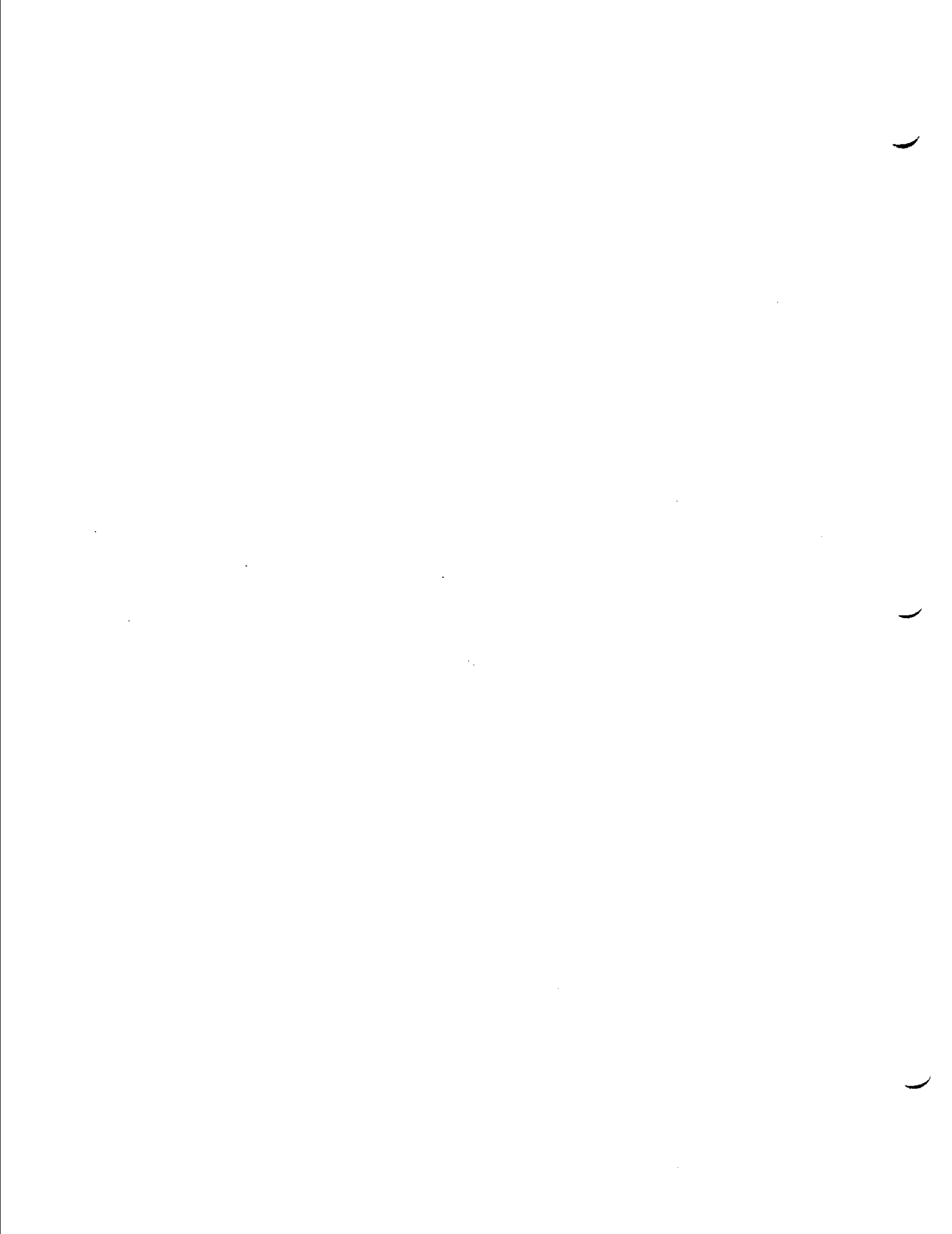


**APPENDIX J**  
**INVESTIGATION-DERIVED WASTE MANAGEMENT REPORT**



**INVESTIGATION-DERIVED WASTE CHARACTERIZATION  
AND DISPOSAL PLAN  
FOR THE PHASE I REMEDIAL INVESTIGATION  
OF HIGH PRIORITY AREAS OF CONCERN  
AT THE RAVENNA ARMY AMMUNITION PLANT  
RAVENNA, OHIO**

**May 1997**



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## List of Acronyms

AOC	Area of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
IDW	investigation-derived waste
OEPA	Ohio Environmental Protection Agency
PCB	polychlorinated biphenyl
PPE	personal protective equipment
RI	Remedial Investigation
RVAAP	Ravenna Army Ammunition Plant
RCRA	Resource Conservation and Recovery Act
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency



## 1. INTRODUCTION

Science Applications International Corporation (SAIC) conducted a Phase I Remedial Investigation (RI) of High Priority Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant (RVAAP), in Ravenna, Ohio, in support of RVAAP's Installation Restoration Program. The Phase I RI was performed for the U.S. Army Corps of Engineers (USACE), Nashville District, under Contract DACA62-94-D-0029, Delivery Orders Nos. 0010 and 0022. The Phase I RI was conducted in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and work plans reviewed and commented on by the Ohio Environmental Protection Agency (OEPA).

Investigative activities conducted during the Phase I RI resulted in the generation of investigation-derived waste (IDW) consisting of soil, sediment, water, and spent personal protective equipment (PPE). The IDW was generated in the course of drilling, sampling, and equipment decontamination activities. The objectives of this plan are to characterize the IDW for future management and disposal. The plan includes a summary of the IDW generated and its origin (Section 2); an overview of the current IDW management (Section 3); the analytical results available for waste characterization (Section 4); and classification of the IDW and recommendations for disposal (Section 5). This document has been revised pursuant to comments provided by the OEPA in letters dated February 10, 1997 and August 5, 1997. In addition, appropriate revisions have been made to this document pursuant to the guidance issued by the OEPA (November 1997) to the U.S. Army regarding IDW disposition.

## 2. OPERATIONAL HISTORY AND WASTE GENERATION

Eleven high-priority AOCs were investigated during the Phase I RI at RVAAP. These AOCs are as follows:

- Demolition Area #2 (RVAAP-04),
- Winklepeck Burning Grounds (RVAAP-05),
- Load Line 1 and Dilution/Settling Pond (RVAAP-08),
- Load Line 2 and Dilution/Settling Pond (RVAAP-09),
- Load Line 3 and Dilution/Settling Pond (RVAAP-10),
- Load Line 4 and Dilution/Settling Pond (RVAAP-11),
- Load Line 12 and Dilution/Settling Pond (RVAAP-12),
- Building 1200 and Dilution/Settling Pond (RVAAP-13),
- Load Line 12 Pink Wastewater Treatment Plant (RVAAP-18),
- Landfill North of Winklepeck Burning Grounds (RVAAP-19), and
- Upper and Lower Cobbs Ponds (RVAAP-29).

Information regarding the operational history and suspected contaminants at the eleven AOCs is presented in Section 1 of the *RVAAP Phase I RI Sampling and Analysis Plan (SAP) Addendum* (USACE 1996a). The investigative activities conducted at each AOC are presented in the *Phase I RI SAP Addendum* along with the sampling methods and procedures. The *Phase I RI SAP Addendum* is tiered under the *RVAAP Facility-wide SAP* (USACE 1996b), which contains additional investigative methods and procedures used for sampling and managing IDW at RVAAP.

Soil, sediment, water (groundwater and decontamination soap and rinse water), and spent PPE IDW generated during the Phase I RI are listed, by container, in Table 2-1.

Table 2-1. IDW Drum Inventory

DRUM NUMBER	DRUM TYPE AND SIZE	CONTENTS AND APPROXIMATE VOLUME	WASTE SOURCE	GENERATION DATE(S)
DECON-01*	closed-top 55 gal	water - 55 gal	decontamination water (soil)	7/22/96 to 7/28/96
DECON-02	closed-top 55 gal	HCL acid rinse water - 12 gal	decontamination acid rinse	7/22/96 to 8/22/96
DECON-03*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/22/96
DECON-04*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/23/96
DECON-05*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/24/96
DECON-06*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/25/96
DECON-07	closed-top 55 gal	water and sediment - 55 gal	decontamination water (sediment)	7/25/96 to 8/14/96
DECON-08*	closed-top 55 gal	water - 55 gal	decontamination water (soil)	7/28/96 to 8/9/96
DECON-09*	closed-top 55 gal	water - 55 gal	decontamination water (soil)	8/9/96 to 8/22/96
DECON-10*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/25/96 to 8/14/96
DECON-11*	closed-top 55 gal	water - 55 gal	decontamination water (drilling)	7/25/96 to 8/14/96
DECON-12	closed-top 55 gal	water - 55 gal	decontamination water (sediment)	8/14/96 to 8/21/96
LL1mw-66-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-066)	7/25/96
LL1mw-66-02	open-top 55 gal	saturated soil - 55 gal	monitoring well (LL1mw-066)	7/26/96
LL1mw-66-03	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-066)	7/26/96
LL1mw-66-04	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-066)	7/26/96



Table 2-1 (continued)

DRUM NUMBER	DRUM TYPE AND SIZE	CONTENTS AND APPROXIMATE VOLUME	WASTE SOURCE	GENERATION DATE(S)
LL1mw-66-05	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-066)	7/27/96
LL1mw-66-06	open-top 55 gal	unsaturated soil - 40 gal	monitoring well (LL1mw-066)	7/27/96
LL1mw-63-01A	open-top 55 gal	unsaturated soil - 20 gal	monitoring well (LL1mw-063)	7/27/96
LL1mw-63-01	closed-top 55 gal	purge water - 15 gal	monitoring well (LL1mw-063)	8/12/96
LL1mw-63-02	open-top 55 gal	unsaturated soil - 45 gal	monitoring well (LL1mw-063)	7/28/96
LL1mw-63-03	open-top 55 gal	saturated soil - 15 gal	monitoring well (LL1mw-063)	7/29/96
LL1mw-63-04	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-063)	7/31/96
LL1mw-65-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-063)	7/24/96
LL1mw-65-02	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-063)	7/24/96
LL1mw-65-03	open-top 55 gal	saturated soil - 55 gal	monitoring well (LL1mw-063)	7/24/96
LL1mw-65-04	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-05	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-06	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-07	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-08	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-09	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-10	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96

Table 2-1 (continued)

DRUM NUMBER	DRUM TYPE AND SIZE	CONTENTS AND APPROXIMATE VOLUME	WASTE SOURCE	GENERATION DATE(S)
LL1mw-65-11	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-12	closed-top 55 gal	water - 18 gal	monitoring well (LL1mw-065)	7/30/96
LL1mw-65-13	open-top 55 gal	water - 55 gal	monitoring well (LL1mw-065)	8/10/96
LL1mw-64-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-064)	7/23/96
LL1mw-64-02	open-top 55 gal	saturated soil - 55 gal	monitoring well (LL1mw-064)	7/23/96
LL1mw-64-03	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-04	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-05	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-06	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-07	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-08	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-09	closed-top 55 gal	water - 40 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-10	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	7/29/96
LL1mw-64-11	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-064)	8/10/96
LL1mw67-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL1mw-067)	8/12/96
LL1mw67-02	open-top 55 gal	unsaturated soil - 35 gal	monitoring well (LL1mw-067)	8/13/96
LL1mw67-03	closed-top 55 gal	water - 55 gal	monitoring well (LL1mw-067)	8/20/96

Table 2-1 (continued)

DRUM NUMBER	DRUM TYPE AND SIZE	CONTENTS AND APPROXIMATE VOLUME	WASTE SOURCE	GENERATION DATE(S)
LL1mw67-04	closed-top 55 gal	water - 50 gal	monitoring well (LL1mw-067)	8/20/96
LL1-001	open-top 55 gal	soil - 30 gal	surface soil from RVAAP-08	7/28/96 to 8/20/96
LL1-002	open-top 55 gal	soil - 10 gal	ditch sediment from RVAAP-08	7/30/96 to 8/20/96
LL2mw59-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL2mw-059)	8/10/96
LL2mw59-02	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL2mw-059)	8/10/96
LL2mw59-03	open-top 55 gal	saturated soil - 18 gal	monitoring well (LL2mw-059)	8/10/96
LL2mw59-04	closed-top 55 gal	water - 55 gal	monitoring well (LL2mw-059)	8/13/96
LL2mw60-01	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL2mw-060)	8/11/96
LL2mw60-02	open-top 55 gal	unsaturated soil - 55 gal	monitoring well (LL2mw-060)	8/11/96
LL2mw60-03	open-top 55 gal	saturated soil - 18 gal	monitoring well (LL2mw-060)	8/11/96
LL2mw60-04	closed-top 55 gal	water - 55 gal	monitoring well (LL2mw-060)	8/14/96
LL2mw60-05	closed-top 55 gal	water - 27 gal	monitoring well (LL2mw-060)	8/14/96
LL2-001SO	open-top 55 gal	soil - 15 gal	surface soil from RVAAP-09	8/8/96 to 8/20/96
LL2-002SD	open-top 55 gal	soil - 6 gal	ditch sediments from RVAAP-09	8/20/96
LL3-001	open-top 55 gal	soil - 20 gal	surface soil from RVAAP-10	7/23/96 to 8/20/96
LL3-002	open-top 55 gal	soil - 8 gal	ditch sediment from RVAAP-10	7/25/96 to 8/20/96
LL4-001	open-top 55 gal	soil - 38 gal	surface soil from RVAAP-11	7/23/96 to 8/20/96

Table 2-1 (continued)

DRUM NUMBER	DRUM TYPE AND SIZE	CONTENTS AND APPROXIMATE VOLUME	WASTE SOURCE	GENERATION DATE(S)
LL12-01	open-top 55 gal	soil - 20 gal	surface soil from RVAAP-12	7/25/96 to 8/20/96
LL12-02	open-top 55 gal	soil - 8 gal	ditch sediment from RVAAP-12	7/25/96 to 8/20/96
B12ss-01	closed-top 55 gal	soil - 6 gal	surface soil from RVAAP-13	7/24/96 to 7/30/96
B12SD-01	closed-top 55 gal	soil - 3 gal	ditch sediments from RVAAP-13	7/24/96 to 7/30/96
LNWtr-001	open-top 55 gal	plastic sheeting from landfill trenches - 55 gal	trenches at RVAAP-19	8/5/96 to 8/7/96
DA2-001	open-top 55 gal	soil - 55 gal	soil borings from RVAAP-04	8/5/96 to 8/20/96
DA2-002	open-top 55 gal	soil - 38 gal	soil borings from RVAAP-04	8/7/96 to 8/20/96
WBG-001so	open-top 55 gal	soil - 55 gal	surface soil from RVAAP-05	7/30/96 to 8/20/96
WBG-002so	open-top 55 gal	soil - 55 gal	surface soil from RVAAP-05	8/7/96 to 8/20/96
PPE-01	open-top 55 gal	plastic sheeting and disposable PPE - 55 gal	sampling equipment decontamination	7/26/96 to 8/23/96
L12wp-001	closed-top 5 gal polyethylene bucket	soil <0.5 gal	saturated sediment from RVAAP-12 well points	7/29/96

\* Drum emptied 8/21/96 into 1000-gal poly tank staged at LL12 (RVAAP-18) Pink Wastewater Treatment Plant.

### 3. MANAGEMENT OF ENVIRONMENTAL MEDIA

All environmental media were managed in a manner that minimized potential risk to human health and the environment and as nonhazardous materials pending waste characterization and classification based on analytical results. The *Facility-Wide SAP* (USACE 1996b) and the *Phase I RI SAP Addendum* (USACE 1996a) contain the procedures used for containerizing and handling IDW.

#### 3.1 SOILS

Excess soil and rock cuttings from monitoring well boreholes (> 4 feet) were segregated by borehole, additionally, on the basis of unsaturated or saturated (groundwater) materials. Excess soil from surface soil sampling stations and shallow (< 4 ft) soil borings were segregated by AOC. All soil IDW was placed in lined, open-top 55-gallon drums and the container was labeled to indicate a description of the medium (e.g., soil, sediment, PPE), the origin of the material, the starting and ending dates that material was placed in the container, and other pertinent information as noted in Table 2-1. The containers were additionally marked using a paint pen or other indelible marker to indicate the container number and origin. Each container was sealed after soil was placed in it and was kept closed except when wastes were being added to the containers to prevent the introduction of rainwater. At the end of field activity, all containers were sealed using the manufacturer's bung-top lid.

Soil drums were staged within the AOC where they were generated in designated field staging areas located near the entrance of each AOC. All containers were placed on wooden pallets to reduce contact with standing water and covered with plastic sheeting, where necessary, to protect them from exposure to weather.

#### 3.2 SEDIMENT

Excess sediment from sampling stations was segregated by AOC and placed in lined, open-top 55-gallon drums. Excess sediment from sampling stations collected within an AOC were commingled to fill the drums. As IDW was placed in a drum, the container was labeled to indicate a description of the medium (e.g., soil, sediment, PPE), the origin of the material, the starting and ending dates that material was placed in the container, and other pertinent information as noted in Table 2-1. The containers were marked using a paint pen or other indelible marker to indicate the container number and origin. Each container was sealed after sediment was placed in it and was kept closed except when wastes were being added to it to prevent the introduction of rainwater. At the end of field activity, all containers were sealed using the manufacturer's bung-top lid.

Sediment drums were staged within the AOC where they were generated in designated field staging areas located near the entrance of each AOC. All containers were placed on wooden pallets to reduce contact with standing water and covered with plastic sheeting, where necessary, to protect them from exposure to weather.

Excess sediment from subaqueous settling pond sampling stations was placed back in the pond at the conclusion of the sampling event. These wastes were not containerized because the amount generated (<0.5 lb/sample) was very small and was no greater than the amount of sediment

resuspended in water from retrieving the sample; therefore, the sediment sampler was washed clean with native water at each sampling point allowing re-sedimentation of wastes.

### **3.3 GROUNDWATER**

Excess groundwater from monitoring well development and purging was segregated by the monitoring well from which it was generated and placed into unlined, closed-top 55-gallon drums. As the water was placed in a drum, the container was labeled to describe the medium, the origin of the material, and the dates that material was placed in the container, as well as other pertinent information. All containers were marked using a paint pen or other indelible marker to indicate the container number and origin. At the end of field activity, all containers were sealed using manufacturer's drum caps. Each container was sealed after water was placed in it and kept closed to prevent the introduction of rainwater to the drums. Drums were initially staged at each monitoring well location on wooden pallets, but at the conclusion of sampling activities, the drums were moved to a designated field staging areas within the AOC from which they were generated (Load Lines 1 and 2). All containers were placed on wooden pallets to reduce contact with standing water and covered with plastic sheeting, where necessary, to protect them from exposure to weather.

### **3.4 DECONTAMINATION FLUIDS**

All decontamination wash and rinse liquids were segregated by waste stream and containerized in unlined, closed-top 55-gallon drums. This includes fluids generated in the course of decontamination of drilling equipment as well as decontamination of hand-held sampling equipment. Labels affixed to the drums as they were being filled describe the medium, the origin of the material, and the start and end dates that material was placed in the container. All drums were marked with a paint pen or other indelible marker to indicate the container number and origin. At the end of field activity, all containers were closed to prevent the introduction of rain water to the drums. All drums were initially staged at Building 1047.

Rinse water from the hydrochloric acid rinse of sampling equipment during decontamination are staged in separate unlined, closed-top, labeled drums inside Building 1037. Wash and rinse water from sediment sampling equipment were segregated from soil and groundwater sampling decontamination IDW and containerized in unlined, closed-top 55-gallon drums that are also staged inside Building 1047. These drums were sampled on August 23, 1996 to characterize the waste for disposal.

At the conclusion of field activities, decontamination wash and rinse IDW from soil sampling equipment were commingled from drums (Table 2-1) into a single 1000-gallon polyethylene holding tank that is staged inside the Load Line 12 Pink Wastewater Treatment Plant. This tank contains approximately 495 gallons of liquid decontamination IDW and rests on a wooden skid within a containment structure. A label affixed to the tank describes the contents, generation dates, and the origin of the contents. Decontamination IDW from groundwater sampling equipment is staged in Building 1047. This tank was sampled on August 23, 1996 to characterize the waste for disposal.

### 3.5 CONTAMINATED PPE

One lined, open-top 55-gallon drum of spent PPE, plastic sheeting, rope, and other solids was generated during Phase I RI. The drum was labeled to describe its contents, the start and end dates of waste generation, and the origin of the waste. A paint pen or indelible marker was used to label the drum. This drum is staged inside Building 1047.

## 4. DISCUSSION OF ANALYTICAL RESULTS

Per Section 7.4 of the *Facility-Wide SAP* (USACE 1996b), the analytical results from environmental samples collected during Phase I RI are used, where possible, to characterize IDW for each sampling medium. For example, analytical results from the sampling of ditch sediments will be used to characterize the drums containing correlative sediment IDW for waste classification. Saturated soils and purge or development groundwater from monitoring wells will be characterized based on the analyses of groundwater samples collected from each well. Where correlative environmental samples do not exist, waste characterization samples were collected. In the case of unsaturated soils and rock cuttings generated from monitoring well drilling, these materials are classified as non-hazardous and non-contaminated based on composite waste samples collected by SAIC during May 1997 and analyzed for TCLP Metals and Explosives. Samples were also collected from segregated decontamination IDW waste containers. The IDW characterization results are presented in Appendix A. Only the analytical results detected above method detection limits are presented in Appendix A, except for waste samples collected during May 1997 where analytical results are reported on Laboratory Form 1 CLP data sheets.

Appendix A presents the frequency of detects, minimum detected value, maximum detected value, and average value for IDW analyses. Note that the average value is calculated from all reported values, either the detected concentration or, if not detected, the quantitation limit for that sample. For analyses that include nondetects, the average represents an upper bound on the true average. Because quantitation limits vary between samples, the calculated average may exceed the maximum detect in cases where nondetects are included. For example, consider anthracene for drum LL12-10: reported values are 940 U (a nondetect) in L12sd-026(d)-0337-sd and 350 J in L12sd-028(d)-0339-sd, making the maximum detect = 350 and the average = 645.

Because surface soil and sediment drums contain IDW from several boring locations within an AOC, minimum, maximum, and mean concentrations from all samples contained in each drum are presented for characterization of the wastes in each container.

## 5. RECOMMENDATIONS FOR DISPOSAL

Table 7-1 of the *Facility-Wide SAP* (USACE 1996b) shows the maximum concentration of contaminants for the toxicity characteristic for hazardous wastes per 40 *CFR* 261.24. Analytical results for the IDW are compared with these criteria to determine whether the wastes are potentially hazardous or non-hazardous.

For the characterization of wastes (e.g., soils, sediments, etc.) as non-hazardous or hazardous, the Resource Conservation and Recovery Act (RCRA) regulatory limit will be compared to the mean contaminant level as presented in Appendix A. Although the analysis conducted on the

materials was a total analysis, the Toxicity Characteristic Leaching Procedure (TCLP) methodology will be used for waste classification by applying a twenty-fold dilution factor to total results for comparison to TCLP. For purposes of hazardous waste determination, if a given analyte is found to exceed 20 times the regulatory limit, it is being considered a RCRA- hazardous waste due to the dilution factor inherent in the TCLP method for solid materials. Analytical results for liquids were directly compared to the regulatory limits to determine hazardous waste applicability.

A portion of the contaminants found within the soils and sediments at the facility are also found listed in 40 *CFR* 261.33(f) and when unused are considered listed hazardous wastes. Activities at the facility included blending of materials for the purpose of manufacturing munitions. It is unknown whether the materials found within the soils and sediments were derived from the mixed compound or from separate individual use. In addition, materials were used as chemical intermediates within a manufacturing process to produce military specification munitions, as such it is unclear whether these process residuals have in fact been used and no longer meet the listing criteria of 40 *CFR* Part 261 for unused commercial chemical products or intermediates. It is recognized that even if this is the case, it is not possible to determine whether materials resulted from process releases before, during, or after the manufacturing process making the determination of the waste listing application unclear. It is because of these uncertainties that the approach used was to base all IDW characterization on TCLP results.

In addition to the RCRA concern, low levels of polychlorinated biphenyls (PCBs) were detected in some samples at less than 10 ppm (most samples were less than 1 ppm PCBs). Due to limitations regarding facility history it was not possible to clearly identify the source(s) of the PCB contamination to determine whether the material is subject to Toxic Substances Control Act (TSCA) for disposal as a PCB waste. As such, the analytical results are being used for TSCA characterization. As no results exceeded the 50 ppm limit, the IDW is not considered a TSCA waste. Non-RCRA and non-TSCA IDW are also classified as contaminated or non-contaminated on the basis of elevated levels of contaminants detected above analytical method detection limits (organics) or background levels (inorganics). IDW exceeding these levels are classified as contaminated. Recommendations for disposal have been revised to reflect the most recent guidance provided by the OEPA in a letter dated November 3, 1997, to the U.S. Army regarding IDW disposition.

## **5.1 SOILS**

As previously discussed, excess soils were generated as a result of the monitoring well installation and from locations where surface soil samples were collected. The results of correlative environmental samples were used to characterize soil IDW where possible. Where no correlative environmental soil samples existed (e.g., monitoring well soil IDW), waste samples were collected to characterize IDW.

### ***IDW Soil Hazardous Waste Determination and Disposal***

Utilizing the criteria from 40 *CFR* Part 261, three drums of soil generated during the sampling activities exceed the regulatory limit (based on total analysis) for lead (drums LL1-001, LL12-01, and LL3-001). These drums of materials are tentatively classified as hazardous waste (D008) and are recommended for disposal accordingly. Prior to disposal, it is recommended that RCRA TCLP testing be performed in conjunction with the permitted disposal facility to ensure appropriate



classification and disposal of these wastes. It is recommended that compatible RCRA wastes be commingled so as to reduce the number of partially filled containers requiring disposal. Applicable waste codes must appear on all hazardous waste containers.

#### ***IDW Contaminated Soil Determination and Disposal***

In addition to determining whether IDW should be considered a hazardous waste, analytical data were compared to background values for metals and reviewed to identify other contaminants that would cause the wastes to be classified as contaminated. Background soil concentrations established during the Phase I RI were used for comparison and are presented in Appendix B of this document for reference. Drums found to be contaminated due to the presence of explosives or metals that exceeded background values include B12ss-01, DA2-001, DA2-002, LL4-001, LL2-001SO, LNWtr-001, LL1mw-63-01A, LL1mw-63-02, WBG-002, and WBG-001SO. It is recommended that these wastes be disposed either (1) at an appropriate permitted facility or (2) temporarily stored on site pending treatment in conjunction with AOC remediation. Under OEPA (November 1997) guidance, Option 2 is only available where an AOL is to be remediated.

#### ***IDW Non-Hazardous and Non-Contaminated Soil Determination and Disposal***

Soil IDW was classified as non-hazardous and non-contaminated using the previously outlined characterization methods. In accordance with OEPA (November 1997) guidance, it is recommended that all non-hazardous and non-contaminated soil IDW be permanently stored at RVAAP by spreading, seeding, and mulching.

### **5.2 SEDIMENT**

Similar to soil sampling, IDW was generated as a result of sediment sampling. Analytical results were compared to the TCLP regulatory limits found in 40 *CFR* Part 261 for the purpose of determining if the material should be considered a potential hazardous waste.

#### ***IDW Sediment Hazardous Waste Determination and Disposal***

Analytical data indicate that elevated levels of lead are present in one drum (LL1-002). As such, these materials are considered as the RCRA characteristic hazardous waste D008 and are recommended for disposal, accordingly, at a hazardous waste disposal facility. Prior to disposal, it is recommended that RCRA TCLP testing be performed in conjunction with the disposal facility to ensure appropriate classification and disposal of these wastes. It is recommended that hazardous sediment IDW be commingled with compatible hazardous soil IDW to reduce the number of partially filled containers requiring disposal. Applicable waste codes must appear on all hazardous waste containers.

### **5.3 GROUNDWATER**

A review of the analytical data from groundwater sampling activities indicated that no regulatory criteria for RCRA-hazardous waste determinations were exceeded. As such, liquid IDW and saturated soil from each monitoring well are classified as non-hazardous. Furthermore, the analytical results indicate that these wastes are non-contaminated except for trace volatile and semi-

volatile organics in some samples. Liquid IDW is recommended for disposal through the RVAAP wastewater treatment plant. Saturated soil IDW is recommended for disposal either (1) at an appropriate permitted facility; or (2) temporarily stored on site pending treatment in conjunction with AOC remediation; or (3) permanently stored at RVAAP by spreading, seeding, and mulching.

#### **5.4 DECONTAMINATION FLUIDS**

Waste samples collected from decontamination fluids (soil and sediment wash/rinse water) indicated all analytes are well below the 40 *CFR* 261.24 maximum concentration for toxicity characteristic and, therefore, are classified as non-hazardous. Further, as no concentrations of explosives or other analytes were found at significant levels, these wastes are also considered non-contaminated for the purpose of disposal. These wastes are recommended for disposal through the RVAAP wastewater treatment plant.

In addition to aqueous decontamination fluids, an acid rinse was generated from the field activities. Field pH measurements indicate an acidic pH of 3 which is above the RCRA D003 criteria of  $\leq 2$ . As only trace contaminants were found in the material it is recommended that the acid rinse be pretreated through neutralization and disposed of through the RVAAP wastewater treatment plant.

#### **5.5 CONTAMINATED PPE**

PPE generated during the sampling event is not considered a hazardous waste based upon analytical results from the sampling of decontamination fluids. These analyses were used for comparative purposes as PPE is decontaminated prior to disposal. As such, the PPE generated by the sampling event is recommended for disposal as sanitary solid waste.

#### **5.6 SUMMARY OF RECOMMENDED DISPOSAL OPTIONS**

Table 5-1 presents a summary of the waste classification and recommended disposal options presented in Section 5.

#### **5.7 SUMMARY OF DISPOSAL ACTIVITIES**

Disposal of potentially RCRA hazardous waste drums has been completed at an off-site permitted disposal facility. Prior to disposal, the four potentially hazardous waste drums were additionally tested using the RCRA TCLP methodology and were determined to be nonhazardous. Disposal of all water IDW has also been completed, with the approval of the OEPA, at the RVAAP wastewater treatment plant. In January 1997, 29 drums and the Decon Wash/Rinse Polytank were processed through the Load Line 12 Pink Wastewater Treatment Plant. The acid rinse water contained in drum Decon-02 was additionally neutralized prior to treatment plant processing.

Soil and sediment IDW containers remain staged within the AOC of origin pending further consideration of the recommended disposal options. Following a decision regarding these disposal

options, these containers will be disposed of accordingly and in compliance with applicable state and federal laws and regulations.

Table 5-1. Summary of Waste Classification and Recommended Disposal Options

Container Number	Media	Waste Criteria	Disposal Options
<b>RCRA Hazardous Waste</b>			
LL1-001	Soil	D008	A
LL12-01	Soil	D008	A
LL3-001	Soil	D008	A
LL1-002	Sediment	D008	A
<b>Contaminated Waste</b>			
LL12-02	Sediment	Explosives detected or metals above background	A, C
LL3-002	Sediment	Explosives detected or metals above background	A, C
LL2-002SD	Sediment	Explosives detected or metals above background	A, C
B12SD-01	Sediment	Explosives detected or metals above background	A, C
B12ss-01	Soil	Explosives detected or metals above background	A, C
DA2-001	Soil	Explosives detected or metals above background	A, C
DA2-002	Soil	Explosives detected or metals above background	A, C
LL4-001	Soil	Explosives detected or metals above background	A, C
LL2-001SO	Soil	Explosives detected or metals above background	A, C
LNWtr-001	Soil	Explosives detected or metals above background	A, C
WBG-001SO	Soil	Explosives detected or metals above background	A, C
Decon-12	Water	Explosives detected or metals above background	B
LL1mw63-01A	Soil	Explosives detected or metals above background	A, C
LL1mw63-02	Soil	Explosives detected or metals above background	A, C
WBG-002so	Soil	Explosives detected or metals above background	A, C
<b>Non-Hazardous and Non-Contaminated Waste</b>			
Decon Wash/Rinse Poly Tank	Water	No detected contamination	B
Decon-02	Water	No detected contamination	B
Decon-07	Water	No detected contamination	B
LL1mw66-01	Soil	No detected contamination	A, D
LL1mw66-02	Soil	No detected contamination	A, D
LL1mw66-03	Soil	No detected contamination	A, D
LL1mw66-04	Soil	No detected contamination	A, D
LL1mw66-05	Soil	No detected contamination	A, D

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Table 5-1 (continued)

Container Number	Media	Waste Criteria	Disposal Options
LL1mw66-06	Soil	No detected contamination	A, D
LL1mw63-01	Water	No detected contamination	B
LL1mw63-03	Soil	No detected contamination	A, D
LL1mw63-04	Water	No detected contamination	B
LL1mw65-01	Soil	No detected contamination	A, D
LL1mw65-02	Soil	No detected contamination	A, D
LL1mw65-03	Soil	No detected contamination	A, D
LL1mw65-04	Water	No detected contamination	B
LL1mw65-05	Water	No detected contamination	B
LL1mw65-06	Water	No detected contamination	B
LL1mw65-07	Water	No detected contamination	B
LL1mw65-08	Water	No detected contamination	B
LL1mw65-09	Water	No detected contamination	B
LL1mw65-10	Water	No detected contamination	B
LL1mw65-11	Water	No detected contamination	B
LL1mw65-12	Water	No detected contamination	B
LL1mw65-13	Water	No detected contamination	B
LL1mw64-01	Soil	No detected contamination	A, D
LL1mw64-02	Soil	No detected contamination	A, D
LL1mw64-03	Water	No detected contamination	B
LL1mw64-04	Water	No detected contamination	B
LL1mw64-05	Water	No detected contamination	B
LL1mw64-06	Water	No detected contamination	B
LL1mw64-07	Water	No detected contamination	B
LL1mw64-08	Water	No detected contamination	B
LL1mw64-09	Water	No detected contamination	B
LL1mw64-10	Water	No detected contamination	B
LL1mw64-11	Water	No detected contamination	B
LL1mw67-01	Soil	No detected contamination	A, D

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Table 5-1 (continued)

Container Number	Media	Waste Criteria	Disposal Options
LL1mw67-02	Soil	No detected contamination	A, D
LL1mw67-03	Water	No detected contamination	B
LL1mw67-04	Water	No detected contamination	B
LL2mw59-01	Soil	No detected contamination	A, D
LL2mw59-02	Soil	No detected contamination	A, D
LL2mw59-03	Soil	No detected contamination	A, D
LL2mw59-04	Water	No detected contamination	B
LL2mw-60-01	Soil	No detected contamination	A, D
LL2mw-60-02	Soil	No detected contamination	A, D
LL2mw-60-03	Soil	No detected contamination	A, D
LL2mw-60-04	Water	No detected contamination	B
LL2mw-60-05	Water	No detected contamination	A, D
PPE-01	PPE	No detected contamination	E
L12wp-001	Soil	Trace VOA detected	A, D

Disposal Options:

- A = Off-site disposal at appropriately permitted facility.
- B = On-site disposal at RVAAP Wastewater Treatment Plant.
- C = Temporarily stored on-site pending AOC remediation and IDW treatment.
- D = Permanently stored at RVAAP.
- E = Dispose as sanitary solid waste.

## 6. REFERENCES

USACE (U.S. Army Corps of Engineers) 1996a. *Phase I Remedial Investigation Sampling and Analysis Plan Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant, Ravenna, Ohio.*

USACE 1996b. *Facility-wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio.*

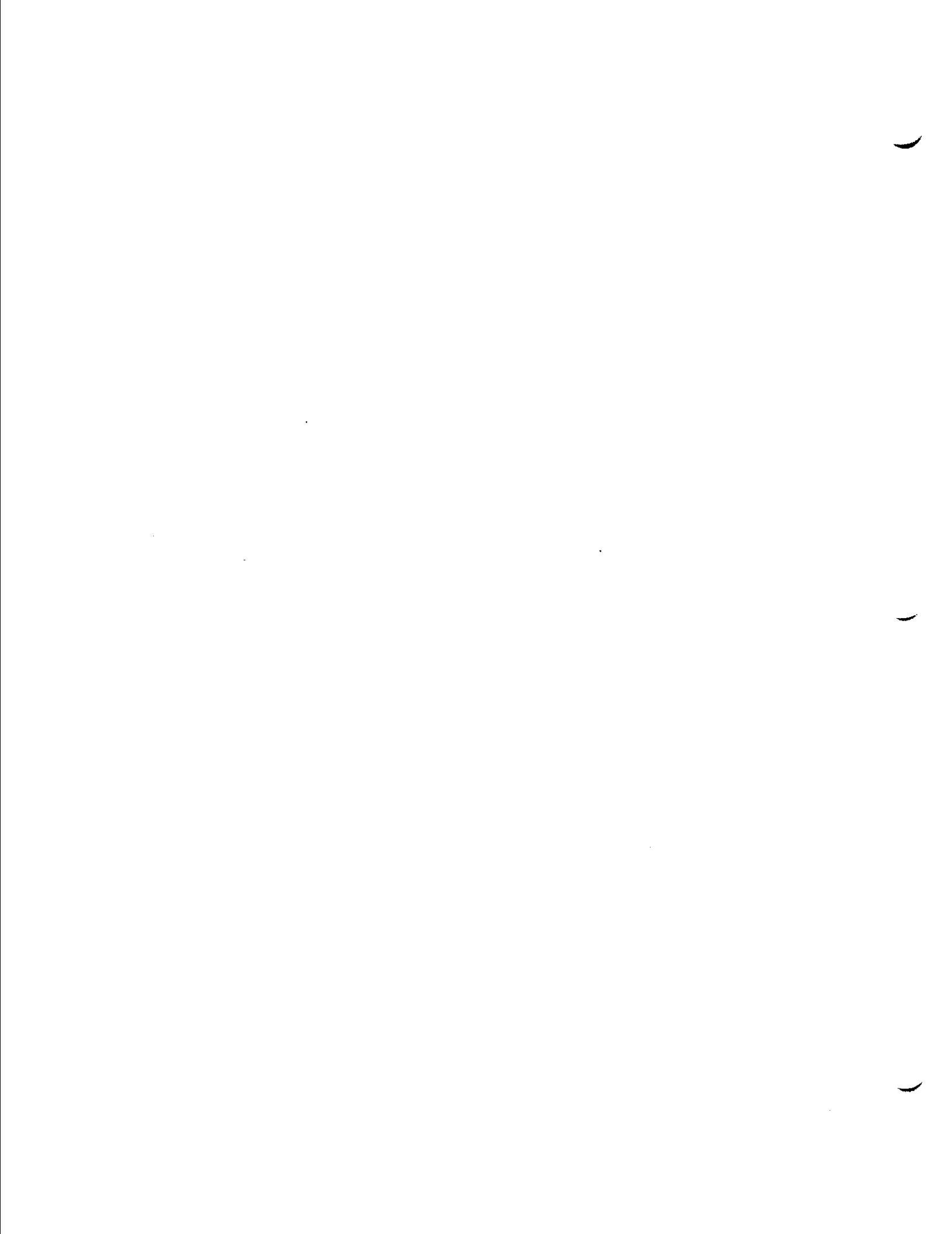
OPEA 1997. Letter to Mr. Bob Whelove, U.S. Army, RE: Ravenna Army Ammunition Plant Portage/Trumbull Counties Investigation & Derived Wastes.





**APPENDIX A**

**INVESTIGATION-DERIVED WASTE  
ANALYTICAL RESULTS SUMMARY**



**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>B12SD-01 Sediment</b>				
<b>Explosives (ug/kg)</b>				
2,4,6-Trinitrotoluene	3/ 5	280.00	370.00	288.00
<b>Metals (mg/kg)</b>				
Aluminum	5/ 5	8,020.00	13,700.00	10,700.00
Arsenic	5/ 5	9.50	13.70	11.50
Barium	5/ 5	64.50	89.90	75.30
Beryllium	1/ 1	0.45	0.45	0.45
Cadmium	5/ 5	0.09	0.51	0.26
Calcium	1/ 1	828.00	828.00	828.00
Chromium	5/ 5	11.00	17.90	13.50
Cobalt	1/ 1	4.00	4.00	4.00
Copper	1/ 1	13.20	13.20	13.20
Iron	1/ 1	21,800.00	21,800.00	21,800.00
Lead	5/ 5	11.90	19.00	15.50
Magnesium	1/ 1	1,470.00	1,470.00	1,470.00
Manganese	5/ 5	112.00	679.00	261.00
Nickel	1/ 1	10.40	10.40	10.40
Potassium	1/ 1	757.00	757.00	757.00
Selenium	5/ 5	0.57	1.60	1.08
Sodium	1/ 1	210.00	210.00	210.00
Thallium	1/ 1	0.93	0.93	0.93
Vanadium	1/ 1	20.40	20.40	20.40
Zinc	5/ 5	39.20	92.50	69.10
<b>Total Organic Carbon(mg/kg)</b>	<b>5/ 5</b>	<b>14,400.00</b>	<b>46,800.00</b>	<b>26,900.00</b>
<b>B12ss-01 Surface Soil</b>				
<b>Cyanide(mg/kg)</b>	<b>1/ 1</b>	<b>0.21</b>	<b>0.21</b>	<b>0.21</b>
<b>Metals (mg/kg)</b>				
Aluminum	3/ 3	11,500.00	12,200.00	11,800.00
Antimony	1/ 1	1.10	1.10	1.10
Arsenic	3/ 3	13.80	14.50	14.10
Barium	3/ 3	69.90	76.70	74.10
Beryllium	1/ 1	0.60	0.60	0.60
Cadmium	3/ 3	0.14	0.28	0.20
Calcium	1/ 1	1,880.00	1,880.00	1,880.00
Chromium	3/ 3	14.30	15.60	15.10
Cobalt	1/ 1	8.80	8.80	8.80
Copper	1/ 1	15.00	15.00	15.00
Iron	1/ 1	22,800.00	22,800.00	22,800.00
Lead	3/ 3	17.40	24.70	21.10
Magnesium	1/ 1	2,410.00	2,410.00	2,410.00
Manganese	3/ 3	201.00	426.00	297.00
Nickel	1/ 1	18.60	18.60	18.60

**Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg)- continued</b>				
Potassium	1/ 1	932.00	932.00	932.00
Selenium	3/ 3	0.63	0.76	0.72
Sodium	1/ 1	143.00	143.00	143.00
Thallium	1/ 1	1.50	1.50	1.50
Vanadium	1/ 1	22.10	22.10	22.10
Zinc	3/ 3	51.50	59.90	55.30
<b>Pesticides and/or PCBs (ug/kg)</b>				
Alpha Chlordane	1/ 1	240.00	240.00	240.00
Gamma Chlordane	1/ 1	230.00	230.00	230.00
<b>Semi-Volatile Organics (ug/kg)</b>				
Benzo(a)anthracene	1/ 1	140.00	140.00	140.00
Benzo(a)pyrene	1/ 1	160.00	160.00	160.00
Benzo(b)fluoranthene	1/ 1	140.00	140.00	140.00
Benzo(g,h,i)perylene	1/ 1	95.00	95.00	95.00
Benzo(k)fluoranthene	1/ 1	130.00	130.00	130.00
Bis(2-ethylhexyl)phthalate	1/ 1	40.00	40.00	40.00
Chrysene	1/ 1	160.00	160.00	160.00
Dibenzo(a,h)anthracene	1/ 1	48.00	48.00	48.00
Fluoranthene	1/ 1	130.00	130.00	130.00
Indeno(1,2,3-cd)pyrene	1/ 1	96.00	96.00	96.00
Pyrene	1/ 1	130.00	130.00	130.00
<b>Volatile Organics (ug/kg)</b>				
Methylene Chloride	1/ 1	3.00	3.00	3.00
<b>DA2 Borehole Soil DA2-001 &amp; DA2-002</b>				
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	1/ 65	29,000.00	29,000.00	692.00
2,4,6-Trinitrotoluene	10/ 65	420.00	920,000.00	14,600.00
2,4-Dinitrotoluene	1/ 65	2,600.00	2,600.00	378.00
Tetryl	3/ 65	420.00	4,300.00	986.00
<b>Metals (mg/kg)</b>				
Aluminum	65/ 65	6,700.00	19,900.00	11,300.00
Arsenic	65/ 65	10.70	30.80	16.80
Barium	65/ 65	27.10	593.00	80.00
Beryllium	3/ 3	0.51	0.83	0.68
Cadmium	56/ 64	0.11	3.10	0.67
Calcium	3/ 3	1,280.00	18,400.00	8,010.00
Chromium	65/ 65	9.70	25.80	15.00
Cobalt	3/ 3	9.80	12.40	11.00
Copper	3/ 3	20.60	67.40	37.10
Iron	3/ 3	23,500.00	25,900.00	24,700.00
Lead	65/ 65	9.60	1,900.00	48.30

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg)- continued</b>				
Magnesium	3/ 3	2,940.00	5,780.00	4,160.00
Manganese	65/ 65	132.00	1,120.00	441.00
Mercury	31/ 65	0.04	1.00	0.09
Nickel	3/ 3	21.80	29.70	24.50
Potassium	3/ 3	832.00	1,820.00	1,320.00
Selenium	51/ 65	0.35	2.00	0.73
Sodium	3/ 3	175.00	236.00	210.00
Thallium	3/ 3	0.82	1.20	1.04
Vanadium	3/ 3	14.00	20.50	17.30
Zinc	65/ 65	45.80	375.00	92.30
<b>Semi-Volatile Organics (ug/kg)</b>				
Bis(2-ethylhexyl)phthalate	1/ 3	50.00	50.00	247.00
<b>Volatile Organics (ug/kg)</b>				
Methylene Chloride	1/ 3	6.00	6.00	5.33
Toluene	1/ 3	170.00	170.00	60.00

**DECON-01 Waste Water**  
**DECON-01, -03, -04, -05, -06, -08, -09, -10, -11**

Metals (ug/l)				
Aluminum	1/ 1	500.00	500.00	500.00
Arsenic	1/ 1	3.90	3.90	3.90
Barium	1/ 1	13.40	13.40	13.40
Cadmium	1/ 1	0.80	0.80	0.80
Calcium	1/ 1	11,500.00	11,500.00	11,500.00
Chromium	1/ 1	1.50	1.50	1.50
Cobalt	1/ 1	1.50	1.50	1.50
Copper	1/ 1	7.80	7.80	7.80
Iron	1/ 1	1,870.00	1,870.00	1,870.00
Lead	1/ 1	9.50	9.50	9.50
Magnesium	1/ 1	1,340.00	1,340.00	1,340.00
Manganese	1/ 1	210.00	210.00	210.00
Nickel	1/ 1	29.40	29.40	29.40
Potassium	1/ 1	4,510.00	4,510.00	4,510.00
Sodium	1/ 1	96,600.00	96,600.00	96,600.00
Vanadium	1/ 1	0.95	0.95	0.95
Zinc	1/ 1	75.70	75.70	75.70
<b>Pesticides and/or PCBs (ug/l)</b>				
Aroclor-1254	1/ 1	1.30	1.30	1.30
<b>Volatile Organics (ug/l)</b>				
Bis(2-ethylhexyl)phthalate	1/ 1	2.00	2.00	2.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>DECON-02 Waste Water</b>				
Cyanide(ug/l)	1/ 1	3.10	3.10	3.10
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	249.00	249.00	249.00
Arsenic	1/ 1	17.50	17.50	17.50
Barium	1/ 1	214.00	214.00	214.00
Cadmium	1/ 1	15.50	15.50	15.50
Calcium	1/ 1	90,000.00	90,000.00	90,000.00
Cobalt	1/ 1	38.00	38.00	38.00
Copper	1/ 1	16.20	16.20	16.20
Iron	1/ 1	688,000.00	688,000.00	688,000.00
Lead	1/ 1	9.60	9.60	9.60
Magnesium	1/ 1	5,010.00	5,010.00	5,010.00
Manganese	1/ 1	5,190.00	5,190.00	5,190.00
Nickel	1/ 1	301.00	301.00	301.00
Potassium	1/ 1	5,610.00	5,610.00	5,610.00
Selenium	1/ 1	14.30	14.30	14.30
Sodium	1/ 1	98,500.00	98,500.00	98,500.00
Vanadium	1/ 1	2.20	2.20	2.20
Zinc	1/ 1	474.00	474.00	474.00
<b>Volatile Organics (ug/l)</b>				
Bis(2-ethylhexyl)phthalate	1/ 1	2.00	2.00	2.00
<b>DECON-07 Waste Water</b>				
Cyanide(ug/l)	1/ 1	2.50	2.50	2.50
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	368.00	368.00	368.00
Arsenic	1/ 1	2.60	2.60	2.60
Barium	1/ 1	11.30	11.30	11.30
Calcium	1/ 1	4,820.00	4,820.00	4,820.00
Chromium	1/ 1	0.81	0.81	0.81
Cobalt	1/ 1	3.60	3.60	3.60
Copper	1/ 1	10.10	10.10	10.10
Iron	1/ 1	3,210.00	3,210.00	3,210.00
Lead	1/ 1	3.60	3.60	3.60
Magnesium	1/ 1	726.00	726.00	726.00
Manganese	1/ 1	240.00	240.00	240.00
Nickel	1/ 1	21.00	21.00	21.00
Potassium	1/ 1	5,560.00	5,560.00	5,560.00
Sodium	1/ 1	98,000.00	98,000.00	98,000.00
Vanadium	1/ 1	0.72	0.72	0.72
Zinc	1/ 1	46.40	46.40	46.40
<b>Volatile Organics (ug/l)</b>				
Bis(2-ethylhexyl)phthalate	1/ 1	2.00	2.00	2.00

Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>DECON-12 Water</b>				
<b>Explosives (ug/kg)</b>				
2,4,6-Trinitrotoluene	1/ 24	860.00	860.00	275.00
Nitrobenzene	2/ 24	380.00	380.00	270.00
<b>Metals (mg/kg)</b>				
Aluminum	24/ 24	4,310.00	18,000.00	10,200.00
Antimony	2/ 4	1.30	1.90	1.04
Arsenic	24/ 24	3.50	23.40	10.50
Barium	24/ 24	38.40	178.00	76.70
Beryllium	4/ 4	0.62	1.20	0.82
Cadmium	14/ 23	0.54	1.50	0.58
Calcium	4/ 4	1,450.00	7,470.00	3,340.00
Chromium	24/ 24	7.90	329.00	42.50
Cobalt	4/ 4	9.10	12.20	10.80
Copper	4/ 4	16.20	316.00	124.00
Iron	4/ 4	19,400.00	38,800.00	24,900.00
Lead	24/ 24	8.80	37.80	20.60
Magnesium	4/ 4	1,640.00	2,740.00	2,260.00
Manganese	24/ 24	74.00	877.00	384.00
Mercury	13/ 24	0.05	0.23	0.08
Nickel	4/ 4	18.00	36.00	24.30
Potassium	4/ 4	683.00	1,540.00	1,080.00
Selenium	18/ 24	0.38	2.90	1.33
Silver	8/ 24	0.22	1.70	0.57
Sodium	4/ 4	263.00	482.00	381.00
Thallium	4/ 4	1.30	4.20	2.55
Vanadium	4/ 4	15.10	18.40	16.40
Zinc	24/ 24	35.10	254.00	121.00
<b>Semi-Volatile Organics (ug/kg)</b>				
Benzo(a)anthracene	2/ 4	210.00	220.00	403.00
Benzo(a)pyrene	2/ 4	260.00	260.00	425.00
Benzo(b)fluoranthene	2/ 4	370.00	560.00	528.00
Benzo(g,h,i)perylene	2/ 4	200.00	230.00	403.00
Benzo(k)fluoranthene	1/ 4	320.00	320.00	850.00
Chrysene	2/ 4	270.00	290.00	435.00
Fluoranthene	2/ 4	380.00	430.00	498.00
Indeno(1,2,3-cd)pyrene	2/ 4	190.00	220.00	398.00
Pyrene	2/ 4	270.00	290.00	435.00
Total Organic Carbon(mg/kg)	22/ 22	2,960.00	41,200.00	15,700.00
<b>Volatile Organics (ug/kg)</b>				
2-Butanone	1/ 4	53.00	53.00	21.80
Acetone	3/ 4	250.00	330.00	217.00
Carbon Disulfide	1/ 4	13.00	13.00	11.80
Methylene Chloride	1/ 4	35.00	35.00	20.00

Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>L12wp-001 Groundwater</b>				
<b>Volatile Organics (ug/l)</b>				
Acetone	1/ 1	25.00	25.00	25.00
Methylene Chloride	1/ 1	13.00	13.00	13.00
<b>LL1-001 Surface Soil</b>				
Cyanide(mg/kg)	9/ 13	0.11	112.00	12.70
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	11/ 51	550.00	110,000.00	5,170.00
2,4,6-Trinitrotoluene	1/ 1	16,000.00	16,000.00	16,000.00
2,4,6-Trinitrotoluene	32/ 51	260.00	10,000,000.00	432,000.00
2,4-Dinitrotoluene	6/ 51	100.00	1,500.00	1,050.00
HMX	2/ 48	2,600.00	9,100.00	2,160.00
RDX	2/ 48	1,800.00	49,000.00	2,020.00
<b>Metals (mg/kg)</b>				
Aluminum	54/ 54	1,860.00	47,600.00	8,500.00
Antimony	9/ 13	0.45	8.80	2.09
Arsenic	54/ 54	4.50	77.00	13.30
Barium	54/ 54	22.20	1,800.00	212.00
Beryllium	13/ 13	0.20	2.50	0.88
Cadmium	46/ 54	0.15	33.80	3.46
Calcium	13/ 13	452.00	56,700.00	12,200.00
Chromium	54/ 54	4.80	1,650.00	58.70
Cobalt	13/ 13	3.90	33.70	12.10
Copper	13/ 13	11.30	110.00	49.40
Iron	13/ 13	13,500.00	75,600.00	31,200.00
Lead	54/ 54	10.80	8,510.00	485.00
Magnesium	13/ 13	750.00	9,100.00	3,150.00
Manganese	54/ 54	113.00	2,140.00	591.00
Mercury	49/ 54	0.03	2.80	0.19
Nickel	13/ 13	9.40	45.80	23.10
Potassium	13/ 13	358.00	2,690.00	1,020.00
Selenium	51/ 54	0.32	4.30	1.14
Silver	1/ 54	0.24	0.24	0.23
Sodium	13/ 13	148.00	535.00	265.00
Thallium	13/ 13	0.84	7.90	3.29
Vanadium	13/ 13	5.50	92.90	20.30
Zinc	54/ 54	33.30	1,560.00	284.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDD	2/ 14	42.00	250.00	34.40
4,4'-DDE	4/ 14	3.30	840.00	87.30
4,4'-DDT	3/ 14	63.00	450.00	62.30



**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Pesticides and/or PCBs (ug/kg)</b>				
Aldrin	1/ 14	2.50	2.50	8.22
Alpha Chlordane	3/ 14	19.00	140.00	20.10
Aroclor-1254	6/ 14	95.00	40,000.00	8,770.00
Aroclor-1260	1/ 14	680.00	680.00	464.00
Dieldrin	2/ 14	170.00	210.00	42.20
Endosulfan I	1/ 14	40.00	40.00	10.90
Endosulfan II	1/ 14	8.70	8.70	16.10
Endrin	1/ 14	37.00	37.00	18.10
Endrin Aldehyde	2/ 14	9.60	53.00	18.00
Gamma Chlordane	5/ 14	1.90	330.00	54.60
Heptachlor Epoxide	1/ 14	2.30	2.30	8.21
<b>Semi-Volatile Organics (ug/kg)</b>				
Anthracene	1/ 13	60.00	60.00	739.00
Benzo(a)anthracene	6/ 13	77.00	330.00	477.00
Benzo(a)pyrene	6/ 13	86.00	420.00	501.00
Benzo(b)fluoranthene	4/ 13	100.00	400.00	612.00
Benzo(g,h,i)perylene	5/ 13	74.00	530.00	546.00
Benzo(k)fluoranthene	6/ 13	94.00	740.00	541.00
Bis(2-ethylhexyl)phthalate	6/ 13	42.00	1,400.00	593.00
Carbazole	1/ 13	36.00	36.00	737.00
Chrysene	7/ 13	90.00	600.00	481.00
Di-n-butyl Phthalate	5/ 13	270.00	14,000.00	2,010.00
Dibenzo(a,h)anthracene	3/ 13	40.00	160.00	618.00
Dimethyl Phthalate	1/ 13	1,900.00	1,900.00	792.00
Fluoranthene	7/ 13	120.00	1,000.00	588.00
Indeno(1,2,3-cd)pyrene	5/ 13	74.00	350.00	522.00
N-Nitrosodiphenylamine	2/ 13	110.00	270.00	675.00
Pentachlorophenol	2/ 13	3,100.00	3,900.00	1,850.00
Phenanthrene	5/ 13	67.00	500.00	547.00
Pyrene	6/ 13	110.00	890.00	597.00
<b>Volatile Organics (ug/kg)</b>				
Acetone	1/ 11	270.00	270.00	30.10
Chloroform	3/ 14	2.00	2.00	5.79
Toluene	5/ 14	6.00	31.00	9.14
<b>LL1-002 Sediment</b>				
Cyanide(mg/kg)	2/ 2	0.35	1.10	0.73
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	2/ 10	380.00	6,800.00	918.00
2,4,6-Trinitrotoluene	3/ 10	430.00	770,000.00	78,800.00
HMX	2/ 10	2,800.00	12,000.00	3,080.00
RDX	1/ 10	16,000.00	16,000.00	2,500.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg)</b>				
Aluminum	10/ 10	3,400.00	11,600.00	7,530.00
Antimony	2/ 2	15.30	2,460.00	1,240.00
Arsenic	10/ 10	8.80	43.30	15.80
Barium	10/ 10	38.50	269.00	109.00
Beryllium	2/ 2	0.38	0.44	0.41
Cadmium	9/ 10	0.21	26.90	4.35
Calcium	2/ 2	3,040.00	5,600.00	4,320.00
Chromium	10/ 10	9.50	345.00	70.90
Cobalt	2/ 2	20.10	43.20	31.70
Copper	2/ 2	234.00	558.00	396.00
Iron	2/ 2	16,500.00	199,000.00	108,000.00
Lead	10/ 10	15.00	2,220.00	498.00
Magnesium	2/ 2	2,110.00	4,300.00	3,210.00
Manganese	10/ 10	160.00	1,860.00	1,020.00
Mercury	9/ 10	0.05	1.40	0.28
Nickel	2/ 2	13.10	108.00	60.60
Potassium	2/ 2	185.00	487.00	336.00
Selenium	10/ 10	0.71	10.30	2.75
Silver	2/ 10	1.50	3.90	0.74
Sodium	2/ 2	195.00	292.00	244.00
Thallium	2/ 2	0.80	8.10	4.45
Vanadium	2/ 2	12.70	14.50	13.60
Zinc	10/ 10	59.30	2,530.00	508.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDD	1/ 2	12.00	12.00	7.80
4,4'-DDE	1/ 2	740.00	740.00	372.00
4,4'-DDT	1/ 2	440.00	440.00	222.00
Alpha Chlordane	1/ 2	9.90	9.90	26.00
Aroclor-1254	2/ 2	290.00	44,000.00	22,100.00
Endrin	1/ 2	160.00	160.00	81.80
Endrin Aldehyde	1/ 2	320.00	320.00	162.00
Gamma Chlordane	2/ 2	11.00	130.00	70.50
<b>Semi-Volatile Organics (ug/kg)</b>				
Anthracene	1/ 2	260.00	260.00	780.00
Benzo(a)anthracene	2/ 2	260.00	860.00	560.00
Benzo(a)pyrene	2/ 2	580.00	1,300.00	940.00
Benzo(b)fluoranthene	2/ 2	600.00	3,000.00	1,800.00
Benzo(g,h,i)perylene	2/ 2	460.00	1,400.00	930.00
Benzo(k)fluoranthene	2/ 2	500.00	1,500.00	1,000.00
Bis(2-ethylhexyl)phthalate	1/ 2	490.00	490.00	715.00
Carbazole	1/ 2	240.00	240.00	770.00
Chrysene	2/ 2	540.00	1,800.00	1,170.00
Di-n-butyl Phthalate	1/ 2	870.00	870.00	905.00
Dibenzo(a,h)anthracene	2/ 2	180.00	560.00	370.00
Fluoranthene	2/ 2	510.00	2,100.00	1,310.00
Indeno(1,2,3-cd)pyrene	2/ 2	440.00	1,100.00	770.00

**Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Semi-Volatile Organics (ug/kg) - continued</b>				
Phenanthrene	2/ 2	190.00	380.00	285.00
Pyrene	2/ 2	660.00	1,400.00	1,030.00
Total Organic Carbon(mg/kg)	7/ 7	13,300.00	84,500.00	40,500.00
<b>Volatile Organics (ug/kg)</b>				
Chloroform	1/ 2	4.00	4.00	7.00
<b>LL12-01 Surface Soil</b>				
Cyanide(mg/kg)	6/ 9	0.15	1.60	0.44
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	3/ 35	250.00	4,600.00	4,340.00
2,4,6-Trinitrotoluene	22/ 35	450.00	19,000,000.00	986,000.00
2,4-Dinitrotoluene	1/ 35	13,000.00	13,000.00	964.00
HMX	6/ 34	1,300.00	180,000.00	9,210.00
RDX	7/ 33	2,800.00	6,800,000.00	222,000.00
<b>Metals (mg/kg)</b>				
Aluminum	38/ 38	2,190.00	127,000.00	16,100.00
Antimony	4/ 9	0.30	5.90	1.01
Arsenic	38/ 38	4.00	19.60	10.70
Barium	38/ 38	20.20	274.00	90.20
Beryllium	9/ 9	0.27	1.50	0.66
Cadmium	33/ 37	0.08	6.60	0.93
Calcium	9/ 9	2,390.00	171,000.00	36,700.00
Chromium	38/ 38	7.00	163.00	24.20
Cobalt	9/ 9	2.40	13.80	6.11
Copper	9/ 9	12.80	3,610.00	421.00
Iron	9/ 9	11,600.00	26,700.00	17,900.00
Lead	38/ 38	13.00	589.00	114.00
Magnesium	9/ 9	891.00	22,500.00	4,560.00
Manganese	38/ 38	42.70	1,760.00	438.00
Mercury	14/ 38	0.03	0.32	0.05
Nickel	9/ 9	7.70	199.00	35.30
Potassium	9/ 9	404.00	1,130.00	688.00
Selenium	34/ 38	0.34	2.60	1.01
Silver	7/ 38	0.19	7.00	0.56
Sodium	9/ 9	167.00	370.00	240.00
Thallium	8/ 9	0.80	4.30	2.10
Vanadium	9/ 9	5.70	26.90	15.10
Zinc	38/ 38	33.90	1,030.00	190.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDE	2/ 9	4.90	39.00	6.98
4,4'-DDT	3/ 9	3.50	25.00	7.06
Alpha Chlordane	2/ 9	20.00	38.00	7.56
Aroclor-1254	2/ 9	760.00	1,700.00	331.00
Aroclor-1260	1/ 9	2,600.00	2,600.00	354.00
Endosulfan II	1/ 9	3.30	3.30	2.78
Endrin	7/ 9	4.70	110.00	31.20
Endrin Aldehyde	1/ 9	31.00	31.00	5.87
Endrin Ketone	2/ 9	12.00	38.00	7.67
Gamma Chlordane	2/ 9	7.20	38.00	6.13
Gamma-BHC (Lindane)	1/ 9	15.00	15.00	2.92
Heptachlor	2/ 9	1.90	8.10	2.21
Heptachlor Epoxide	1/ 9	2.80	2.80	1.58
Methoxychlor	1/ 9	47.00	47.00	17.80
<b>Semi-Volatile Organics (ug/kg)</b>				
1,2,4-Trichlorobenzene	1/ 9	85.00	85.00	407.00
2-Methylnaphthalene	4/ 9	81.00	260.00	310.00
Acenaphthene	6/ 9	44.00	2,700.00	857.00
Acenaphthylene	2/ 9	81.00	280.00	396.00
Anthracene	6/ 9	120.00	8,700.00	2,380.00
Benzo(a)anthracene	7/ 9	240.00	14,000.00	3,800.00
Benzo(a)pyrene	7/ 9	240.00	12,000.00	3,480.00
Benzo(b)fluoranthene	6/ 9	290.00	11,000.00	3,180.00
Benzo(g,h,i)perylene	7/ 9	160.00	8,500.00	2,270.00
Benzo(k)fluoranthene	7/ 9	170.00	14,000.00	3,820.00
Bis(2-ethylhexyl)phthalate	5/ 9	40.00	220.00	298.00
Carbazole	6/ 9	110.00	3,800.00	1,000.00
Chrysene	7/ 9	240.00	13,000.00	3,720.00
Dibenzo(a,h)anthracene	7/ 9	66.00	4,400.00	1,240.00
Dibenzofuran	5/ 9	270.00	1,900.00	639.00
Fluoranthene	8/ 9	73.00	30,000.00	8,110.00
Fluorene	6/ 9	42.00	3,200.00	1,020.00
Indeno(1,2,3-cd)pyrene	7/ 9	130.00	9,200.00	2,550.00
Naphthalene	4/ 9	89.00	270.00	313.00
Phenanthrene	7/ 9	140.00	23,000.00	5,800.00
Pyrene	7/ 9	380.00	25,000.00	6,610.00
<b>Volatile Organics (ug/kg)</b>				
1,1,2,2-Tetrachloroethane	1/ 8	5.00	5.00	5.50
2-Butanone	1/ 8	49.00	49.00	10.90
Acetone	3/ 7	55.00	100.00	39.30
Toluene	2/ 8	7.00	16.00	7.13
<b>LL12-02 Sediment</b>				
Cyanide(mg/kg)	1/ 2	1.40	1.40	0.77

Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	1/ 16	660.00	660.00	276.00
2,4,6-Trinitrotoluene	5/ 16	160.00	170,000.00	11,000.00
<b>Metals (mg/kg)</b>				
Aluminum	16/ 16	6,870.00	18,500.00	11,100.00
Antimony	1/ 2	2.60	2.60	1.52
Arsenic	16/ 16	4.00	217.00	25.40
Barium	16/ 16	26.70	170.00	82.10
Beryllium	2/ 2	1.40	2.50	1.95
Cadmium	15/ 16	0.09	2.00	0.50
Calcium	2/ 2	3,930.00	4,510.00	4,220.00
Chromium	16/ 16	8.20	27.70	16.30
Cobalt	2/ 2	8.00	27.70	17.90
Copper	2/ 2	50.50	399.00	225.00
Iron	2/ 2	29,200.00	48,800.00	39,000.00
Lead	16/ 16	10.30	88.70	24.30
Magnesium	2/ 2	2,160.00	2,420.00	2,290.00
Manganese	16/ 16	53.70	1,170.00	346.00
Mercury	8/ 16	0.04	1.20	0.14
Nickel	2/ 2	24.10	59.70	41.90
Potassium	2/ 2	867.00	1,050.00	959.00
Selenium	14/ 16	0.41	2.40	0.93
Silver	3/ 16	0.47	58.00	3.91
Sodium	2/ 2	287.00	654.00	471.00
Thallium	2/ 2	0.86	2.40	1.63
Vanadium	2/ 2	19.40	22.70	21.10
Zinc	16/ 16	57.30	794.00	160.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
Aroclor-1254	1/ 2	310.00	310.00	203.00
<b>Semi-Volatile Organics (ug/kg)</b>				
Anthracene	1/ 2	350.00	350.00	645.00
Benzo(a)anthracene	1/ 2	460.00	460.00	700.00
Benzo(a)pyrene	1/ 2	340.00	340.00	640.00
Benzo(b)fluoranthene	1/ 2	320.00	320.00	630.00
Benzo(g,h,i)perylene	1/ 2	240.00	240.00	590.00
Benzo(k)fluoranthene	1/ 2	350.00	350.00	645.00
Chrysene	1/ 2	620.00	620.00	780.00
Fluoranthene	1/ 2	1,600.00	1,600.00	1,270.00
Indeno(1,2,3-cd)pyrene	1/ 2	280.00	280.00	610.00
N-Nitrosodiphenylamine	1/ 2	2,000.00	2,000.00	1,470.00
Phenanthrene	1/ 2	540.00	540.00	740.00
Pyrene	1/ 2	980.00	980.00	960.00
Total Organic Carbon(mg/kg)	16/ 16	3,750.00	91,900.00	21,800.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Volatile Organics (ug/kg)</b>				
2-Butanone	1/ 2	440.00	440.00	224.00
Acetone	1/ 2	870.00	870.00	439.00
Carbon Disulfide	1/ 2	180.00	180.00	93.50
<b>LL1mw-63 Groundwater LL1mw-63-01, -03, -04</b>				
Cyanide(ug/l)	1/ 1	2.90	2.90	2.90
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	84.10	84.10	84.10
Barium	1/ 1	27.40	27.40	27.40
Beryllium	1/ 1	0.33	0.33	0.33
Calcium	1/ 1	4,050.00	4,050.00	4,050.00
Cobalt	1/ 1	27.50	27.50	27.50
Copper	1/ 1	0.99	0.99	0.99
Iron	1/ 1	37.30	37.30	37.30
Magnesium	1/ 1	2,590.00	2,590.00	2,590.00
Manganese	1/ 1	821.00	821.00	821.00
Mercury	1/ 1	0.13	0.13	0.13
Nickel	1/ 1	35.80	35.80	35.80
Potassium	1/ 1	1,690.00	1,690.00	1,690.00
Sodium	1/ 1	4,850.00	4,850.00	4,850.00
Zinc	1/ 1	47.00	47.00	47.00
<b>LL1mw-63 Surface Soil LL1mw-63-01A, LL1mw-63-02</b>				
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	1/ 2	3,600.00	3,600.00	1,930.00
2,4,6-Trinitrotoluene	2/ 2	1,800.00	830,000.00	416,000.00
<b>Metals (mg/kg)</b>				
Aluminum	2/ 2	9,810.00	12,800.00	11,300.00
Arsenic	2/ 2	9.40	17.60	13.50
Barium	2/ 2	58.60	135.00	96.80
Cadmium	2/ 2	0.15	1.10	0.63
Chromium	2/ 2	11.00	14.20	12.60
Lead	2/ 2	15.00	35.60	25.30
Manganese	2/ 2	386.00	1,630.00	1,010.00
Mercury	2/ 2	0.07	0.08	0.08
Selenium	2/ 2	0.81	2.40	1.61
Zinc	2/ 2	46.10	738.00	392.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>LL1mw-64 Groundwater</b>				
<b>LL1mw-64-02, -03, -04, -05, -06, -07, -08, -09, -10, -11</b>				
<b>Metals (ug/l)</b>				
Aluminum	2/ 2	22.50	27.80	25.20
Barium	2/ 2	65.60	67.30	66.50
Calcium	2/ 2	54,200.00	54,400.00	54,300.00
Copper	2/ 2	5.00	7.40	6.20
Magnesium	2/ 2	9,240.00	9,270.00	9,260.00
Manganese	2/ 2	130.00	130.00	130.00
Mercury	1/ 2	0.10	0.10	0.10
Nickel	2/ 2	1.20	1.60	1.40
Potassium	2/ 2	987.00	1,010.00	999.00
Sodium	2/ 2	5,770.00	6,010.00	5,890.00
Zinc	1/ 1	82.50	82.50	82.50
<b>LL1mw-65 Groundwater</b>				
<b>LL1mw-65-03, -04, -05, -06, -07, -08, -09, -10, -11, -12, -13</b>				
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	235.00	235.00	235.00
Barium	1/ 1	51.70	51.70	51.70
Calcium	1/ 1	70,400.00	70,400.00	70,400.00
Cobalt	1/ 1	1.40	1.40	1.40
Copper	1/ 1	0.93	0.93	0.93
Iron	1/ 1	370.00	370.00	370.00
Magnesium	1/ 1	21,200.00	21,200.00	21,200.00
Manganese	1/ 1	807.00	807.00	807.00
Nickel	1/ 1	2.80	2.80	2.80
Potassium	1/ 1	2,140.00	2,140.00	2,140.00
Sodium	1/ 1	18,100.00	18,100.00	18,100.00
<b>LL1mw-67 Groundwater</b>				
<b>LL1mw-67-03, -04</b>				
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	45.80	45.80	45.80
Barium	1/ 1	20.30	20.30	20.30
Calcium	1/ 1	32,900.00	32,900.00	32,900.00
Cobalt	1/ 1	19.30	19.30	19.30
Magnesium	1/ 1	22,900.00	22,900.00	22,900.00
Manganese	1/ 1	1,050.00	1,050.00	1,050.00
Nickel	1/ 1	73.20	73.20	73.20
Potassium	1/ 1	1,940.00	1,940.00	1,940.00
Sodium	1/ 1	4,360.00	4,360.00	4,360.00
Zinc	1/ 1	9.10	9.10	9.10

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>LL2-001SO Surface Soil</b>				
Cyanide(mg/kg)	8/ 12	0.10	5.00	0.66
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	7/ 51	320.00	160,000.00	4,630.00
2,4,6-Trinitrotoluene	31/ 51	240.00	12,000,000.00	261,000.00
HMX	4/ 50	2,800.00	1,500,000.00	32,500.00
RDX	8/ 51	400.00	9,800,000.00	198,000.00
<b>Metals (mg/kg)</b>				
Aluminum	53/ 53	3,100.00	24,500.00	8,410.00
Antimony	3/ 12	0.33	1.20	0.59
Arsenic	53/ 53	4.40	28.40	11.60
Barium	53/ 53	18.10	297.00	75.60
Beryllium	9/ 9	0.28	2.90	0.93
Cadmium	47/ 50	0.05	22.70	1.51
Calcium	12/ 12	921.00	73,500.00	12,300.00
Chromium	53/ 53	4.70	116.00	16.30
Cobalt	12/ 12	3.30	17.00	7.74
Copper	12/ 12	11.70	53.40	26.40
Iron	12/ 12	12,200.00	55,500.00	20,700.00
Lead	53/ 53	7.00	881.00	89.60
Magnesium	12/ 12	923.00	8,500.00	3,340.00
Manganese	53/ 53	146.00	4,240.00	571.00
Mercury	19/ 53	0.04	0.94	0.06
Nickel	12/ 12	7.00	41.90	19.20
Potassium	12/ 12	546.00	2,410.00	1,140.00
Selenium	26/ 53	0.37	3.10	0.65
Silver	2/ 53	0.47	1.50	0.25
Sodium	12/ 12	148.00	649.00	231.00
Thallium	12/ 12	0.81	7.60	2.44
Vanadium	12/ 12	7.20	24.80	13.50
Zinc	53/ 53	29.80	892.00	185.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDD	1/ 12	12.00	12.00	3.48
4,4'-DDE	8/ 12	3.90	81.00	18.20
4,4'-DDT	6/ 12	6.20	170.00	28.80
Aldrin	2/ 12	2.20	24.00	3.35
Alpha Chlordane	1/ 12	570.00	570.00	48.80
Aroclor-1254	6/ 12	150.00	2,500.00	511.00
Aroclor-1260	2/ 12	240.00	6,000.00	580.00
Delta-BHC	1/ 12	2.20	2.20	1.48
Dieldrin	2/ 12	3.10	27.00	4.77
Endrin	2/ 12	2.70	5.60	2.98
Endrin Aldehyde	2/ 12	15.00	120.00	13.50
Gamma Chlordane	3/ 12	1.50	7.50	2.27
Gamma-BHC (Lindane)	1/ 12	4.80	4.80	1.69
Heptachlor Epoxide	1/ 12	4.20	4.20	1.64



**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Semi-Volatile Organics (ug/kg)</b>				
2-Methylnaphthalene	1/ 12	120.00	120.00	487.00
Acenaphthene	1/ 12	740.00	740.00	538.00
Anthracene	1/ 12	1,900.00	1,900.00	635.00
Benzo(a)anthracene	7/ 12	52.00	2,900.00	551.00
Benzo(a)pyrene	7/ 12	59.00	2,300.00	501.00
Benzo(b)fluoranthene	6/ 12	43.00	170.00	350.00
Benzo(g,h,i)perylene	6/ 12	38.00	1,100.00	421.00
Benzo(k)fluoranthene	7/ 12	54.00	3,200.00	578.00
Bis(2-ethylhexyl)phthalate	2/ 12	86.00	190.00	500.00
Butyl Benzyl Phthalate	2/ 12	84.00	810.00	494.00
Carbazole	1/ 12	1,200.00	1,200.00	577.00
Chrysene	8/ 12	60.00	2,700.00	497.00
Di-n-butyl Phthalate	3/ 12	68.00	110.00	469.00
Dibenzo(a,h)anthracene	2/ 12	48.00	720.00	509.00
Dibenzofuran	1/ 12	540.00	540.00	522.00
Fluoranthene	9/ 12	39.00	7,700.00	908.00
Fluorene	1/ 12	910.00	910.00	553.00
Indeno(1,2,3-cd)pyrene	5/ 12	49.00	1,300.00	462.00
Naphthalene	1/ 12	270.00	270.00	499.00
Phenanthrene	7/ 12	56.00	6,400.00	842.00
Pyrene	8/ 12	70.00	5,000.00	703.00

<b>Volatile Organics (ug/kg)</b>				
Chloroform	5/ 11	2.00	3.00	3.91
Methylene Chloride	1/ 11	6.00	6.00	6.73
Toluene	1/ 11	5.00	5.00	5.18

**LL2-002SD Sediment**

<b>Explosives (ug/kg)</b>				
2,4,6-Trinitrotoluene	1/ 7	860.00	860.00	337.00

<b>Metals (mg/kg)</b>				
Aluminum	7/ 7	4,390.00	18,000.00	10,900.00
Arsenic	7/ 7	3.50	19.80	10.90
Barium	7/ 7	38.40	178.00	81.40
Beryllium	2/ 2	0.32	1.20	0.76
Cadmium	1/ 6	0.99	0.99	0.25
Calcium	2/ 2	1,450.00	17,800.00	9,630.00
Chromium	7/ 7	8.20	22.60	16.40
Cobalt	2/ 2	3.70	12.20	7.95
Copper	2/ 2	21.60	25.50	23.60
Iron	2/ 2	19,800.00	38,800.00	29,300.00
Lead	7/ 7	8.80	27.80	17.40
Magnesium	2/ 2	1,890.00	2,740.00	2,320.00
Manganese	7/ 7	74.00	877.00	375.00
Mercury	3/ 7	0.05	0.08	0.05

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg) - continued</b>				
Nickel	2/ 2	12.10	36.00	24.10
Potassium	2/ 2	363.00	1,540.00	952.00
Selenium	6/ 7	0.38	2.30	1.09
Silver	1/ 7	0.22	0.22	0.23
Sodium	2/ 2	173.00	263.00	218.00
Thallium	2/ 2	1.00	4.20	2.60
Vanadium	2/ 2	9.30	18.40	13.90
Zinc	7/ 7	35.10	103.00	68.30
<b>Semi-Volatile Organics (ug/kg)</b>				
Benzo(a)anthracene	1/ 2	76.00	76.00	223.00
Benzo(b)fluoranthene	1/ 2	130.00	130.00	250.00
Benzo(k)fluoranthene	1/ 2	88.00	88.00	229.00
Chrysene	1/ 2	110.00	110.00	240.00
Di-n-butyl Phthalate	1/ 2	110.00	110.00	240.00
Fluoranthene	1/ 2	130.00	130.00	250.00
Pyrene	1/ 2	82.00	82.00	226.00
Total Organic Carbon(mg/kg)	6/ 6	2,960.00	9,630.00	5,620.00
<b>Volatile Organics (ug/kg)</b>				
Chloroform	1/ 2	3.00	3.00	4.50
<b>LL2mw-59 Groundwater</b> <b>LL2mw-59-03, -04</b>				
<b>Explosives (ug/l)</b>				
2,4-Dinitrotoluene	1/ 1	0.34	0.34	0.34
<b>Metals (ug/l)</b>				
Arsenic	1/ 1	2.60	2.60	2.60
Barium	1/ 1	13.30	13.30	13.30
Calcium	1/ 1	28,800.00	28,800.00	28,800.00
Cobalt	1/ 1	14.70	14.70	14.70
Magnesium	1/ 1	7,510.00	7,510.00	7,510.00
Manganese	1/ 1	642.00	642.00	642.00
Nickel	1/ 1	17.90	17.90	17.90
Potassium	1/ 1	1,470.00	1,470.00	1,470.00
Sodium	1/ 1	6,200.00	6,200.00	6,200.00
Zinc	1/ 1	7.80	7.80	7.80
<b>LL2mw-60 Groundwater</b> <b>LL2mw-60-03, -04, -05</b>				
Cyanide(ug/l)	1/ 1	8.70	8.70	8.70

Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (ug/l)</b>				
Aluminum	1/ 1	27.40	27.40	27.40
Barium	1/ 1	18.70	18.70	18.70
Calcium	1/ 1	34,600.00	34,600.00	34,600.00
Cobalt	1/ 1	0.87	0.87	0.87
Iron	1/ 1	26.40	26.40	26.40
Magnesium	1/ 1	9,900.00	9,900.00	9,900.00
Manganese	1/ 1	106.00	106.00	106.00
Nickel	1/ 1	3.80	3.80	3.80
Potassium	1/ 1	831.00	831.00	831.00
Sodium	1/ 1	3,050.00	3,050.00	3,050.00
Zinc	1/ 1	8.40	8.40	8.40
<b>Volatile Organics (ug/l)</b>				
Bis(2-ethylhexyl)phthalate	1/ 1	2.00	2.00	2.00
<b>LL3-001 Surface Soil</b>				
Cyanide(mg/kg)	7/ 10	0.12	0.38	0.19
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	8/ 40	253.00	110,000.00	3,420.00
2,4,6-Trinitrotoluene	27/ 40	142.00	390,000,000.00	10,000,000.00
HMX	2/ 38	14,000.00	14,000.00	2,840.00
RDX	1/ 38	10,000.00	10,000.00	1,340.00
<b>Metals (mg/kg)</b>				
Aluminum	43/ 43	3,720.00	23,900.00	8,320.00
Antimony	8/ 10	0.30	30.00	4.54
Arsenic	43/ 43	7.00	23.20	13.00
Barium	43/ 43	16.10	447.00	75.90
Beryllium	10/ 10	0.31	1.20	0.62
Cadmium	39/ 43	0.06	4.10	0.94
Calcium	10/ 10	772.00	13,500.00	5,660.00
Chromium	43/ 43	4.90	150.00	16.60
Cobalt	10/ 10	3.70	8.70	6.51
Copper	10/ 10	8.90	99.40	28.20
Iron	10/ 10	14,900.00	26,100.00	19,600.00
Lead	43/ 43	11.10	2,620.00	121.00
Magnesium	10/ 10	1,140.00	3,330.00	2,000.00
Manganese	43/ 43	75.30	4,800.00	600.00
Mercury	11/ 43	0.03	0.20	0.04
Nickel	10/ 10	7.00	21.90	14.30
Potassium	10/ 10	468.00	967.00	640.00
Selenium	41/ 43	0.34	4.10	0.87
Silver	11/ 43	0.19	2.40	0.27
Sodium	10/ 10	137.00	232.00	178.00
Thallium	10/ 10	0.78	3.50	2.01
Vanadium	10/ 10	9.90	22.50	14.80
Zinc	43/ 43	30.90	626.00	108.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDE	2/ 10	3.80	12.00	3.68
4,4'-DDT	2/ 10	11.00	77.00	10.90
Alpha Chlordane	1/ 10	590.00	590.00	60.30
Aroclor-1254	3/ 10	170.00	21,000.00	2,230.00
Beta-BHC	1/ 10	30.00	30.00	4.25
Endosulfan II	1/ 10	4.50	4.50	2.86
Endrin	2/ 10	10.00	3,200.00	323.00
Endrin Aldehyde	1/ 10	4.80	4.80	2.86
Gamma Chlordane	1/ 10	110.00	110.00	12.30
Heptachlor	1/ 10	1.60	1.60	1.39
Heptachlor Epoxide	1/ 10	94.00	94.00	10.70
<b>Semi-Volatile Organics (ug/kg)</b>				
2-Methylnaphthalene	1/ 10	48.00	48.00	321.00
Acenaphthene	2/ 10	66.00	95.00	298.00
Acenaphthylene	2/ 10	54.00	58.00	293.00
Anthracene	2/ 10	160.00	320.00	330.00
Benzo(a)anthracene	4/ 10	39.00	1,200.00	406.00
Benzo(a)pyrene	4/ 10	36.00	1,000.00	409.00
Benzo(b)fluoranthene	5/ 10	35.00	1,100.00	382.00
Benzo(g,h,i)perylene	2/ 10	440.00	610.00	387.00
Benzo(k)fluoranthene	6/ 10	38.00	1,000.00	318.00
Bis(2-ethylhexyl)phthalate	3/ 10	98.00	440.00	327.00
Butyl Benzyl Phthalate	1/ 10	88.00	88.00	324.00
Carbazole	2/ 10	110.00	250.00	318.00
Chrysene	5/ 10	45.00	1,500.00	410.00
Di-n-butyl Phthalate	2/ 10	110.00	190.00	314.00
Dibenzo(a,h)anthracene	2/ 10	150.00	250.00	322.00
Dibenzofuran	1/ 10	57.00	57.00	325.00
Fluoranthene	6/ 10	51.00	2,200.00	549.00
Fluorene	2/ 10	58.00	94.00	297.00
Indeno(1,2,3-cd)pyrene	2/ 10	460.00	590.00	387.00
Naphthalene	2/ 10	43.00	52.00	292.00
Phenanthrene	4/ 10	72.00	1,200.00	409.00
Pyrene	5/ 10	44.00	1,800.00	485.00
<b>Volatile Organics (ug/kg)</b>				
Methylene Chloride	2/ 9	2.00	4.00	9.67
Toluene	3/ 9	14.00	38.00	11.20

**LL3-002 Sediment**

<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	1/ 9	200.00	200.00	244.00
2,4,6-Trinitrotoluene	7/ 9	250.00	8,100.00	1,470.00

**Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg)</b>				
Aluminum	9/ 9	4,530.00	14,100.00	9,030.00
Antimony	1/ 1	0.97	0.97	0.97
Arsenic	9/ 9	4.50	18.80	12.00
Barium	9/ 9	39.80	115.00	66.30
Beryllium	1/ 1	0.68	0.68	0.68
Cadmium	7/ 9	0.06	0.86	0.28
Calcium	1/ 1	1,460.00	1,460.00	1,460.00
Chromium	9/ 9	7.40	18.10	12.50
Cobalt	1/ 1	6.50	6.50	6.50
Copper	1/ 1	18.30	18.30	18.30
Iron	1/ 1	18,500.00	18,500.00	18,500.00
Lead	9/ 9	8.80	67.50	25.20
Magnesium	1/ 1	1,680.00	1,680.00	1,680.00
Manganese	9/ 9	134.00	2,310.00	656.00
Mercury	3/ 9	0.05	0.06	0.04
Nickel	1/ 1	16.00	16.00	16.00
Potassium	1/ 1	543.00	543.00	543.00
Selenium	9/ 9	0.65	2.30	1.35
Silver	1/ 9	0.23	0.23	0.21
Sodium	1/ 1	176.00	176.00	176.00
Thallium	1/ 1	0.89	0.89	0.89
Vanadium	1/ 1	19.40	19.40	19.40
Zinc	9/ 9	45.20	560.00	142.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDE	1/ 1	3.20	3.20	3.20
4,4'-DDT	1/ 1	8.10	8.10	8.10
Endrin	1/ 1	10.00	10.00	10.00
Gamma Chlordane	1/ 1	2.90	2.90	2.90
<b>Semi-Volatile Organics (ug/kg)</b>				
Benzo(a)anthracene	1/ 1	100.00	100.00	100.00
Benzo(a)pyrene	1/ 1	140.00	140.00	140.00
Benzo(b)fluoranthene	1/ 1	130.00	130.00	130.00
Benzo(g,h,i)perylene	1/ 1	88.00	88.00	88.00
Benzo(k)fluoranthene	1/ 1	140.00	140.00	140.00
Bis(2-ethylhexyl)phthalate	1/ 1	54.00	54.00	54.00
Chrysene	1/ 1	130.00	130.00	130.00
Dibenzo(a,h)anthracene	1/ 1	55.00	55.00	55.00
Fluoranthene	1/ 1	240.00	240.00	240.00
Indeno(1,2,3-cd)pyrene	1/ 1	110.00	110.00	110.00
Phenanthrene	1/ 1	91.00	91.00	91.00
Pyrene	1/ 1	180.00	180.00	180.00
Total Organic Carbon(mg/kg)	8/ 8	2,580.00	28,900.00	10,500.00
<b>Volatile Organics (ug/kg)</b>				
Toluene	1/ 1	4.00	4.00	4.00

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>LL4-001 Surface Soil</b>				
Cyanide(mg/kg)	6/ 12	0.11	0.51	0.21
<b>Explosives (ug/kg)</b>				
2,4,6-Trinitrotoluene	10/ 49	240.00	2,200.00	350.00
HMX	1/ 49	1,000.00	1,000.00	1,980.00
RDX	1/ 49	270.00	270.00	985.00
<b>Metals (mg/kg)</b>				
Aluminum	52/ 52	4,210.00	22,700.00	8,420.00
Antimony	2/ 12	0.31	0.37	0.34
Arsenic	52/ 52	2.00	17.80	9.38
Barium	52/ 52	17.30	238.00	61.00
Beryllium	12/ 12	0.25	3.60	0.73
Cadmium	46/ 52	0.04	5.20	0.52
Calcium	12/ 12	731.00	8,100.00	3,290.00
Chromium	52/ 52	5.20	30.10	11.00
Cobalt	12/ 12	3.00	10.40	6.50
Copper	12/ 12	7.70	106.00	23.10
Iron	12/ 12	7,850.00	28,700.00	17,800.00
Lead	52/ 52	7.80	384.00	34.50
Magnesium	12/ 12	864.00	14,300.00	3,520.00
Manganese	52/ 52	43.50	2,830.00	411.00
Mercury	13/ 52	0.03	0.16	0.04
Nickel	12/ 12	7.80	32.10	15.50
Potassium	12/ 12	379.00	1,810.00	897.00
Selenium	43/ 52	0.32	3.20	0.73
Silver	3/ 52	0.19	0.24	0.21
Sodium	12/ 12	128.00	649.00	209.00
Thallium	12/ 12	0.46	13.30	2.16
Vanadium	12/ 12	8.90	19.70	13.40
Zinc	52/ 52	25.40	1,850.00	111.00
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDD	3/ 12	3.10	90.00	10.60
4,4'-DDE	3/ 12	18.00	57.00	9.86
4,4'-DDT	3/ 12	8.70	230.00	27.60
Aldrin	2/ 12	17.00	43.00	6.18
Alpha Chlordane	4/ 12	5.60	34.00	7.90
Aroclor-1254	4/ 12	110.00	3,200.00	388.00
Aroclor-1260	1/ 12	4,500.00	4,500.00	442.00
Beta-BHC	1/ 12	41.00	41.00	4.72
Dieldrin	1/ 12	4.80	4.80	2.92
Endosulfan II	1/ 12	37.00	37.00	5.58
Endrin	4/ 12	7.50	35.00	7.58
Endrin Aldehyde	1/ 12	4.50	4.50	2.85
Gamma Chlordane	3/ 12	1.60	19.00	3.69

Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Semi-Volatile Organics (ug/kg)</b>				
Acenaphthylene	3/ 12	270.00	560.00	519.00
Anthracene	3/ 12	190.00	1,200.00	594.00
Benzo(a)anthracene	3/ 12	450.00	2,100.00	762.00
Benzo(a)pyrene	4/ 12	40.00	2,700.00	828.00
Benzo(b)fluoranthene	4/ 12	40.00	7,200.00	1,250.00
Benzo(g,h,i)perylene	3/ 12	240.00	3,800.00	853.00
Benzo(k)fluoranthene	3/ 12	330.00	5,000.00	1,120.00
Bis(2-ethylhexyl)phthalate	5/ 12	43.00	170.00	400.00
Carbazole	3/ 12	120.00	1,400.00	553.00
Chrysene	5/ 12	38.00	6,400.00	1,160.00
Di-n-butyl Phthalate	1/ 12	920.00	920.00	618.00
Dibenzo(a,h)anthracene	3/ 12	140.00	1,200.00	577.00
Fluoranthene	7/ 12	38.00	8,100.00	1,220.00
Fluorene	2/ 12	64.00	120.00	488.00
Indeno(1,2,3-cd)pyrene	3/ 12	230.00	3,700.00	868.00
Phenanthrene	3/ 12	140.00	2,300.00	678.00
Pyrene	5/ 12	35.00	5,400.00	1,090.00
<b>Volatile Organics (ug/kg)</b>				
Acetone	1/ 8	50.00	50.00	11.10
Chloroform	1/ 12	2.00	2.00	5.17
Toluene	2/ 12	5.00	12.00	5.92
<b>LNWtr-001 Trench Soil</b>				
Cyanide(mg/kg)	5/ 11	0.11	0.43	0.16
<b>Metals (mg/kg)</b>				
Aluminum	11/ 11	7,320.00	11,200.00	9,040.00
Antimony	1/ 11	1.30	1.30	0.40
Arsenic	11/ 11	7.40	18.50	12.20
Barium	11/ 11	30.00	53.10	44.20
Beryllium	11/ 11	0.35	0.53	0.46
Cadmium	5/ 11	0.14	0.52	0.16
Calcium	11/ 11	549.00	3,280.00	1,470.00
Chromium	11/ 11	9.00	13.80	11.40
Cobalt	11/ 11	6.10	9.40	8.15
Copper	11/ 11	13.10	32.20	22.00
Iron	11/ 11	17,300.00	28,400.00	21,700.00
Lead	11/ 11	9.90	28.40	15.90
Magnesium	11/ 11	1,580.00	2,820.00	2,250.00
Manganese	11/ 11	222.00	338.00	290.00
Mercury	1/ 11	0.04	0.04	0.04
Nickel	11/ 11	11.80	19.30	16.50
Potassium	11/ 11	467.00	1,100.00	751.00
Selenium	11/ 11	0.45	1.90	0.78
Silver	2/ 11	0.20	0.22	0.20

**Ravenna Analytical Results for IDW Characterization**  
**Nondetects Included in Average**

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg) - continued</b>				
Sodium	11/ 11	148.00	200.00	174.00
Thallium	11/ 11	0.98	2.40	1.35
Vanadium	11/ 11	11.10	17.50	14.80
Zinc	11/ 11	40.00	212.00	85.80
<b>Pesticides and/or PCBs (ug/kg)</b>				
4,4'-DDD	2/ 13	62.00	62.00	15.30
4,4'-DDE	4/ 14	3.40	110.00	16.90
4,4'-DDT	7/ 14	2.60	40.00	13.30
Alpha Chlordane	1/ 14	2.20	2.20	4.14
Aroclor-1254	2/ 14	87.00	180.00	217.00
Delta-BHC	1/ 14	4.90	4.90	4.32
Endrin Aldehyde	1/ 14	2.70	2.70	7.69
Gamma Chlordane	1/ 14	2.20	2.20	4.14
Heptachlor	3/ 13	1.60	3.70	4.52
<b>Semi-Volatile Organics (ug/kg)</b>				
1,4-Dichlorobenzene	2/ 11	130.00	270.00	318.00
Bis(2-ethylhexyl)phthalate	8/ 11	37.00	100.00	135.00
Di-n-butyl Phthalate	1/ 11	36.00	36.00	317.00
<b>Volatile Organics (ug/kg)</b>				
Acetone	1/ 11	70.00	70.00	11.40
Chlorobenzene	2/ 12	150.00	260.00	38.30
Methylene Chloride	7/ 12	4.00	19.00	6.33
<b>WBG Surface Soil</b>				
<b>WBG-001so &amp; WBG-002so</b>				
Cyanide(mg/kg)	3/ 7	0.19	0.59	0.21
<b>Explosives (ug/kg)</b>				
1,3,5-Trinitrobenzene	3/ 86	490.00	490,000.00	6,830.00
2,4,6-Trinitrotoluene	24/ 86	230.00	3,800,000.00	84,900.00
2,4-Dinitrotoluene	1/ 86	310.00	310.00	393.00
HMX	5/ 85	1,900.00	1,700,000.00	22,600.00
RDX	4/ 85	6,500.00	9,500,000.00	116,000.00
<b>Metals (mg/kg)</b>				
Aluminum	86/ 86	1,410.00	30,400.00	11,300.00
Antimony	1/ 8	2.60	2.60	0.61
Arsenic	86/ 86	2.50	21.60	13.20
Barium	86/ 86	11.70	7,780.00	201.00
Beryllium	6/ 6	0.47	2.60	0.89
Cadmium	66/ 84	0.04	877.00	13.60
Calcium	8/ 8	805.00	88,900.00	12,800.00
Chromium	86/ 86	5.40	118.00	15.70
Cobalt	8/ 8	4.60	8.90	6.79



Ravenna Analytical Results for IDW Characterization  
Nondetects Included in Average

Analyte (units)	Frequency of Detects	Minimum Detect	Maximum Detect	Average Result
<b>Metals (mg/kg) - continued</b>				
Copper	8/ 8	9.30	29.30	15.40
Iron	8/ 8	12,800.00	27,300.00	18,800.00
Lead	86/ 86	10.20	916.00	80.80
Magnesium	8/ 8	1,480.00	13,100.00	3,300.00
Manganese	86/ 86	65.40	3,910.00	522.00
Mercury	29/ 86	0.03	0.28	0.05
Nickel	8/ 8	7.40	18.50	12.30
Potassium	8/ 8	400.00	1,600.00	700.00
Selenium	73/ 86	0.34	5.00	0.99
Silver	14/ 86	0.19	6.40	0.42
Sodium	8/ 8	77.80	962.00	245.00
Thallium	8/ 8	1.40	3.10	2.10
Vanadium	8/ 8	12.70	19.60	15.80
Zinc	86/ 86	28.60	1,050.00	140.00
<b>Semi-Volatile Organics (ug/kg)</b>				
2-Methylnaphthalene	1/ 8	80.00	80.00	304.00
Bis(2-ethylhexyl)phthalate	1/ 8	34.00	34.00	343.00
Di-n-butyl Phthalate	1/ 8	53.00	53.00	345.00
Fluoranthene	1/ 8	40.00	40.00	343.00
Naphthalene	1/ 8	76.00	76.00	303.00
Phenanthrene	1/ 8	70.00	70.00	303.00
Pyrene	1/ 8	36.00	36.00	342.00
<b>Volatile Organics (ug/kg)</b>				
Benzene	1/ 13	32.00	32.00	7.23
Chloroform	6/ 13	2.00	23.00	5.38
Ethylbenzene	1/ 13	160.00	160.00	17.10
Methylene Chloride	2/ 13	12.00	12.00	14.80
Styrene	1/ 13	36.00	36.00	7.54
Toluene	9/ 13	10.00	190.00	52.20
Xylenes, Total	1/ 13	20.00	20.00	6.31
o-Xylene	1/ 13	20.00	20.00	6.31

Generated 11/14/96 using program sum\_idw.sas and dataset idw02.ssd



1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract: LL1MW063  
 Lab Code: SWOK      Case No: SAIC      SDG No: 29480  
 Matrix: (soil/water) SOIL      Lab Sample ID: 29480.01  
 Sample Amt: 2gm    % Moisture 4.97    Date Received: 05/23/97  
 Extraction Volume: 10ml      Date Extracted: 05/24/97  
 Extraction Method: SONC      Date Analyzed: 05/29/97  
 GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/kg      Q
2691-41-0	HMX-----	2200	U
121-82-4	RDX-----	1000	U
99-35-4	TNB-----	250	U
99-65-0	DNB-----	250	U
479-45-8	TETRYL-----	650	U
98-95-3	NB-----	260	U
118-96-7	TNT-----	250	U
606-20-2	26DNT-----	250	U
121-14-2	24DNT-----	250	U
88-72-2	2NT-----	250	U
99-99-0	4NT-----	250	U
99-08-1	3NT-----	250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
 3,4DNT

U.S. EPA - CLP

LL1MW63

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48001

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
 Lab Code: SWOK Case No.: 29480 SAS No.: \_\_\_\_\_ SDG No.: 29480  
 Matrix (soil/water): WATER Lab Sample ID: 29480.01  
 Level (low/med): LOW Date Received: 05/23/97  
 % Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	2440		E	P
7440-43-9	Cadmium	0.30	U		P
7440-47-3	Chromium	2.3	B		P
7439-92-1	Lead	7.8	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	13.6	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: \_\_\_\_\_  
 Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:  
CLIENT\_ID = LL1MW063

1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract:

LL1MW064
----------

Lab Code: SWOK      Case No: SAIC      SDG No: 29480

Matrix: (soil/water) SOIL      Lab Sample ID: 29480.02

Sample Amt: 2gm      % Moisture 21.03      Date Received: 05/23/97

Extraction Volume: 10ml      Date Extracted: 05/24/97

Extraction Method: SONC      Date Analyzed: 05/29/97

GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)	ug/kg	Q
2691-41-0	HMX-----		2200	U
121-82-4	RDX-----		1000	U
99-35-4	TNB-----		250	U
99-65-0	DNB-----		250	U
479-45-8	TETRYL-----		650	U
98-95-3	NB-----		260	U
118-96-7	TNT-----		250	U
606-20-2	26DNT-----		250	U
121-14-2	24DNT-----		250	U
88-72-2	2NT-----		250	U
99-99-0	4NT-----		250	U
99-08-1	3NT-----		250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
3, 4DNT

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48002

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
 Lab Code: SWOK Case No.: 29480 SAS No.: SDG No.: 29480  
 Matrix (soil/water): WATER Lab Sample ID: 29480.02  
 Level (low/med): LOW Date Received: 05/23/97  
 % Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	2990		B	P
7440-43-9	Cadmium	0.55	B		P
7440-47-3	Chromium	2.6	B		P
7439-92-1	Lead	7.2	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	13.1	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: \_\_\_\_\_  
 Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:  
 CLIENT\_ID = LL1MW064  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract: LL1MW065  
 Lab Code: SWOK      Case No: SAIC      SDG No: 29480  
 Matrix: (soil/water) SOIL      Lab Sample ID: 29480.03  
 Sample Amt: 2gm    % Moisture 18.74    Date Received: 05/23/97  
 Extraction Volume: 10ml      Date Extracted: 05/24/97  
 Extraction Method: SONC      Date Analyzed: 05/29/97  
 GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)	ug/kg	Q
2691-41-0	HMX-----		2200	U
121-82-4	RDX-----		1000	U
99-35-4	TNB-----		250	U
99-65-0	DNB-----		250	U
479-45-8	TETRYL-----		650	U
98-95-3	NB-----		260	U
118-96-7	TNT-----		250	U
606-20-2	26DNT-----		250	U
121-14-2	24DNT-----		250	U
88-72-2	2NT-----		250	U
99-99-0	4NT-----		250	U
99-08-1	3NT-----		250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
 3, 4DNT

U.S. EPA - CLP

LL1MW065

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48003

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
 Lab Code: SWOK Case No.: 29480 SAS No.: SDG No.: 29480  
 Matrix (soil/water): WATER Lab Sample ID: 29480.03  
 Level (low/med): LOW Date Received: 05/23/97  
 ‡ Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	2960		E	P
7440-43-9	Cadmium	0.60	B		P
7440-47-3	Chromium	4.0	B		P
7439-92-1	Lead	12.0	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	10.4	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: \_\_\_\_\_  
 Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:  
 CLIENT ID = LL1MW065



1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract: LL2MW059  
 Lab Code: SWOK      Case No: SAIC      SDG No: 29480  
 Matrix: (soil/water) SOIL      Lab Sample ID: 29480.04  
 Sample Amt: 2gm    % Moisture 14.54    Date Received: 05/23/97  
 Extraction Volume: 10ml      Date Extracted: 05/24/97  
 Extraction Method: SONC      Date Analyzed: 05/29/97  
 GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/kg	
2691-41-0	HMX-----		2200	U
121-82-4	RDX-----		1000	U
99-35-4	TNB-----		250	U
99-65-0	DNB-----		250	U
479-45-8	TETRYL-----		650	U
98-95-3	NB-----		260	U
118-96-7	TNT-----		250	U
606-20-2	26DNT-----		250	U
121-14-2	24DNT-----		250	U
88-72-2	2NT-----		250	U
99-99-0	4NT-----		250	U
99-08-1	3NT-----		250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
 3, 4DNT

U.S. EPA - CLP

LL2MW059

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48004

Lab Name: SOUTHWEST\_LAB\_OF\_OK      Contract: SAIC  
 Lab Code: SWOK      Case No.: 29480      SAS No.:      SDG No.: 29480  
 Matrix (soil/water): WATER      Lab Sample ID: 29480.04  
 Level (low/med):      LOW      Date Received: 05/23/97  
 % Solids:      0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	3110		E	P
7440-43-9	Cadmium	0.68	B		P
7440-47-3	Chromium	3.9	B		P
7439-92-1	Lead	5.5	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	15.4	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS      Clarity Before: CLEAR      Texture: \_\_\_\_\_  
 Color After: COLORLESS      Clarity After: CLEAR      Artifacts: \_\_\_\_\_

Comments:  
 CLIENT\_ID = LL2MW059

1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract:

LL2MW060

Lab Code: SWOK      Case No: SAIC      SDG No: 29480

Matrix: (soil/water) SOIL      Lab Sample ID: 29480.05

Sample Amt: 2gm    % Moisture 16.52    Date Received: 05/23/97

Extraction Volume: 10ml      Date Extracted: 05/24/97

Extraction Method: SONC      Date Analyzed: 05/29/97

GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/kg	
2691-41-0	HMX-----		2200	U
121-82-4	RDX-----		1000	U
99-35-4	TNB-----		250	U
99-65-0	DNB-----		250	U
479-45-8	TETRYL-----		650	U
98-95-3	NB-----		260	U
118-96-7	TNT-----		250	U
606-20-2	2,6DNT-----		250	U
121-14-2	2,4DNT-----		250	U
88-72-2	2NT-----		250	U
99-99-0	4NT-----		250	U
99-08-1	3NT-----		250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
3,4DNT

FORM I

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LL2MW60

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

48005

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
 Lab Code: SWOK Case No.: 29480 SAS No.: SDG No.: 29480  
 Matrix (soil/water): WATER Lab Sample ID: 29480.05  
 Level (low/med): LOW Date Received: 05/23/97  
 % Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	3070		E	P
7440-43-9	Cadmium	0.74	B		P
7440-47-3	Chromium	3.8	B		P
7439-92-1	Lead	7.7	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	12.5	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: \_\_\_\_\_  
 Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:  
 CLIENT\_ID = LL2MW060

1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract:

LL1MW066

Lab Code: SWOK      Case No: SAIC      SDG No: 29480

Matrix: (soil/water) SOIL      Lab Sample ID: 29480.06

Sample Amt: 2gm    % Moisture 23.03    Date Received: 05/23/97

Extraction Volume: 10ml      Date Extracted: 05/24/97

Extraction Method: SONC      Date Analyzed: 05/30/97

GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)	ug/kg	Q
2691-41-0	HMX-----		2200	U
121-82-4	RDX-----		1000	U
99-35-4	TNB-----		250	U
99-65-0	DNB-----		250	U
479-45-8	TETRYL-----		650	U
98-95-3	NB-----		260	U
118-96-7	TNT-----		250	U
606-20-2	26DNT-----		250	U
121-14-2	24DNT-----		250	U
88-72-2	2NT-----		250	U
99-99-0	4NT-----		250	U
99-08-1	3NT-----		250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
3, 4DNT

FORM I

LL1MW066

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48006

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
Lab Code: SWOK Case No.: 29480 SAS No.:            SDG No.: 29480  
Matrix (soil/water): WATER Lab Sample ID: 29480.06  
Level (low/med): LOW Date Received: 05/23/97  
† Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	3070		R	P
7440-43-9	Cadmium	0.47	B		P
7440-47-3	Chromium	2.7	B		P
7439-92-1	Lead	21.7	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	15.8	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS      Clarity Before: CLEAR      Texture:           
Color After: COLORLESS      Clarity After: CLEAR      Artifacts:         

Comments:  
CLIENT\_ID = LL1MW066

1D  
EXPLOSIVE CAL ANALYSIS DATA SHEET      EPA SAMPLE NO:

Lab Name: SWL-TULSA      Contract: LL1MW067

Lab Code: SWOK      Case No: SAIC      SDG No: 29480

Matrix: (soil/water) SOIL      Lab Sample ID: 29480.07

Sample Amt: 2gm    % Moisture 14.93    Date Received: 05/23/97

Extraction Volume: 10ml      Date Extracted: 05/24/97

Extraction Method: SONC      Date Analyzed: 05/30/97

GPC Cleanup: (Y/N) N      Dilution Factor: 2.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/kg      Q
2691-41-0	HMX-----	2200	U
121-82-4	RDX-----	1000	U
99-35-4	TNB-----	250	U
99-65-0	DNB-----	250	U
479-45-8	TETRYL-----	650	U
98-95-3	NB-----	260	U
118-96-7	TNT-----	250	U
606-20-2	26DNT-----	250	U
121-14-2	24DNT-----	250	U
88-72-2	2NT-----	250	U
99-99-0	4NT-----	250	U
99-08-1	3NT-----	250	U

SURROGATE AMOUNT SPIKED (ug/kg dry wt.)      10000  
3,4DNT

FORM I

LL1MW067

1  
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

48007

Lab Name: SOUTHWEST LAB OF OK Contract: SAIC  
Lab Code: SWOK Case No.: 29480 SAS No.: SDG No.: 29480  
Matrix (soil/water): WATER Lab Sample ID: 29480.07  
Level (low/med): LOW Date Received: 05/23/97  
† Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

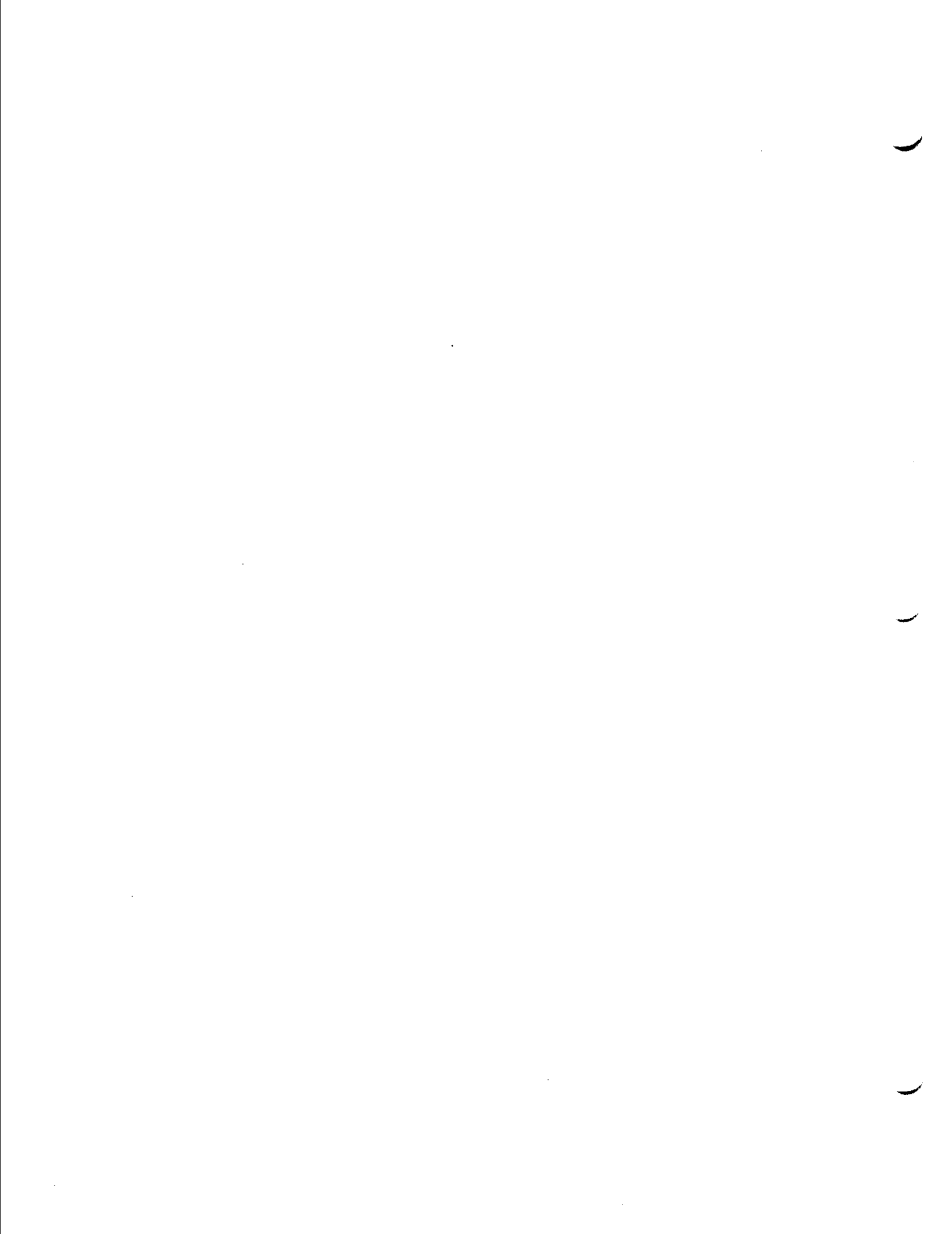
CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	3090		E	P
7440-43-9	Cadmium	0.72	B		P
7440-47-3	Chromium	3.2	B		P
7439-92-1	Lead	5.0	B		P
7439-97-6	Mercury	1.0	U		AV
7782-49-2	Selenium	11.3	B		P
7440-22-4	Silver	1.0	U		P

Color Before: COLORLESS    Clarity Before: CLEAR    Texture: \_\_\_\_\_  
Color After: COLORLESS    Clarity After: CLEAR    Artifacts: \_\_\_\_\_

Comments:  
CLIENT\_ID = LL1MW067  
\_\_\_\_\_  
\_\_\_\_\_



**APPENDIX B**  
**BACKGROUND ANALYTICAL DATA SUMMARY**



Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Building 1200 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	1/ 1	.		0.2100	0.2100		Yes	No Background Data Available

----- Media=Soil Area=Building 1200 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria <sup>1</sup>	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values <sup>2</sup>	Site Related? <sup>3</sup>	Justification <sup>4</sup>
ALUMINUM	2/ 2	15600.00	0/ 2	11500.0000	12200.0000	20000 - 100000	No	Below Background
ANTIMONY	1/ 1	.		1.1000	1.1000		Yes	No Background Data Available
ARSENIC	2/ 2	19.60	0/ 2	13.8000	13.9000	5.2 - 27.0	No	Below Background
BARIUM	2/ 2	75.00	1/ 2	69.9000	75.8000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	1/ 1	.		0.6000	0.6000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	2/ 2	0.29	0/ 2	0.1400	0.2800		No	Below Background
CALCIUM	1/ 1	.		1880.0000	1880.0000	1100 - 31000	No	Essential Element
CHROMIUM	2/ 2	18.70	0/ 2	14.3000	15.6000	15.0 - 100.0	No	Below Background
COBALT	1/ 1	.		8.8000	8.8000	7 - 20	Yes	No Background Data Available
COPPER	1/ 1	.		15.0000	15.0000	7.0 - 70.0	Yes	No Background Data Available
IRON	1/ 1	.		22800.0000	22800.0000	15000 - 50000	Yes	No Background Data Available
LEAD	2/ 2	17.90	1/ 2	17.4000	24.7000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	1/ 1	.		2410.0000	2410.0000	3000 - 15000	No	Essential Element
MANGANESE	2/ 2	728.00	0/ 2	265.0000	426.0000	150 - 1000	No	Below Background
NICKEL	1/ 1	.		18.6000	18.6000	15 - 50	Yes	No Background Data Available
POTASSIUM	1/ 1	.		932.0000	932.0000	11800 - 25100	No	Essential Element
SELENIUM	2/ 2	2.60	0/ 2	0.6300	0.7600	<0.1 - 1.2	No	Below Background
SODIUM	1/ 1	.		143.0000	143.0000	5000 - 7000	No	Essential Element
THALLIUM	1/ 1	.		1.5000	1.5000		Yes	No Background Data Available
VANADIUM	1/ 1	.		22.1000	22.1000	20 - 150	Yes	No Background Data Available
ZINC	2/ 2	72.10	0/ 2	51.5000	59.9000	250000-1100000	No	Below Background

Results less than the detection limit were set to 1/2 the reported detection limit.

- 1 Site background values established during Phase I RI.
- 2 Shacklette and Boerngen 1981 and 1984.
- 3 Chemical occurrence detected above background in >5% of samples analyzed.
- 4 Rationale for "site-related" classification.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Building 1200 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALPHA CHLORDANE	1/ 1	.		240.0000	240.0000		Yes	No Background Data Available
GAMMA CHLORDANE	1/ 1	.		230.0000	230.0000		Yes	No Background Data Available

----- Media=Soil Area=Building 1200 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
BENZO(A)ANTHRACENE	1/ 1	.		140.0000	140.0000		Yes	No Background Data Available
BENZO(A)PYRENE	1/ 1	.		160.0000	160.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	1/ 1	.		140.0000	140.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	1/ 1	.		95.0000	95.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	1/ 1	.		130.0000	130.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	1/ 1	.		40.0000	40.0000		Yes	No Background Data Available
CHRYSENE	1/ 1	.		160.0000	160.0000		Yes	No Background Data Available
DIBENZO(A,H)ANTHRACENE	1/ 1	.		48.0000	48.0000		Yes	No Background Data Available
FLUORANTHENE	1/ 1	.		130.0000	130.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	1/ 1	.		96.0000	96.0000		Yes	No Background Data Available
PYRENE	1/ 1	.		130.0000	130.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Building 1200 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
METHYLENE CHLORIDE	1/ 1	.		3.0000	3.0000		Yes	No Background Data Available

----- Media=Soil Area=Demolition Area No. 2 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2,4,6-TRINITROTOLUENE	4/ 30	.		540.0000	4400.0000		Yes	No Background Data Available
TETRYL	1/ 30	.		3500.0000	3500.0000		Yes	No Background Data Available

----- Media=Soil Area=Demolition Area No. 2 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	30/ 30	15600.00	3/ 30	7730.0000	19900.0000	20000 - 100000	Yes	> 5% Detect Above Background
ARSENIC	30/ 30	19.60	6/ 30	11.1000	25.7000	5.2 - 27.0	Yes	> 5% Detect Above Background
BARIUM	30/ 30	75.00	12/ 30	27.1000	266.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	1/ 1	.		0.5100	0.5100	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	27/ 30	0.29	22/ 30	0.1300	3.1000		Yes	> 5% Detect Above Background
CALCIUM	1/ 1	.		4350.0000	4350.0000	1100 - 31000	No	Essential Element
CHROMIUM	30/ 30	18.70	4/ 30	9.7000	25.8000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	1/ 1	.		9.8000	9.8000	7 - 20	Yes	No Background Data Available
COPPER	1/ 1	.		67.4000	67.4000	7.0 - 70.0	Yes	No Background Data Available
IRON	1/ 1	.		23500.0000	23500.0000	15000 - 50000	Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Demolition Area No. 2 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
LEAD	30/ 30	17.90	16/ 30	12.2000	1900.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	1/ 1	.		3770.0000	3770.0000	3000 - 15000	No	Essential Element
MANGANESE	30/ 30	728.00	6/ 30	188.0000	1120.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	19/ 30	0.08	10/ 30	0.0400	0.2800	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	1/ 1	.		22.0000	22.0000	15 - 50	Yes	No Background Data Available
POTASSIUM	1/ 1	.		1300.0000	1300.0000	11800 - 25100	No	Essential Element
SELENIUM	26/ 30	2.60	0/ 30	0.3500	2.0000	<0.1 - 1.2	No	Below Background
SODIUM	1/ 1	.		218.0000	218.0000	5000 - 7000	No	Essential Element
THALLIUM	1/ 1	.		1.1000	1.1000		Yes	No Background Data Available
VANADIUM	1/ 1	.		14.0000	14.0000	20 - 150	Yes	No Background Data Available
ZINC	30/ 30	72.10	15/ 30	57.9000	375.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Demolition Area No. 2 Group=> 2 feet Analysis Type=Explosives Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2,4,6-TRINITROTOLUENE	5/ 29	.		420.0000	2300.0000		Yes	No Background Data Available
2,4-DINITROTOLUENE	1/ 29	.		2600.0000	2600.0000		Yes	No Background Data Available
TETRYL	2/ 29	.		420.0000	4300.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Demolition Area No. 2 Group=> 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	29/ 29	15600.00	1/ 29	6700.0000	16600.0000	20000 - 100000	No	<= 5% Detect Above Background
ARSENIC	29/ 29	19.60	8/ 29	10.7000	30.8000	5.2 - 27.0	Yes	> 5% Detect Above Background
BARIUM	29/ 29	75.00	11/ 29	29.9000	593.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	2/ 2	.		0.7100	0.8300	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	25/ 29	0.29	12/ 29	0.1100	2.9000		Yes	> 5% Detect Above Background
CALCIUM	2/ 2	.		1280.0000	18400.0000	1100 - 31000	No	Essential Element
CHROMIUM	29/ 29	18.70	6/ 29	10.0000	21.9000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	2/ 2	.		10.7000	12.4000	7 - 20	Yes	No Background Data Available
COPPER	2/ 2	.		20.6000	23.3000	7.0 - 70.0	Yes	No Background Data Available
IRON	2/ 2	.		24600.0000	25900.0000	15000 - 50000	Yes	No Background Data Available
LEAD	29/ 29	17.90	8/ 29	9.6000	87.2000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	2/ 2	.		2940.0000	5780.0000	3000 - 15000	No	Essential Element
MANGANESE	29/ 29	728.00	2/ 29	132.0000	1080.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	9/ 29	0.08	6/ 29	0.0400	1.0000	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	2/ 2	.		21.8000	29.7000	15 - 50	Yes	No Background Data Available
POTASSIUM	2/ 2	.		832.0000	1820.0000	11800 - 25100	No	Essential Element
SELENIUM	21/ 29	2.60	0/ 29	0.3500	1.3000	<0.1 - 1.2	No	Below Background
SODIUM	2/ 2	.		175.0000	236.0000	5000 - 7000	No	Essential Element
THALLIUM	2/ 2	.		0.8200	1.2000		Yes	No Background Data Available
VANADIUM	2/ 2	.		17.5000	20.5000	20 - 150	Yes	No Background Data Available
ZINC	29/ 29	72.10	11/ 29	45.8000	235.0000	250000-1100000	Yes	> 5% Detect Above Background

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----- Media=Soil Area=Demolition Area No. 2 Group=> 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
BIS(2-ETHYLHEXYL)PHTHALATE	1/ 2	.		50.0000	50.0000		Yes	No Background Data Available

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Demolition Area No. 2 Group=> 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
METHYLENE CHLORIDE	1/ 2	.		6.0000	6.0000		Yes	No Background Data Available
TOLUENE	1/ 2	.		170.0000	170.0000		Yes	No Background Data Available

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=' / ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	3/ 9	.		0.1400	0.2500		Yes	No Background Data Available

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	9/ 9	15600.00	0/ 9	7320.0000	11200.0000	20000 - 100000	No	Below Background
ANTIMONY	1/ 9	.		1.3000	1.3000		Yes	No Background Data Available
ARSENIC	9/ 9	19.60	0/ 9	10.0000	18.5000	5.2 - 27.0	No	Below Background
BARIUM	9/ 9	75.00	0/ 9	30.0000	53.1000	300 - 700	No	Below Background
BERYLLIUM	9/ 9	.		0.3500	0.5300	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	4/ 9	0.29	2/ 9	0.1500	0.5200		Yes	> 5% Detect Above Background
CALCIUM	9/ 9	.		549.0000	1740.0000	1100 - 31000	No	Essential Element
CHROMIUM	9/ 9	18.70	0/ 9	9.0000	13.1000	15.0 - 100.0	No	Below Background
COBALT	9/ 9	.		6.1000	9.4000	7 - 20	Yes	No Background Data Available
COPPER	9/ 9	.		13.1000	32.2000	7.0 - 70.0	Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=Metals Units=MG/KG -----  
 (continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
IRON	9/ 9	.		17300.0000	28400.0000	15000 - 50000	Yes	No Background Data Available
LEAD	9/ 9	17.90	3/ 9	9.9000	28.4000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	9/ 9	.		1580.0000	2610.0000	3000 - 15000	No	Essential Element
MANGANESE	9/ 9	728.00	0/ 9	222.0000	338.0000	150 - 1000	No	Below Background
NICKEL	9/ 9	.		11.8000	19.3000	15 - 50	Yes	No Background Data Available
POTASSIUM	9/ 9	.		467.0000	942.0000	11800 - 25100	No	Essential Element
SELENIUM	9/ 9	2.60	0/ 9	0.4500	1.9000	<0.1 - 1.2	No	Below Background
SILVER	1/ 9	0.24	0/ 9	0.2200	0.2200		No	Below Background
SODIUM	9/ 9	.		148.0000	197.0000	5000 - 7000	No	Essential Element
THALLIUM	9/ 9	.		0.9800	2.4000		Yes	No Background Data Available
VANADIUM	9/ 9	.		11.1000	17.5000	20 - 150	Yes	No Background Data Available
ZINC	9/ 9	72.10	4/ 9	40.0000	212.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDD	1/ 8	.		62.0000	62.0000		Yes	No Background Data Available
4,4'-DDE	3/ 9	.		3.4000	110.0000		Yes	No Background Data Available
4,4'-DDT	5/ 9	.		2.6000	37.0000		Yes	No Background Data Available
AROCLOR-1254	1/ 9	.		87.0000	87.0000		Yes	No Background Data Available
DELTA-BHC	1/ 9	.		4.9000	4.9000		Yes	No Background Data Available
ENDRIN ALDEHYDE	1/ 9	.		2.7000	2.7000		Yes	No Background Data Available
HEPTACHLOR	2/ 8	.		1.6000	1.9000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,4-DICHLOROBENZENE	1/ 9	.		130.0000	130.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	6/ 9	.		37.0000	100.0000		Yes	No Background Data Available
DI-N-BUTYL PHTHALATE	1/ 9	.		36.0000	36.0000		Yes	No Background Data Available

----- Media=Soil Area=Landfill North of Winklepeck Burning Ground Group=LNWtr Surf Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CHLOROBENZENE	1/ 9	.		150.0000	150.0000		Yes	No Background Data Available
METHYLENE CHLORIDE	5/ 9	.		4.0000	19.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	8/ 11	.		0.1100	112.0000		Yes	No Background Data Available

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,3,5-TRINITROBENZENE	10/ 46	.		550.0000	110000.000		Yes	No Background Data Available
2,4,6-TRINITROTOLUENE	28/ 46	.		260.0000	580000.000		Yes	No Background Data Available
2,4-DINITROTOLUENE	5/ 46	.		100.0000	1500.0000		Yes	No Background Data Available
HMX	2/ 46	.		2600.0000	9100.0000		Yes	No Background Data Available
RDX	2/ 46	.		1800.0000	49000.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	46/ 46	15600.00	4/ 46	1860.0000	47600.0000	20000 - 100000	Yes	> 5% Detect Above Background
ANTIMONY	8/ 11	.		0.4500	8.8000		Yes	No Background Data Available
ARSENIC	46/ 46	19.60	3/ 46	4.5000	77.0000	5.2 - 27.0	Yes	> 5% Detect Above Background
BARIIUM	46/ 46	75.00	21/ 46	22.2000	1380.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	11/ 11	.		0.2000	2.5000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	41/ 46	0.29	35/ 46	0.1500	23.5000		Yes	> 5% Detect Above Background
CALCIUM	11/ 11	.		452.0000	56700.0000	1100 - 31000	No	Essential Element
CHROMIUM	46/ 46	18.70	17/ 46	4.8000	394.0000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	11/ 11	.		3.9000	33.7000	7 - 20	Yes	No Background Data Available
COPPER	11/ 11	.		11.3000	110.0000	7.0 - 70.0	Yes	No Background Data Available
IRON	11/ 11	.		13500.0000	75600.0000	15000 - 50000	Yes	No Background Data Available
LEAD	46/ 46	17.90	41/ 46	12.8000	3610.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	11/ 11	.		750.0000	9100.0000	3000 - 15000	No	Essential Element
MANGANESE	46/ 46	728.00	10/ 46	113.0000	2140.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	40/ 46	0.08	14/ 46	0.0400	1.4000	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	11/ 11	.		9.4000	45.8000	15 - 50	Yes	No Background Data Available
POTASSIUM	11/ 11	.		358.0000	2690.0000	11800 - 25100	No	Essential Element

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
SELENIUM	44/ 46	2.60	4/ 46	0.3200	4.3000	<0.1 - 1.2	Yes	> 5% Detect Above Background
SILVER	1/ 46	0.24	0/ 46	0.2400	0.2400		No	Below Background
SODIUM	11/ 11	.		148.0000	535.0000	5000 - 7000	No	Essential Element
THALLIUM	11/ 11	.		0.8400	7.9000		Yes	No Background Data Available
VANADIUM	11/ 11	.		5.5000	92.9000	20 - 150	Yes	No Background Data Available
ZINC	46/ 46	72.10	34/ 46	34.1000	1560.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDD	2/ 11	.		42.0000	250.0000		Yes	No Background Data Available
4,4'-DDE	4/ 11	.		3.3000	840.0000		Yes	No Background Data Available
4,4'-DDT	3/ 11	.		63.0000	450.0000		Yes	No Background Data Available
ALDRIN	1/ 11	.		2.5000	2.5000		Yes	No Background Data Available
ALPHA CHLORDANE	3/ 11	.		19.0000	140.0000		Yes	No Background Data Available
AROCLOR-1254	5/ 11	.		95.0000	36000.0000		Yes	No Background Data Available
AROCLOR-1260	1/ 11	.		680.0000	680.0000		Yes	No Background Data Available
DIELDRIN	1/ 11	.		170.0000	170.0000		Yes	No Background Data Available
ENDOSULFAN II	1/ 11	.		8.7000	8.7000		Yes	No Background Data Available
ENDRIN	1/ 11	.		37.0000	37.0000		Yes	No Background Data Available
ENDRIN ALDEHYDE	2/ 11	.		9.6000	53.0000		Yes	No Background Data Available
GAMMA CHLORDANE	4/ 11	.		1.9000	250.0000		Yes	No Background Data Available
HEPTACHLOR EPOXIDE	1/ 11	.		2.3000	2.3000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ANTHRACENE	1/ 11	.		60.0000	60.0000		Yes	No Background Data Available
BENZO(A)ANTHRACENE	5/ 11	.		77.0000	330.0000		Yes	No Background Data Available
BENZO(A)PYRENE	5/ 11	.		86.0000	420.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	4/ 11	.		100.0000	400.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	4/ 11	.		74.0000	530.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	5/ 11	.		94.0000	500.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	4/ 11	.		42.0000	1400.0000		Yes	No Background Data Available
CARBAZOLE	1/ 11	.		36.0000	36.0000		Yes	No Background Data Available
CHRYSENE	6/ 11	.		90.0000	600.0000		Yes	No Background Data Available
DI-N-BUTYL PHTHALATE	4/ 11	.		410.0000	14000.0000		Yes	No Background Data Available
DIBENZO(A,H)ANTHRACENE	3/ 11	.		40.0000	160.0000		Yes	No Background Data Available
DIMETHYL PHTHALATE	1/ 11	.		1900.0000	1900.0000		Yes	No Background Data Available
FLUORANTHENE	6/ 11	.		120.0000	1000.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	4/ 11	.		74.0000	310.0000		Yes	No Background Data Available
N-NITROSODIPHENYLAMINE	2/ 11	.		110.0000	270.0000		Yes	No Background Data Available
PENTACHLOROPHENOL	1/ 11	.		3900.0000	3900.0000		Yes	No Background Data Available
PHENANTHRENE	4/ 11	.		67.0000	500.0000		Yes	No Background Data Available
PYRENE	5/ 11	.		110.0000	890.0000		Yes	No Background Data Available

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----- Media=Soil Area=Load Line 1 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ACETONE	1/ 8	.		270.0000	270.0000		Yes	No Background Data Available
CHLOROFORM	3/ 11	.		2.0000	2.0000		Yes	No Background Data Available
TOLUENE	5/ 11	.		6.0000	31.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	7/ 11	.		0.1000	5.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,3,5-TRINITROBENZENE	6/ 44	.		320.0000	160000.0000		Yes	No Background Data Available
2,4,6-TRINITROTOLUENE	27/ 44	.		240.0000	1200000.00		Yes	No Background Data Available
HMX	4/ 44	.		2800.0000	1500000.00		Yes	No Background Data Available
RDX	8/ 44	.		400.0000	9800000.00		Yes	No Background Data Available

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	44/ 44	15600.00	2/ 44	3100.0000	24500.0000	20000 - 100000	No	<= 5% Detect Above Background
ANTIMONY	3/ 11	.		0.3300	1.2000		Yes	No Background Data Available
ARSENIC	44/ 44	19.60	2/ 44	4.4000	28.4000	5.2 - 27.0	No	<= 5% Detect Above Background
BARIUM	44/ 44	75.00	14/ 44	19.4000	297.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	8/ 11	.		0.2800	2.9000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	38/ 44	0.29	30/ 44	0.0500	22.7000		Yes	> 5% Detect Above Background
CALCIUM	11/ 11	.		921.0000	73500.0000	1100 - 31000	No	Essential Element
CHROMIUM	44/ 44	18.70	9/ 44	5.5000	116.0000	15.0 - 100.0	Yes	> 5% Detect Above Background

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----  
 (continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
COBALT	11/ 11	.		3.3000	17.0000	7 - 20	Yes	No Background Data Available
COPPER	11/ 11	.		11.7000	53.4000	7.0 - 70.0	Yes	No Background Data Available
IRON	11/ 11	.		12200.0000	55500.0000	15000 - 50000	Yes	No Background Data Available
LEAD	44/ 44	17.90	32/ 44	7.0000	881.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	11/ 11	.		923.0000	8500.0000	3000 - 15000	No	Essential Element
MANGANESE	44/ 44	728.00	5/ 44	146.0000	4240.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	15/ 44	0.08	2/ 44	0.0400	0.9400	0.03 - 0.22	No	<= 5% Detect Above Background
NICKEL	11/ 11	.		7.0000	41.9000	15 - 50	Yes	No Background Data Available
POTASSIUM	11/ 11	.		546.0000	2410.0000	11800 - 25100	No	Essential Element
SELENIUM	22/ 44	2.60	1/ 44	0.3700	3.1000	<0.1 - 1.2	No	<= 5% Detect Above Background
SILVER	2/ 44	0.24	2/ 44	0.4700	1.5000		No	<= 5% Detect Above Background
SODIUM	11/ 11	.		148.0000	649.0000	5000 - 7000	No	Essential Element
THALLIUM	11/ 11	.		0.8100	7.6000		Yes	No Background Data Available
VANADIUM	11/ 11	.		7.2000	24.8000	20 - 150	Yes	No Background Data Available
ZINC	44/ 44	72.10	24/ 44	29.8000	892.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDD	1/ 11	.		12.0000	12.0000		Yes	No Background Data Available
4,4'-DDE	8/ 11	.		3.9000	81.0000		Yes	No Background Data Available
4,4'-DDT	6/ 11	.		6.2000	170.0000		Yes	No Background Data Available
ALDRIN	2/ 11	.		2.2000	24.0000		Yes	No Background Data Available
ALPHA CHLORDANE	1/ 11	.		570.0000	570.0000		Yes	No Background Data Available
AROCLOR-1254	6/ 11	.		150.0000	2500.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
AROCOR-1260	2/ 11	.		240.0000	6000.0000		Yes	No Background Data Available
DELTA-BHC	1/ 11	.		2.2000	2.2000		Yes	No Background Data Available
DIELDRIN	2/ 11	.		3.1000	27.0000		Yes	No Background Data Available
ENDRIN	1/ 11	.		5.6000	5.6000		Yes	No Background Data Available
ENDRIN ALDEHYDE	2/ 11	.		15.0000	120.0000		Yes	No Background Data Available
GAMMA CHLORDANE	2/ 11	.		5.6000	7.5000		Yes	No Background Data Available
GAMMA-BHC (LINDANE)	1/ 11	.		4.8000	4.8000		Yes	No Background Data Available
HEPTACHLOR EPOXIDE	1/ 11	.		4.2000	4.2000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2-METHYLNAPHTHALENE	1/ 11	.		120.0000	120.0000		Yes	No Background Data Available
ACENAPHTHENE	1/ 11	.		740.0000	740.0000		Yes	No Background Data Available
ANTHRACENE	1/ 11	.		1900.0000	1900.0000		Yes	No Background Data Available
BENZO(A)ANTHRACENE	7/ 11	.		52.0000	2900.0000		Yes	No Background Data Available
BENZO(A)PYRENE	7/ 11	.		59.0000	2300.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	6/ 11	.		43.0000	170.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	6/ 11	.		38.0000	1100.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	7/ 11	.		54.0000	3200.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	2/ 11	.		86.0000	190.0000		Yes	No Background Data Available
BUTYL BENZYL PHTHALATE	2/ 11	.		84.0000	810.0000		Yes	No Background Data Available
CARBAZOLE	1/ 11	.		1200.0000	1200.0000		Yes	No Background Data Available
CHRYSENE	8/ 11	.		60.0000	2700.0000		Yes	No Background Data Available
DI-N-BUTYL PHTHALATE	3/ 11	.		68.0000	110.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna .ls  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----  
 (continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
DIBENZO(A,H)ANTHRACENE	2/ 11	.		48.0000	720.0000		Yes	No Background Data Available
DIBENZOFURAN	1/ 11	.		540.0000	540.0000		Yes	No Background Data Available
FLUORANTHENE	9/ 11	.		39.0000	7700.0000		Yes	No Background Data Available
FLUORENE	1/ 11	.		910.0000	910.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	5/ 11	.		49.0000	1300.0000		Yes	No Background Data Available
NAPHTHALENE	1/ 11	.		270.0000	270.0000		Yes	No Background Data Available
PHENANTHRENE	7/ 11	.		56.0000	6400.0000		Yes	No Background Data Available
PYRENE	8/ 11	.		70.0000	5000.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 2 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CHLOROFORM	4/ 10	.		2.0000	3.0000		Yes	No Background Data Available
METHYLENE CHLORIDE	1/ 10	.		6.0000	6.0000		Yes	No Background Data Available
TOLUENE	1/ 10	.		5.0000	5.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	6/ 9	.		0.1200	0.3800		Yes	No Background Data Available

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,3,5-TRINITROBENZENE	7/ 37	.		253.0000	110000.000		Yes	No Background Data Available
2,4,6-TRINITROTOLUENE	26/ 37	.		142.0000	390000000		Yes	No Background Data Available
HMX	1/ 37	.		14000.0000	14000.0000		Yes	No Background Data Available
RDX	1/ 37	.		10000.0000	10000.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	37/ 37	15600.00	1/ 37	3720.0000	23900.0000	20000 - 100000	No	<= 5% Detect Above Background
ANTIMONY	4/ 9	.		3.4000	30.0000		Yes	No Background Data Available
ARSENIC	37/ 37	19.60	2/ 37	7.0000	23.2000	5.2 - 27.0	Yes	> 5% Detect Above Background
BARIUM	37/ 37	75.00	10/ 37	16.1000	447.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	9/ 9	.		0.3100	1.2000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	36/ 37	0.29	24/ 37	0.0600	4.1000		Yes	> 5% Detect Above Background
CALCIUM	9/ 9	.		772.0000	13500.0000	1100 - 31000	No	Essential Element
CHROMIUM	37/ 37	18.70	4/ 37	4.9000	150.0000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	9/ 9	.		3.7000	8.7000	7 - 20	Yes	No Background Data Available
COPPER	9/ 9	.		8.9000	99.4000	7.0 - 70.0	Yes	No Background Data Available
IRON	9/ 9	.		14900.0000	26100.0000	15000 - 50000	Yes	No Background Data Available
LEAD	37/ 37	17.90	27/ 37	11.1000	2620.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	9/ 9	.		1140.0000	3330.0000	3000 - 15000	No	Essential Element
MANGANESE	37/ 37	728.00	8/ 37	75.3000	4800.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	8/ 37	0.08	3/ 37	0.0400	0.2000	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	9/ 9	.		7.0000	21.9000	15 - 50	Yes	No Background Data Available
POTASSIUM	9/ 9	.		468.0000	967.0000	11800 - 25100	No	Essential Element
SELENIUM	35/ 37	2.60	1/ 37	0.3500	4.1000	<0.1 - 1.2	No	<= 5% Detect Above Background

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
SILVER	5/ 37	0.24	5/ 37	0.2800	2.4000		Yes	> 5% Detect Above Background
SODIUM	9/ 9	.		137.0000	232.0000	5000 - 7000	No	Essential Element
THALLIUM	9/ 9	.		0.7800	3.5000		Yes	No Background Data Available
VANADIUM	9/ 9	.		9.9000	22.5000	20 - 150	Yes	No Background Data Available
ZINC	37/ 37	72.10	19/ 37	30.9000	626.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDE	2/ 9	.		3.8000	12.0000		Yes	No Background Data Available
4,4'-DDT	2/ 9	.		11.0000	77.0000		Yes	No Background Data Available
ALPHA CHLORDANE	1/ 9	.		590.0000	590.0000		Yes	No Background Data Available
AROCLOR-1254	3/ 9	.		170.0000	21000.0000		Yes	No Background Data Available
BETA-BHC	1/ 9	.		30.0000	30.0000		Yes	No Background Data Available
ENDOSULFAN II	1/ 9	.		4.5000	4.5000		Yes	No Background Data Available
ENDRIN	2/ 9	.		10.0000	3200.0000		Yes	No Background Data Available
ENDRIN ALDEHYDE	1/ 9	.		4.8000	4.8000		Yes	No Background Data Available
GAMMA CHLORDANE	1/ 9	.		110.0000	110.0000		Yes	No Background Data Available
HEPTACHLOR	1/ 9	.		1.6000	1.6000		Yes	No Background Data Available
HEPTACHLOR EPOXIDE	1/ 9	.		94.0000	94.0000		Yes	No Background Data Available

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Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2-METHYLNAPHTHALENE	1/ 9	.	.	48.0000	48.0000		Yes	No Background Data Available
ACENAPHTHENE	2/ 9	.	.	66.0000	95.0000		Yes	No Background Data Available
ACENAPHTHYLENE	2/ 9	.	.	54.0000	58.0000		Yes	No Background Data Available
ANTHRACENE	2/ 9	.	.	160.0000	320.0000		Yes	No Background Data Available
BENZO(A)ANTHRACENE	4/ 9	.	.	39.0000	1200.0000		Yes	No Background Data Available
BENZO(A)PYRENE	4/ 9	.	.	36.0000	1000.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	5/ 9	.	.	35.0000	1100.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	2/ 9	.	.	440.0000	610.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	6/ 9	.	.	38.0000	1000.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	3/ 9	.	.	98.0000	440.0000		Yes	No Background Data Available
BUTYL BENZYL PHTHALATE	1/ 9	.	.	88.0000	88.0000		Yes	No Background Data Available
CARBAZOLE	2/ 9	.	.	110.0000	250.0000		Yes	No Background Data Available
CHRYSENE	5/ 9	.	.	45.0000	1500.0000		Yes	No Background Data Available
DI-N-BUTYL PHTHALATE	2/ 9	.	.	110.0000	190.0000		Yes	No Background Data Available
DIBENZO(A,H)ANTHRACENE	2/ 9	.	.	150.0000	250.0000		Yes	No Background Data Available
DIBENZOFURAN	1/ 9	.	.	57.0000	57.0000		Yes	No Background Data Available
FLUORANTHENE	6/ 9	.	.	51.0000	2200.0000		Yes	No Background Data Available
FLUORENE	2/ 9	.	.	58.0000	94.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	2/ 9	.	.	460.0000	590.0000		Yes	No Background Data Available
NAPHTHALENE	2/ 9	.	.	43.0000	52.0000		Yes	No Background Data Available
PHENANTHRENE	4/ 9	.	.	72.0000	1200.0000		Yes	No Background Data Available
PYRENE	5/ 9	.	.	44.0000	1800.0000		Yes	No Background Data Available

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 3 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
METHYLENE CHLORIDE	2/ 8	.		2.0000	4.0000		Yes	No Background Data Available
TOLUENE	2/ 8	.		14.0000	38.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	6/ 11	.		0.1100	0.5100		Yes	No Background Data Available

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2,4,6-TRINITROTOLUENE	9/ 47	.		240.0000	2200.0000		Yes	No Background Data Available
HMX	1/ 47	.		1000.0000	1000.0000		Yes	No Background Data Available
RDX	1/ 47	.		270.0000	270.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	47/ 47	15600.00	1/ 47	4210.0000	22700.0000	20000 - 100000	No	<= 5% Detect Above Background
ARSENIC	47/ 47	19.60	0/ 47	2.0000	17.8000	5.2 - 27.0	No	Below Background
BARIUM	47/ 47	75.00	10/ 47	17.3000	238.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	11/ 11	.		0.2500	3.6000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	44/ 47	0.29	16/ 47	0.0400	5.2000		Yes	> 5% Detect Above Background
CALCIUM	11/ 11	.		731.0000	8100.0000	1100 - 31000	No	Essential Element
CHROMIUM	47/ 47	18.70	1/ 47	5.2000	30.1000	15.0 - 100.0	No	<= 5% Detect Above Background
COBALT	11/ 11	.		3.0000	10.4000	7 - 20	Yes	No Background Data Available
COPPER	11/ 11	.		7.7000	106.0000	7.0 - 70.0	Yes	No Background Data Available
IRON	11/ 11	.		7850.0000	28700.0000	15000 - 50000	Yes	No Background Data Available
LEAD	47/ 47	17.90	22/ 47	8.1000	384.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	11/ 11	.		864.0000	14300.0000	3000 - 15000	No	Essential Element
MANGANESE	47/ 47	728.00	5/ 47	43.5000	2830.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	10/ 47	0.08	1/ 47	0.0300	0.1600	0.03 - 0.22	No	<= 5% Detect Above Background
NICKEL	11/ 11	.		7.8000	32.1000	15 - 50	Yes	No Background Data Available
POTASSIUM	11/ 11	.		379.0000	1810.0000	11800 - 25100	No	Essential Element
SELENIUM	38/ 47	2.60	1/ 47	0.3200	3.2000	<0.1 - 1.2	No	<= 5% Detect Above Background
SODIUM	11/ 11	.		128.0000	649.0000	5000 - 7000	No	Essential Element
THALLIUM	11/ 11	.		0.4600	13.3000		Yes	No Background Data Available
VANADIUM	11/ 11	.		8.9000	19.7000	20 - 150	Yes	No Background Data Available
ZINC	47/ 47	72.10	19/ 47	25.4000	1850.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDD	1/ 11	.		9.8000	9.8000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----  
 (continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDE	2/ 11	.		18.0000	19.0000		Yes	No Background Data Available
4,4'-DDT	3/ 11	.		8.7000	230.0000		Yes	No Background Data Available
ALDRIN	2/ 11	.		17.0000	43.0000		Yes	No Background Data Available
ALPHA CHLORDANE	3/ 11	.		5.6000	34.0000		Yes	No Background Data Available
AROCLOR-1254	3/ 11	.		110.0000	3200.0000		Yes	No Background Data Available
AROCLOR-1260	1/ 11	.		4500.0000	4500.0000		Yes	No Background Data Available
DIELDRIN	1/ 11	.		4.8000	4.8000		Yes	No Background Data Available
ENDOSULFAN II	1/ 11	.		37.0000	37.0000		Yes	No Background Data Available
ENDRIN	3/ 11	.		7.5000	18.0000		Yes	No Background Data Available
ENDRIN ALDEHYDE	1/ 11	.		4.5000	4.5000		Yes	No Background Data Available
GAMMA CHLORDANE	3/ 11	.		1.6000	19.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ACENAPHTHYLENE	2/ 11	.		270.0000	560.0000		Yes	No Background Data Available
ANTHRACENE	3/ 11	.		190.0000	1200.0000		Yes	No Background Data Available
BENZO(A)ANTHRACENE	3/ 11	.		450.0000	2100.0000		Yes	No Background Data Available
BENZO(A)PYRENE	4/ 11	.		40.0000	2700.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	4/ 11	.		40.0000	7200.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	3/ 11	.		240.0000	3800.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	3/ 11	.		330.0000	5000.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	5/ 11	.		43.0000	170.0000		Yes	No Background Data Available
CARBAZOLE	3/ 11	.		120.0000	1400.0000		Yes	No Background Data Available
CHRYSENE	5/ 11	.		38.0000	6400.0000		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
DI-N-BUTYL PHTHALATE	1/ 11	.		920.0000	920.0000		Yes	No Background Data Available
DIBENZO(A,H)ANTHRACENE	3/ 11	.		140.0000	1200.0000		Yes	No Background Data Available
FLUORANTHENE	7/ 11	.		38.0000	8100.0000		Yes	No Background Data Available
FLUORENE	2/ 11	.		64.0000	120.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	3/ 11	.		230.0000	3700.0000		Yes	No Background Data Available
PHENANTHRENE	3/ 11	.		140.0000	2300.0000		Yes	No Background Data Available
PYRENE	5/ 11	.		35.0000	5400.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 4 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ACETONE	1/ 7	.		50.0000	50.0000		Yes	No Background Data Available
CHLOROFORM	1/ 11	.		2.0000	2.0000		Yes	No Background Data Available
TOLUENE	2/ 11	.		5.0000	12.0000		Yes	No Background Data Available

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	6/ 9	.		0.1500	1.6000		Yes	No Background Data Available

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Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,3,5-TRINITROBENZENE	3/ 31	.		250.0000	4600.0000		Yes	No Background Data Available
2,4,6-TRINITROTOLUENE	18/ 31	.		450.0000	19000000.0		Yes	No Background Data Available
2,4-DINITROTOLUENE	1/ 31	.		13000.0000	13000.0000		Yes	No Background Data Available
HMX	6/ 31	.		1300.0000	180000.000		Yes	No Background Data Available
RDX	8/ 30	.		2800.0000	6800000.00		Yes	No Background Data Available

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	31/ 31	15600.00	3/ 31	2190.0000	105000.000	20000 - 100000	Yes	> 5% Detect Above Background
ANTIMONY	2/ 9	.		0.8600	5.9000		Yes	No Background Data Available
ARSENIC	31/ 31	19.60	0/ 31	4.0000	17.4000	5.2 - 27.0	No	Below Background
BARIUM	31/ 31	75.00	16/ 31	20.2000	274.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	9/ 9	.		0.2700	1.5000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	28/ 31	0.29	16/ 31	0.0900	6.6000		Yes	> 5% Detect Above Background
CALCIUM	9/ 9	.		1650.0000	171000.000	1100 - 31000	No	Essential Element
CHROMIUM	31/ 31	18.70	7/ 31	7.0000	163.0000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	9/ 9	.		3.6000	13.8000	7 - 20	Yes	No Background Data Available
COPPER	9/ 9	.		14.8000	3610.0000	7.0 - 70.0	Yes	No Background Data Available
IRON	9/ 9	.		13700.0000	26700.0000	15000 - 50000	Yes	No Background Data Available
LEAD	31/ 31	17.90	25/ 31	10.8000	589.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	9/ 9	.		937.0000	22500.0000	3000 - 15000	No	Essential Element
MANGANESE	31/ 31	728.00	3/ 31	42.7000	1760.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	14/ 31	0.08	2/ 31	0.0300	0.3200	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	9/ 9	.		10.2000	199.0000	15 - 50	Yes	No Background Data Available
POTASSIUM	9/ 9	.		404.0000	1130.0000	11800 - 25100	No	Essential Element

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Ravenna Soils  
Summary of Site Results and Comparison to Background  
All Analytes Measured

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----  
(continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
SELENIUM	28/ 31	2.60	0/ 31	0.3400	2.2000	<0.1 - 1.2	No	Below Background
SILVER	3/ 31	0.24	3/ 31	0.5000	4.7000		Yes	> 5% Detect Above Background
SODIUM	9/ 9	.		167.0000	370.0000	5000 - 7000	No	Essential Element
THALLIUM	8/ 9	.		0.9100	4.3000		Yes	No Background Data Available
VANADIUM	9/ 9	.		5.7000	26.9000	20 - 150	Yes	No Background Data Available
ZINC	31/ 31	72.10	18/ 31	33.9000	1030.0000	250000-1100000	Yes	> 5% Detect Above Background

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Pesticides and/or PCBs Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
4,4'-DDE	2/ 9	.		4.9000	39.0000		Yes	No Background Data Available
4,4'-DDT	3/ 9	.		3.5000	25.0000		Yes	No Background Data Available
ALPHA CHLORDANE	2/ 9	.		20.0000	38.0000		Yes	No Background Data Available
AROCLOR-1254	2/ 9	.		760.0000	1700.0000		Yes	No Background Data Available
AROCLOR-1260	1/ 9	.		2600.0000	2600.0000		Yes	No Background Data Available
ENDOSULFAN I	1/ 9	.		40.0000	40.0000		Yes	No Background Data Available
ENDOSULFAN II	1/ 9	.		3.3000	3.3000		Yes	No Background Data Available
ENDRIN	6/ 9	.		4.7000	110.0000		Yes	No Background Data Available
ENDRIN ALDEHYDE	1/ 9	.		31.0000	31.0000		Yes	No Background Data Available
ENDRIN KETONE	1/ 9	.		38.0000	38.0000		Yes	No Background Data Available
GAMMA CHLORDANE	2/ 9	.		7.2000	38.0000		Yes	No Background Data Available
GAMMA-BHC (LINDANE)	1/ 9	.		15.0000	15.0000		Yes	No Background Data Available
HEPTACHLOR	2/ 9	.		1.9000	8.1000		Yes	No Background Data Available
HEPTACHLOR EPOXIDE	1/ 9	.		2.8000	2.8000		Yes	No Background Data Available
METHOXYCHLOR	1/ 9	.		47.0000	47.0000		Yes	No Background Data Available

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Ravenna soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,2,4-TRICHLOROBENZENE	1/ 9	.		85.0000	85.0000		Yes	No Background Data Available
2-METHYLNAPHTHALENE	4/ 9	.		81.0000	260.0000		Yes	No Background Data Available
ACENAPHTHENE	5/ 9	.		44.0000	2700.0000		Yes	No Background Data Available
ACENAPHTHYLENE	2/ 9	.		81.0000	280.0000		Yes	No Background Data Available
ANTHRACENE	5/ 9	.		120.0000	8700.0000		Yes	No Background Data Available
BENZO(A)ANTHRACENE	6/ 9	.		240.0000	14000.0000		Yes	No Background Data Available
BENZO(A)PYRENE	6/ 9	.		240.0000	12000.0000		Yes	No Background Data Available
BENZO(B)FLUORANTHENE	5/ 9	.		290.0000	11000.0000		Yes	No Background Data Available
BENZO(G,H,I)PERYLENE	6/ 9	.		160.0000	8500.0000		Yes	No Background Data Available
BENZO(K)FLUORANTHENE	6/ 9	.		170.0000	14000.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	5/ 9	.		40.0000	220.0000		Yes	No Background Data Available
CARBAZOLE	5/ 9	.		110.0000	3800.0000		Yes	No Background Data Available
CHRYSENE	6/ 9	.		240.0000	13000.0000		Yes	No Background Data Available
DIBENZO(A,H)ANTHRACENE	6/ 9	.		66.0000	4400.0000		Yes	No Background Data Available
DIBENZOFURAN	4/ 9	.		280.0000	1900.0000		Yes	No Background Data Available
FLUORANTHENE	7/ 9	.		73.0000	30000.0000		Yes	No Background Data Available
FLUORENE	5/ 9	.		42.0000	3200.0000		Yes	No Background Data Available
INDENO(1,2,3-CD)PYRENE	6/ 9	.		130.0000	9200.0000		Yes	No Background Data Available
NAPHTHALENE	3/ 9	.		130.0000	270.0000		Yes	No Background Data Available
PHENANTHRENE	6/ 9	.		140.0000	23000.0000		Yes	No Background Data Available
PYRENE	6/ 9	.		380.0000	25000.0000		Yes	No Background Data Available

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----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ACETONE	2/ 7	.		55.0000	99.0000		Yes	No Background Data Available

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Load Line 12 Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----  
 (continued)

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
TOLUENE	2/ 8	.		7.0000	16.0000		Yes	No Background Data Available

----- Media=Soil Area=Winklepeck Burning Ground Group=0 - 2 feet Analysis Type=' ' Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CYANIDE	2/ 7	.		0.2300	0.5900		Yes	No Background Data Available

----- Media=Soil Area=Winklepeck Burning Ground Group=0 - 2 feet Analysis Type=Explosives Units=UG/KG -----

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Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
1,3,5-TRINITROBENZENE	3/ 78	.		490.0000	490000.000		Yes	No Background Data Available
2,4,6-TRINITROTOLUENE	19/ 78	.		230.0000	3800000.00		Yes	No Background Data Available
2,4-DINITROTOLUENE	1/ 78	.		310.0000	310.0000		Yes	No Background Data Available
HMX	3/ 78	.		1900.0000	1700000.00		Yes	No Background Data Available
RDX	3/ 78	.		6500.0000	9500000.00		Yes	No Background Data Available

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Winklepeck Burning Ground Group=0 - 2 feet Analysis Type=Metals Units=MG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
ALUMINUM	79/ 79	15600.00	6/ 79	1410.0000	30400.0000	20000 - 100000	Yes	> 5% Detect Above Background
ANTIMONY	1/ 7	.		2.6000	2.6000		Yes	No Background Data Available
ARSENIC	79/ 79	19.60	4/ 79	2.5000	21.6000	5.2 - 27.0	Yes	> 5% Detect Above Background
BARIUM	79/ 79	75.00	29/ 79	11.7000	7780.0000	300 - 700	Yes	> 5% Detect Above Background
BERYLLIUM	6/ 7	.		0.4700	2.6000	1.5 - 2.0	Yes	No Background Data Available
CADMIUM	60/ 79	0.29	39/ 79	0.0600	877.0000		Yes	> 5% Detect Above Background
CALCIUM	7/ 7	.		805.0000	88900.0000	1100 - 31000	No	Essential Element
CHROMIUM	79/ 79	18.70	10/ 79	5.4000	118.0000	15.0 - 100.0	Yes	> 5% Detect Above Background
COBALT	7/ 7	.		4.6000	8.9000	7 - 20	Yes	No Background Data Available
COPPER	7/ 7	.		9.3000	29.3000	7.0 - 70.0	Yes	No Background Data Available
IRON	7/ 7	.		12800.0000	27300.0000	15000 - 50000	Yes	No Background Data Available
LEAD	79/ 79	17.90	38/ 79	10.2000	916.0000	15 - 30	Yes	> 5% Detect Above Background
MAGNESIUM	7/ 7	.		1480.0000	13100.0000	3000 - 15000	No	Essential Element
MANGANESE	79/ 79	728.00	12/ 79	65.4000	3910.0000	150 - 1000	Yes	> 5% Detect Above Background
MERCURY	25/ 79	0.08	7/ 79	0.0300	0.2800	0.03 - 0.22	Yes	> 5% Detect Above Background
NICKEL	7/ 7	.		7.4000	18.5000	15 - 50	Yes	No Background Data Available
POTASSIUM	7/ 7	.		400.0000	1600.0000	11800 - 25100	No	Essential Element
SELENIUM	68/ 79	2.60	2/ 79	0.3400	5.0000	<0.1 - 1.2	No	<= 5% Detect Above Background
SILVER	10/ 79	0.24	8/ 79	0.2200	6.4000		Yes	> 5% Detect Above Background
SODIUM	7/ 7	.		77.8000	962.0000	5000 - 7000	No	Essential Element
THALLIUM	7/ 7	.		1.4000	3.1000		Yes	No Background Data Available
VANADIUM	7/ 7	.		12.7000	19.6000	20 - 150	Yes	No Background Data Available
ZINC	79/ 79	72.10	28/ 79	28.6000	1050.0000	250000-1100000	Yes	> 5% Detect Above Background

Results less than the detection limit were set to 1/2 the reported detection limit.

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Ravenna Soils  
 Summary of Site Results and Comparison to Background  
 All Analytes Measured

----- Media=Soil Area=Winklepeck Burning Ground Group=0 - 2 feet Analysis Type=Semi-Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
2-METHYLNAPHTHALENE	1/ 7	.		80.0000	80.0000		Yes	No Background Data Available
BIS(2-ETHYLHEXYL)PHTHALATE	1/ 7	.		34.0000	34.0000		Yes	No Background Data Available
DI-N-BUTYL PHTHALATE	1/ 7	.		53.0000	53.0000		Yes	No Background Data Available
FLUORANTHENE	1/ 7	.		40.0000	40.0000		Yes	No Background Data Available
NAPHTHALENE	1/ 7	.		76.0000	76.0000		Yes	No Background Data Available
PHENANTHRENE	1/ 7	.		70.0000	70.0000		Yes	No Background Data Available
PYRENE	1/ 7	.		36.0000	36.0000		Yes	No Background Data Available

----- Media=Soil Area=Winklepeck Burning Ground Group=0 - 2 feet Analysis Type=Volatile Organics Units=UG/KG -----

Analyte	Results >Detection Limit	Site Background Criteria	Detects >Site Background Criteria	Minimum Detect	Maximum Detect	USGS Ohio Reference Values	Site Related?	Justification
CHLOROFORM	1/ 7	.		2.0000	2.0000		Yes	No Background Data Available
METHYLENE CHLORIDE	1/ 7	.		12.0000	12.0000		Yes	No Background Data Available
TOLUENE	5/ 7	.		17.0000	170.0000		Yes	No Background Data Available

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Results less than the detection limit were set to 1/2 the reported detection limit.

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