum allowable Drift/D for

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%? N/A	[ ]	[ ]

10. Sample Analysis:

	Yes	No
• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[✓]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[✓]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[✓]	[ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL?	[✓]	[ ]
• LCS: Were the percent recoveries for LCS within the limits?	[✓]	[ ]
• MS/MSD: Were the percent recoveries within limits?	[✓]	[ ]
Were the RPD within control limits? (with ∆ sample amts. taken into account)	[✓]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits ~~(50-150%)?~~ QSM limits	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

Validated/Reviewed by:
Signature: L.S. Calvin

Date: 3.28.2014

Name: L.S. Calvin

VOLATILE ORGANIC ANALYSIS CHECKLIST

Project Name: RVAAP CR Site 83

Laboratory: CT Labs

Batch Number(s): 45499

Sample Delivery Group (SDG): 99211

	Yes	No
1. Holding Time:		
(a) Were samples preserved?	[✓]	[ ]
(b) Were samples analyzed within holding time?	[✓]	[ ]
2. Was the BFB tune performed at the beginning of each 12-hour period during which samples were analyzed?	[✓]	[ ]
3. Was mass assignment based on m/z 95?	[✓]	[ ]
4. Indicate if BFB ions abundance relative to m/z 95 base peak met the ions abundance criteria:		

m/z	Acceptance Criteria		
50	15.0 - 40.0 %	[✓]	[ ]
75	30.0 - 66.0 %	[✓]	[ ]
95	**100%, Base Peak**	[✓]	[ ]
96	5.0 - 9.0%	[✓]	[ ]
173	<2.0% of m/z 174	[✓]	[ ]
174	>50%	[✓]	[ ]
175	5.0 - 9.0% of mass 174	[✓]	[ ]
176	95.0 - 101.0% of m/z 174	[✓]	[ ]
177	5.0 - 9.0% of m/z 176	[✓]	[ ]

The relative ion abundance of m/z 95/96, m/z 174/176, and 176/177 are of critical importance.

The relative ion abundance of m/z 50 and 75 are of lower importance.

	Yes	No
5. Initial Calibration:		
• Did the initial calibration consist of five standards?	[✓]	[ ]
• Did the System Performance Check Compounds (SPCC) meet the minimum mean response factor (RF)?		
RF		
Chloromethane 0.1	[✓]	[ ]
1,1-Dichloroethane 0.1	[✓]	[ ]
Bromoform 0.1	[✓]	[ ]
Chlorobenzene 0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane 0.3	[✓]	[ ]
• Did the RSD meet the criteria ≤ 30% for each individual Calibration Check Compound (CCC)?		
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Are the RSDs for the remaining target analytes ≤ 15% or r ≥ 0.99 with a mean RSD ≤ 15% with a maximum RSD ≤ 20%?	[✓]	[ ]
If the answer is "No", are the mean RSDs ≤ 15%?	N/A [ ]	[ ]
• Was manual integration "M" performed?	[✓]	[ ]
If the answer is "Yes", check for supporting documents.	[✓]	[ ]
• Was the manual integration necessary?	[✓]	[ ]
If the answer is "No", contact the laboratory inquiring about the reasons behind the manual integration, and **inform the District Chemist immediately if there were no valid reasons.**		
6. QCMDL:	[ ]	[✓]
• Was MDL Check performed?		
7. QCMRL:	[✓]	[ ]

	Yes	No
• Were QC/MRL run at the beginning and end of every daily sequence or every 12 hours?	[✓]	[ ]
• Was the QC/MRL between 70-130% R Chloroethane 65% closing - UJ/C -0005M	[ ]	[✓]
• For the non-contaminants of concern was the QC/MRL between 60-140% (Sporadic Marginal Failure) N/A	[ ]	[ ]

8. Initial Calibration Verification (ICV):

those affecting sample data	[✓]	[ ]
• Is the mid level (2nd source) recovery within 80 - 120% for contaminants of concern ? methylene chloride ↑ (J/B in SA - no ICV cal. qual) UJC		
• Is the mid level (2nd source) recovery within 60-140% for non-contaminants of concern (Sporadic Marginal Failure)? N/A		

9. Continuing Calibration Verification (CCV):

• Was CCV conducted every 12 hours?	[✓]	[ ]
• Did SPCC meet the RF values?	[✓]	[ ]

RF

Chloromethane	0.1	[✓]	[ ]
1,1-Dichloroethane	0.1	[✓]	[ ]
Bromoform	0.1	[✓]	[ ]
Chlorobenzene	0.3	[✓]	[ ]
1,1,2,2-Tetrachloroethane	0.3	[✓]	[ ]

• Did the CCC meet the minimum requirements (D ≤ 20%)?	[✓]	[ ]
1,1-Dichloroethene	[✓]	[ ]
Chloroform	[✓]	[ ]
1,2-Dichloropropane	[✓]	[ ]
Toluene	[✓]	[ ]
Ethylbenzene	[✓]	[ ]
Vinyl chloride	[✓]	[ ]
• Primary Evaluation: Was the mean, Drift or D ≤ 20% from the initial calibration?	[ ]	[✓]
UJC methylene chloride ↓ 36.6% D / 130% R see comments		
• Alternative Evaluation: Maximum allowable Drift/D for		

	Yes	No
each target analyte is ≤ 30% when mean D ≤ 20%? N/A	[ ]	[ ]

10. Sample Analysis:

	Yes	No
• Was the RRT of an identified component within ± 0.06 RRT units of the RRT of the standard component?	[✓]	[ ]
• Did the abundance of ions in the sample spectra agree within 30% of the major ions (> 10% of the base ion) in the standard spectra?	[✓]	[ ]
• Were the internal standard areas within the QC limits (from -50% to +200%)?	[✓]	[ ]

11. Sample Quality Control:

	Yes	No
• Method Blanks: Were target analytes ≤ 1/2 MRL? RL=10 ½ @ 5J methylene chloride w/B in 0005M at level of contamination	[ ]	[✓]
• LCS: Were the percent recoveries for LCS within the limits? methylene chloride ↑ not reportable in sample	[ ]	[✓]
• MS/MSD: Were the percent recoveries within limits? N/A	[ ]	[ ]
Were the RPD within control limits?	[ ]	[ ]
System Monitoring Compounds (Surrogates): are surrogate recoveries within QC limits (50-150%)?	[✓]	[ ]

12. Comments (attach additional sheets if necessary):

CCV: methylene chloride %D ↓ 42.4% -0005M W/C
Assoc VBS – no reportable detects.

Validated/Reviewed by:
Signature: A Calvin

Date: 4.3.2014

Name: L.S. Calvin

APPENDIX G

IDW Disposal Letter Report

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Regional Office
33 Boston Post Rd West
Suite 340
Marlborough, MA 01752

Phone: 508.229.2270
Fax: 508.229.7737

Corporate Office
1240 Bayshore Highway
Burlingame, CA 94010

Phone: (650) 347-1555
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www.ecc.net

November 1, 2013

Mr. Eric Cheng, P.E.
Technical Manager
U.S. Army Corps of Engineers, Louisville District
600 Martin Luther King Jr. Place
Louisville, Kentucky 40202-0059

Subject: Investigation-Derived Waste Letter Report
2011 Performance-Based Acquisition
Environmental Investigation and Remediation
14 Compliance Restoration Sites
Ravenna Army Ammunition Plant, Ravenna, Ohio
Contract No. W912QR-04-D-0039
Delivery Order No. 0004
Project No. 5161.004

Dear Mr. Cheng:

Investigation activities in accordance with the Site Inspection (SI) and Remedial Investigation (RI) Work Plan (October 2012) SI and RI Work Plan Addendum (June 2013) were conducted from August 12, 2013 through August 14, 2013 and on September 10, 2013. These activities resulted in the generation of Investigation-Derived Waste (IDW) consisting of soil cuttings from direct push borings and equipment decontamination fluids. The purpose of this letter report is to characterize and classify IDW for disposal and to propose methods for disposing the IDW.

This letter report includes a summary of IDW generated, the origin of the IDW (Table 1), as well as proposed classification and recommendations for disposal of the IDW (Table 2). This letter report follows guidance established by the following:

1.) The Facility-Wide Sampling and Analysis Plan (SAIC 2011),
2.) Final SI/RI Work Plan (ECC 2012), and
3.) Final SI/RI Work Plan Addendum (ECC 2013).

Two distinct IDW streams were sampled as part of the SI/RI Work Plan field activities. Each waste stream was composited and sampled per requirements outlined in Section 7.0 of the Facility-Wide Sampling and Analysis Plan (FWSAP) and SI/RI Work Plan. IDW streams generated are:

- One (1), 55-gallon drum containing equipment decontamination fluids (Liquinox, distilled water [DI], and diluted hydrochloric/nitric acids), sampled on August 15, 2013, and
- One (1) 55-gallon drums containing soils from SI/RI sampling activities, sampled on August 15, 2012 and 10 September 2013, and

Per Section 7.0 of the Facility-Wide SAP, three composite samples were collected for Toxicity Characteristic Leaching Procedure (TCLP) parameters and submitted for laboratory analysis to characterize the following waste streams for disposal:

- Liquid IDW

The liquid sample (083SB-0021-0001-IDW TCLP) characterized one drum of decontamination fluid containing 2% hydrochloric/10% nitric acids, DI water, and Liquinox.

- Solid IDW

The solid samples (083SB-0022-0001-IDW TCLP and 075SB-0011-0001-SB TCLP) were collected from one, 55-gallon drum containing soil cuttings.

Table 1 summarizes the IDW samples collected.

Table 1 – Summary of Site Inspection/Remedial Investigation Investigation-Derived Waste

Container Type and Size	Contents	Generation Dates	Sample ID
55-gallon closed top drum	De-con fluids from sampling equipment and decontamination	12 August 2013 through 14 August 2013	083SB-0021-0001-IDW TCLP
55-gallon closed top drum	Soil cuttings	12 August 2013 through 14 August 2013, and 10 September 2013	083SB-0022-0001-IDW TCLP and 075SB-0011-0001-SB TCLP

Per Section 8.0 of the FWSAP, non-indiginous IDW is characterized for disposal on the basis of composite samples collected and submitted for laboratory analysis to characterize the waste stream for disposal. Upon receipt of analytical results from the laboratory, the analytical data was reviewed to determine if the waste was potentially hazardous. This review consisted of a comparison of the analytical results against the TCLP criteria presented in Table 8-1 and 8-2, Maximum Concentration of Contaminants for the Toxicity Characteristic (40 Code of Federal Regulation (CFR) 261.24), as presented in the FWSAP. The results of this review are summarized below.

IDW –FLUIDS

One liquid composite sample (083SB-0021-0001-IDW TCLP) was collected. **Attachment 1** presents the analytical laboratory data for TCLP analysis for IDW fluids generated during the August 12 through August 14, 2013 field activities. All analytical results were below regulatory levels as presented in Tables 8-1 and 8-2 in the FWSAP.

IDW –SOLIDS

Two solid composite samples (083SB-0022-0001-IDW TCLP, and 075SB-0011-0001-SB TCLP) were collected. **Attachment 2** presents the analytical laboratory data for TCLP analysis for IDW solids generated during the August 12 through August 14, 2013 and September 10, 2013 field activities. All analytical results were below regulatory levels as presented in Tables 8-1 and 8-2 in the FWSAP.

Please note the IDW addressed in this letter report has been characterized under provisions of the FWSAP using TCLP analysis and process knowledge. Unless RVAAP has additional information that would result in the IDW meeting, or containing materials that meet, the definition of a listed hazardous waste as defined in 40 CFR Part 261 Subpart D, it is recommended that the IDW, as presently characterized, be disposed as summarized in Table 2.

Table 2 - Summary of Final Waste Classification and Recommended Options

Medium	Waste Criterion	Disposal Recommendation
Water	Inorganics, Organics	Permitted Wastewater Treatment Facility or Permitted Solid Waste Facility
Soils	Inorganics, Organics	Permitted Wastewater Treatment Facility or Permitted Solid Waste Facility

Since RVAAP, under RCRA, is the generator of this material, ECC requests concurrence or direction on the waste classification prior to disposal to ensure materials are properly disposed. Following your direction and immediate approval, ECC will proceed with appropriate waste disposal.

Should you have any questions or wish to discuss the proposed activities further, please do not hesitate to contact the undersigned at 508-229-2270, ext. 22109, or via email.

Regards,
ECC

Alexander Easterday
Sr. Project Manager

Copy: Brett Merkel, ARNG
Kevin Sedlak, ARNG
Katie Tait, OHARNG
Mark Patterson, RVAAP Facility Manager
Nancy Zikmanis, Ohio EPA

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ATTACHMENTS

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Attachment 1 – IDW Analytical Results – Fluids

Analysis Type	Chemical	Units	Limit of Detection (mg/L)	TCLP Criteria (mg/L)	Results
					083SB-0021-0001-IDW TCLP
Semi-Volatile Organics	1,4-Dichlorobenzene	mg/L	0.0040	7.50	0.0040 U
Semi-Volatile Organics	2,4,5-Trichlorophenol	mg/L	0.020	400.00	0.020 U
Semi-Volatile Organics	2,4,6-Trichlorophenol	mg/L	0.020	2.00	0.020 U
Semi-Volatile Organics	2,4-Dinitrotoluene	mg/L	0.0040	0.13	0.0040 U
Semi-Volatile Organics	Hexachlorobenzene	mg/L	0.0040	0.13	0.0040 U
Semi-Volatile Organics	Hexachlorobutadiene	mg/L	0.0040	0.50	0.0040 U
Semi-Volatile Organics	Hexachloroethane	mg/L	0.0040	3.00	0.0040 U
Semi-Volatile Organics	3 & 4 Methylphenol	mg/L	0.360	200	0.360 U
Semi-Volatile Organics	2-Methylphenol	mg/L	0.020	200	0.020 U
Semi-Volatile Organics	Nitrobenzene	mg/L	0.0040	2.00	0.0040 U
Semi-Volatile Organics	Pentachlorophenol	mg/L	0.020	100.00	0.020 U
Semi-Volatile Organics	Pyridine	mg/L	0.010	5.00	0.010 U
TCLP Metals	Arsenic	mg/L	0.0120	5.00	0.010 J
TCLP Metals	Barium	mg/L	0.00090	100.00	0.19
TCLP Metals	Cadmium	mg/L	0.0010	1.00	0.0010 U
TCLP Metals	Chromium	mg/L	0.0020	5.00	0.019
TCLP Metals	Lead	mg/L	0.0020	5.00	0.013
TCLP Metals	Mercury	mg/L	0.000060	0.20	0.000060 U
TCLP Metals	Selenium	mg/L	0.0065	1.00	0.0028 J B
TCLP Metals	Silver	mg/L	0.0020	5.00	0.0018 J B
TCLP Herbicides	2,4,5-TP (Silvex)	mg/L	0.0010	1.00	0.0010 U
TCLP Herbicides	2,4-D	mg/L	0.010	10.00	0.010 U
TCLP Pesticides	Chlordane	mg/L	0.0030	0.03	0.0030 U
TCLP Pesticides	Endrin	mg/L	0.00010	0.02	0.00010 U
TCLP Pesticides	Gamma-BHC (Lindane)	mg/L	0.00010	0.40	0.00010 U
TCLP Pesticides	Heptachlor	mg/L	0.00010	0.0080	0.00038 P
TCLP Pesticides	Heptachlor Epoxide	mg/L	0.00010	0.0080	0.00010 U
TCLP Pesticides	Methoxychlor	mg/L	0.00010	10.00	0.00010 U
TCLP Pesticides	Toxaphene	mg/L	0.0030	0.50	0.0030 U
Volatile Organics	1,1-Dichloroethene	mg/L	0.025	0.7	0.025 U
Volatile Organics	1,2-Dichloroethane	mg/L	0.050	0.50	0.050 U
Volatile Organics	2-Butanone	mg/L	0.250	200	0.250 U
Volatile Organics	Benzene	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Carbon Tetrachloride	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Chlorobenzene	mg/L	0.0250	100.00	0.0250 U
Volatile Organics	Chloroform	mg/L	0.0250	6.00	0.0250 U
Volatile Organics	Tetrachloroethylene	mg/L	0.050	0.70	0.050 U
Volatile Organics	Trichloroethene	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Vinyl Chloride	mg/L	0.0250	0.2	0.0250 U

Notes:
J – Estimated value
B-Analyte detected in associated method blank
P-Concentration differs more than 40% between primary and confirmation analysis
mg/L – milligrams per liter
U- Undetected above laboratory limit of detection

Attachment 2 – IDW Analytical Results – Solids

Analysis Type	Chemical	Units	Limit of Detection (mg/L)	TCLP Criteria (mg/L)	Results
					083SB-0022-0001-IDW
Semi-Volatile Organics	1,4-Dichlorobenzene	mg/L	0.0040	7.50	0.0040 U
Semi-Volatile Organics	2,4,5-Trichlorophenol	mg/L	0.020	400.00	0.020 U
Semi-Volatile Organics	2,4,6-Trichlorophenol	mg/L	0.020	2.00	0.020 U
Semi-Volatile Organics	2,4-Dinitrotoluene	mg/L	0.0040	0.13	0.0040 U
Semi-Volatile Organics	Hexachlorobenzene	mg/L	0.0040	0.13	0.0040 U
Semi-Volatile Organics	Hexachlorobutadiene	mg/L	0.0040	0.50	0.0040 U
Semi-Volatile Organics	Hexachloroethane	mg/L	0.0040	3.00	0.0040 U
Semi-Volatile Organics	Nitrobenzene	mg/L	0.0040	2.00	0.0040 U
Semi-Volatile Organics	Pentachlorophenol	mg/L	0.020	100.00	0.020 U
Semi-Volatile Organics	Pyridine	mg/L	0.010	5.00	0.010 U
TCLP Metals	Arsenic	mg/L	0.0120	5.00	0.0120 U
TCLP Metals	Barium	mg/L	0.0090	100.00	0.40
TCLP Metals	Cadmium	mg/L	0.0010	1.00	0.00062 J
TCLP Metals	Chromium	mg/L	0.0020	5.00	0.0012 J
TCLP Metals	Lead	mg/L	0.0020	5.00	0.0022 J
TCLP Metals	Mercury	mg/L	0.000060/0.00020*	0.20	0.000060 U/0.00020 U*
TCLP Metals	Selenium	mg/L	0.25	1.00	0.0042 J
TCLP Metals	Silver	mg/L	0.0050	5.00	0.0050 U
TCLP Herbicides	2,4,5-TP (Silvex)	mg/L	0.010	1.00	0.010 U
TCLP Herbicides	2,4-D	mg/L	0.0010	10.00	0.0010 U
TCLP Pesticides	Chlordane	mg/L	0.0030	0.03	0.0030 J
TCLP Pesticides	Endrin	mg/L	0.00010	0.02	0.00010 U
TCLP Pesticides	Gamma-BHC (Lindane)	mg/L	0.00010	0.40	0.00010 U
TCLP Pesticides	Heptachlor	mg/L	0.00010	0.01	0.00037 P
TCLP Pesticides	Heptachlor Epoxide	mg/L	0.00010	0.01	0.00010 U
TCLP Pesticides	Methoxychlor	mg/L	0.00010	10.00	0.00010 U
TCLP Pesticides	Toxaphene	mg/L	0.0030	0.50	0.0030 U
Volatile Organics	1,1-Dichloroethene	mg/L	0.0250	0.7	0.0250 U
Volatile Organics	1,2-Dichloroethane	mg/L	0.050	0.50	0.050 U
Volatile Organics	2-Butanone	mg/L	0.250	200	0.250 U
Volatile Organics	Benzene	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Carbon Tetrachloride	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Chlorobenzene	mg/L	0.0250	100.00	0.0250 U
Volatile Organics	Chloroform	mg/L	0.0250	6.00	0.0250 U
Volatile Organics	Tetrachloroethylene	mg/L	0.050	0.70	0.050 U
Volatile Organics	Trichloroethene	mg/L	0.0250	0.50	0.0250 U
Volatile Organics	Vinyl Chloride	mg/L	0.0250	0.20	0.0250 U

Notes:

*- Mercury sample result for sample 075SB-0011-0001-SO

NA – Not Analyzed

J – Estimated Value

P-Concentration differs more than 40% between primary and confirmation analysis

mg/L – milligrams per liter

U- Undetected above laboratory limit of detection

OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

November 27, 2013

CERTIFIED MAIL
7012 3050 0001 8837 5129

Mr. Mark Patterson, Facility Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

Re: Investigation-Derived Waste Report 2011 Performance-Based Acquisition Environmental Investigation and Remediation 14 Compliance Restoration Sites, Ravenna Army Ammunition Plant (Ohio EPA ID # 267-000859-162)

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the Investigation-Derived Waste Report 2011 Performance-Based Acquisition Environmental Investigation and Remediation 14 Compliance Restoration Sites, Ravenna Army Ammunition Plant. The document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on November 15, 2013. The document was prepared for the U.S. Army Corps of Engineers (USACE), Louisville District by Environmental Chemical Corporation (ECC), under Contract No. W912QR-04-D-0039.

This report is approved and Ohio EPA concurs that the IDW (soil cuttings) from work conducted on August 12, 2013, August 14, 2013, and September 10, 2013, may be disposed of as contaminated, non-hazardous waste and that it be sent off-site for disposal to a permitted water treatment facility or permitted solid waste facility.

If you have any questions, please call me at (330) 963-1170.

Sincerely,

Edward D'Amato, Site Coordinator
Division of Environmental Response and Revitalization

ED:NZ/nvr

cc: Cullen Grasty, USACE
Katie Tait, OHNGB
Kevin Sedlak, ARNG
Brett Merkel, ARNGD-Washington, DC

ec: Justin Burke, Ohio EPA, NEDO, DERR
Nancy Zikmanis, Ohio EPA, NEDO, DERR

E-MAILED 12-02-2013 RMH

Scanned By: RMH Date: 12-02-2013

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 12-02-2013

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mark Patterson
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna Oh 44266-9297

COMPLETE THIS SECTION ON DELIVERY

A. Signature
x Rebecca Haney
☒ Agent
☐ Addressee

B. Received by *(Printed Name)* Rebecca Haney
C. Date of Delivery 12-2-2013

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7012 3050 0001 8837 5129 NRAINES for ED 11/27/13

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

OHIO EPA
NORTHEAST DISTRICT OFFICE
2110 EAST AURORA ROAD
TWINSBURG OH 44087

COPY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
OH5 210 020 736	1	330-677-0785	12232013-01-A

GENERATOR

5. Generator's Name and Mailing Address
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266
Generator's Phone: 330-358-2920

Generator's Site Address (if different than mailing address)
Same

6. Transporter 1 Company Name: Emerald Environmental Services, Inc
U.S. EPA ID Number: OHR 000 102 053

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Vexor Technology
955 West Smith Road
Medina, Ohio 44256
Facility's Phone: 330-721-9773
U.S. EPA ID Number: OHD 077 772 895

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non DOT Regulated, Non Hazardous Material (Purge Water) 1167850	1	DM	25 CYS ~~200 lbs~~ DW	G	
2.	Non DOT Regulated, Non Hazardous Material (Soil Cuttings) 1167851	1	DM	200 lbs	P	
3.	W1091721					
4.						

13. Special Handling Instructions and Additional Information
9.1.) Approval # VEX 25094
9.2.) Approval # VEX 25095
Job Number: 13-0081 EES

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Mark Patterson
Signature: Mark Patterson
Month: 12 Day: 23 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: FRED B McCULTY
Signature: Fred B. McCulty
Month: 12 Day: 23 Year: 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Daniel Kindall
Signature:
Month: 12 Day: 24 Year: 13

169-BLC-O 5 11977 (Rev. 8/06)

DESIGNATED FACILITY TO GENERATOR

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APPENDIX H

Site Photographs

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View is looking towards the northeast. Note orange paint line on edge of manhole rim. This denotes direction of incoming pipe at the bottom of the manhole.

View is looking into the manhole. Note orange line on manhole rim aligns with incoming pipe visible in the bottom of the manhole.

View of incoming pipe in manhole. Manhole bottom is at 7 ft bgs.

View is looking to the northwest.

Sample collection. View is looking eastward. Direct push drill rig visible in the background.

Photo No. 1 – CC RVAAP-83 DU01 SB01 sample intervals 0-5 ft and 5-10 ft.

Photo No. 2 – CC RVAAP-83 DU01 SB02 sample intervals 0-5 ft and 5-10 ft.

Photo No. 3 – CC RVAAP-83 DU01 SB05 sample intervals 0-5 ft, 5-10 ft, and 10-13 ft.

APPENDIX I

Comment Response Table and Regulatory Correspondence
(Note – To be provided with final report)

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