Final

Remedial Design
for Soil and Dry Sediment
at RVAAP-01 Ramsdell Quarry Landfill

Ravenna Army Ammunition Plant
Ravenna, Ohio

GSA Contract No. GS-10F-0076J
Delivery Order No. W912QR-12-F-0020

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

leidos

Leidos Engineering of Ohio, Inc.
8866 Commons Boulevard
Twinsburg, Ohio 44087

April 9, 2014

REPORT DOCUMENTATION PAGE

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at the RVAAP-01 Ramsdell Quarry Landfill
Ravenna Army Ammunition Plant
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Jed Thomas, PE

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None

14. ABSTRACT

This remedial design presents the plan for implementing Alternative 8 in accordance with the approved Record of Decision Amendment for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill. This design outlines procedures for installation of a perimeter fence and signage and cleanup of surficial asbestos-containing material (ACM) within the former quarry at RVAAP-01 Ramsdell Quarry Landfill. Implementation of this remedial design will result in attainment of CERCLA closure for soil and dry sediment at the AOC for Restricted Access land use.

15. SUBJECT TERMS

Remedial objectives, remedial design, contamination, fence installation, asbestos cleanup, disposal, Ramsdell Quarry Landfill

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Thomas Chanda
NA	NA	NA	NA	241	19b. TELEPHONE NUMBER *(Include area code)* 502-315-6868

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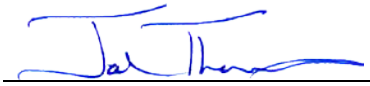
CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.



4/9/2014

Jed Thomas, PE
Study/Design Team Leader

Date

4/9/2014

W. Kevin Jago, PG
Independent Technical Review Team Leader

Date

Significant concerns and the explanation of the resolution are as follows:

Internal Leidos Independent Technical Review was conducted on this document. Internal Leidos Independent Technical Review comments are recorded on a Document Review Record per Leidos quality assurance procedure QAAP 3.1. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader.

As noted above, all concerns resulting from independent technical review of the project have been considered.

4/9/2014

Lisa Jones-Bateman
Senior Program Manager

Date

OhioEPA

June 5, 2014

Mr. Brett Merkel
Army National Guard Directorate
ARNGD-ILE Clean UP
111 South George Mason Drive
Arlington, VA 22203

Re: Approval for the "Final Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio," Dated April 9, 2014 (Work Activity No. 267-000859-130)

Dear Mr. Merkel:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the document entitled, "Final Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio," dated April 9, 2014. This document, received by Ohio EPA's NEDO on April 10, 2014, was prepared for the U.S. Army Corps of Engineers (USACE) Louisville District, by Leidos Engineering of Ohio, Inc.

Ohio EPA has reviewed this documentation and has found no significant deficiencies. As a result, the *"Final Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill"* has been approved. Please let Ohio EPA know when the subsequent field activities will begin, at least two weeks prior to commencement.

If you have any questions or concerns, please do not hesitate to contact me at (330) 963-1249.

Sincerely,

Andrew C. Kocher
Site Coordinator
Division of Environmental Response and Revitalization

ACK/nvr

cc: Katie Tait/Kevin Sedlak, Camp Ravenna Environmental Office, Newton Falls
Haney/Harris, Camp Ravenna Environmental Office, Vista Sciences, Newton Falls
Gregory F. Moore, USACE, Louisville District

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Final

Remedial Design
for Soil and Dry Sediment
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Volume One - Main Report and Attachments
Version 1.0

Ravenna Army Ammunition Plant
Ravenna, Ohio

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Prepared for:
U.S. Army Corps of Engineers
600 Martin Luther King, Jr. Place
Louisville, Kentucky 40202

Prepared by:
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8866 Commons Boulevard
Twinsburg, Ohio 44087

April 9, 2014

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Final Remedial Design for Soil and Dry Sediment
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Ravenna Army Ammunition Plant
Ravenna, Ohio

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ARNG = Army National Guard
OHARNG = Ohio Army National Guard
Ohio EPA CO = Ohio Environmental Protection Agency, Central Office
Ohio EPA DERR = Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization
REIMS = Ravenna Environmental Information Management System
USACE = United States Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

AAP	Asbestos Abatement Plan
ACM	Asbestos-containing Material
AOC	Area of Concern
ARNG	Army National Guard
ASTM	American Society for Testing Materials
bgs	below ground surface
BMP	Best Management Practice
Camp Ravenna	Camp Ravenna Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
COC	Chemical of Concern
COTR	Contracting Officer's Technical Representative
CQAP	Construction Quality Assurance Plan
CUG	Cleanup Goal
FS	Feasibility Study
FSA	Field Staging Area
FWSAP	Facility-wide Sampling and Analysis Plan
FWSHP	Facility-wide Safety and Health Plan
HHRA	Human Health Risk Assessment
IDW	Investigation-derived Waste
IRP	Installation Restoration Program
LUC	Land Use Control
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
MPPEH	Materials Presenting a Potential Explosive Hazard
mph	miles per hour
NCR	Non-conformance Report
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
QAPP	Quality Assurance Project Plan
QA	Quality Assurance
QC	Quality Control
RD	Remedial Design
ROD	Record of Decision
RQL	Ramsdell Quarry Landfill

ACRONYMS AND ABBREVIATIONS (CONTINUED)

RVAAP	Ravenna Army Ammunition Plant
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
USACE	United States Army Corps of Engineers
U.S. Army	United States Department of the Army
USEPA	United States Environmental Protection Agency
UXO	Unexploded Ordnance

1.0 INTRODUCTION

Leidos has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District, to provide environmental services to attain Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory closure at the Ramsdell Quarry Landfill (RQL) area of concern (AOC) within the former Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. This Remedial Design (RD) describes the implementation process for the selected modified remedy for soil and dry sediment at RQL as stated in the *Record of Decision Amendment for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013).

This work is being performed in accordance with U.S. General Services Administration Environmental Advisory Services Contract GS-10-F-0076J, Delivery Order W912QR-12-F-0020. In addition, planning and performance of all work is being conducted in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* dated June 10, 2004 (Ohio EPA 2004).

1.1 PURPOSE

In March 2009, the U.S. Department of the Army (U.S. Army) published the *Record of Decision for Soil and Dry Sediment for the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2009) [herein referred to as the Original Record of Decision (ROD)], documenting the selection of Alternative 3: Excavation and Off-site Disposal (Security Guard/Maintenance Worker Land Use) to remediate soil and dry sediment at the AOC. Soil excavation activities started in July 2010 as part of Alternative 3, in accordance with the *Remedial Design for the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2010) (herein referred to as the Original RD). During these soil removal activities, unanticipated site conditions were encountered. Large amounts of subsurface construction and miscellaneous debris (containing asbestos) were identified within the remedial action excavation footprint in the bottom of the former quarry.

The U.S. Army and Ohio EPA identified this unanticipated site condition as a Fundamental Post-ROD Change, using site-specific determination per the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Section 300.435(c)(2) and prescribed under the *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (USEPA 1999). Consequently, the U.S. Army, in consultation with Ohio EPA, used current site knowledge to re-evaluate remedial alternatives to address soil and dry sediment in the *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2011a) (herein referred to as the Engineering Evaluation). The Engineering Evaluation evaluated four new alternatives, presented below:

- Alternative 5: Excavation of Soil and Off-site Disposal as Friable Asbestos-containing Material (ACM) – Security Guard/Maintenance Worker
- Alternative 6: Capping – Security Guard/Maintenance Worker

- Alternative 7: Quarry Bottom Fence – Security Guard/Maintenance Worker with Restricted Land Use
- Alternative 8: Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use

This alternative re-evaluation was the basis for the *Record of Decision Amendment for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013) (herein referred to as the ROD Amendment). The ROD Amendment selected Alternative 8: Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use as the new remedy for soil and dry sediment at the AOC. The purpose of this RD is to detail implementation of the selected remedy (Alternative 8) at RQL.

1.2 SCOPE

The overall program goal of the Installation Restoration Program (IRP) is to clean up previously contaminated land at the former RVAAP to an acceptable level of risk as resources and mission requirements allow. RQL is an AOC at the former RVAAP, designated as RVAAP-01. This RD addresses chemical contamination and ACM in soil and dry sediment at this AOC.

The scope of this RD is to present a plan to 1) install a security fence and signage around the perimeter of RQL to restrict access to areas of soil containing contaminant concentrations exceeding cleanup goals (CUGs) specified in the ROD Amendment for RQL, 2) implement a best management practice (BMP) to remove surficial ACM through non-intrusive/no-digging methods, 3) document completion of the wetland restoration of disturbed areas, and 4) define land use controls (LUCs) that will be implemented after completing the remedial action. Once these remedial action objectives are met, the selected modified remedy will be considered protective of the Security Guard/Maintenance Worker with Restricted Land Use.

This RD does not address other potentially contaminated media (e.g., surface water, groundwater, wet sediment), which will be evaluated under a separate investigation. While a BMP will be employed during the implementation to avoid potential munitions or unexploded ordnance (UXO), this remedy does not address munitions constituents (MC), munitions and explosives of concern (MEC), or materials presenting a potential explosive hazard (MPPEH), under the Military Munitions Response Program.

1.3 REMEDIAL DESIGN ORGANIZATION

This RD is comprised of a work plan, design drawings, and specifications. The work plan is organized as follows:

Section 2:	Presents facility and site descriptions, and previous remedial activities;
Section 3:	Presents project organization and coordination;
Section 4:	Outlines remedial action objectives;

Section 5: Discusses construction mobilization and site preparation;
Section 6: Describes fence installation activities;
Section 7: Summarizes asbestos cleanup activities;
Section 8: Describes asbestos signage installation activities;
Section 9: Summarizes site restoration activities;
Section 10: Discusses waste characterization and disposal activities;
Section 11: Presents the Construction Quality Assurance Plan (CQAP); and
Section 12: Lists references used in this document.

Attachments:

A. September 2013 Wetland Delineation Letter Report
B. Construction Forms and Checklists
C. Design Drawings
D. Land Use Controls for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill
E. Site Safety and Health Plan
F. Comment Response Correspondence

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2.0 FACILITY AND SITE DESCRIPTION

2.1 FACILITY DESCRIPTION

When the RVAAP restoration program began in 1989, the facility [Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Identification Number OH5210020736] was identified as a 21,419-acre installation. The Ohio Army National Guard (OHARNG) surveyed the property over a two-year period (2002 and 2003), and the total acreage of the property was found to be 21,683 acres. Administrative accountability for all acreage at the facility has been transferred to the Army National Guard (ARNG) with licensure to OHARNG for use as a military training site, now known as the Camp Ravenna Joint Military Training Center (Camp Ravenna). The entire 21,683-acre parcel was an industrial facility used for load, assemble, and pack operations for munitions when RVAAP was operational (Camp Ravenna did not exist at that time). The RVAAP restoration program encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP.

Currently, Camp Ravenna is a federally owned facility located in east-central Portage County and southwestern Trumbull County, Ohio approximately 3 miles (4.8 km) east-northeast of Ravenna and approximately 1 mile (1.6 km) northwest of the city of Newton Falls. Camp Ravenna is a parcel of property approximately 11 miles (17.7 km) long and 3.5 miles (5.6 km) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (Figures 2-1 and 2-2). Camp Ravenna is surrounded by several communities: Windham on the north, Garrettsville 6 miles (9.6 km) to the northwest, Newton Falls 1 mile (1.6 km) to the southeast, Charlestown to the southwest, and Wayland 3 miles (4.8 km) to the south.

2.2 RAMSDELL QUARRY LANDFILL DESCRIPTION AND HISTORY

The following sections present the site description and history, and discuss previous remedial activities at RQL.

2.2.1 Site Description

RQL encompasses approximately 14 acres in the northeastern portion of Camp Ravenna. RQL includes old-field communities with patches of forests and grasslands. The land surface in a large portion of the AOC slopes into a former quarry, which occupies most of the AOC (Figure 2-3).
The quarry bottom is about 40 ft below the surrounding area. Former quarry operations resulted in the much of the original soil being removed.

Surface water runoff collects in an isolated wetland in the bottom of the former quarry. There is no surface water drainage outlet from the quarry. When water is present in the wetland, the water depth

is usually less than 4 ft. The drainage ways and ditch lines outside of the quarry, located along access roads and the rail line in the southern part of the AOC, only contain water during rain events.

2.2.2 Site History

RQL was initially a stone quarry that operated until 1941. During operations, the quarry was excavated 30 to 40 ft below existing grade. The excavated sandstone and quartzite pebble conglomerate was used for road and construction ballast. From 1946 to the 1950s, the bottom of the quarry was used to burn waste explosives from Load Line 1. Approximately 18,000 500 lb (225-kg) incendiary or napalm bombs were reported to have been burned, and liquid residues from annealing operations were disposed in the quarry.

Between 1941 and 1989, the western and southern sections of the abandoned quarry were used for landfill operations. No information is available regarding landfill disposal activities from 1941 to 1976, and no information is available on other activities at the quarry from the 1950s to 1976. Only nonhazardous solid waste was deposited in RQL from 1976 until it was closed in 1989. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the state of Ohio.

The sanitary landfill was closed in 1990 under state of Ohio solid waste regulations. A clay cap was placed on the former permitted landfill area covering approximately four acres of the AOC. The specific extent of the RQL cap placed at the time of landfill closure in 1990 has been subject to some uncertainty in historical drawings of the AOC. To better establish the as-built landfill cap limits, USACE participated in a site walk in July 2010, including a previous RVAAP employee that worked on closing the sanitary landfill at RQL. The site walk confirmed that previous depictions of the extent of the landfill cap were not accurate. The new landfill boundary is depicted in Figure 2-3.

2.2.3 Previous Remedial Activities

2.2.3.1 Soil Removal Activities

The *Feasibility Study for Ramsdell Quarry (RVAAP-01)* (USACE 2006) (herein referred to as the RQL FS) identified benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene as soil chemicals of concern (COCs) in the human health risk assessment (HHRA). This HHRA estimated the risks associated with dermal exposure to soil by a Security Guard/Maintenance Worker visiting the site 250 days/year for 25 years wearing short sleeves and operating heavy equipment. Figure 2-3 shows locations of the identified COCs in the RQL quarry bottom.

In March 2009, the U.S. Army published the Original ROD (USACE 2009), documenting the selection of Alternative 3: Excavation and Off-site Disposal (Security Guard/Maintenance Worker Land Use) to remediate soil and dry sediment at the AOC. In June 2010, the Original RD was issued, presenting the plan and specifications for implementing Alternative 3 (USACE 2010).

In June 2010, equipment movement areas and soil removal areas within the wetland were treated with an invasive weed control herbicide (Rodeo®) by a licensed applicator in accordance with the Pre-Construction Herbicide Application requirements specified in the Original RD. Soil removal activities were initiated in July 2010 in accordance with the Original ROD in order to reduce the risk level to below acceptable risk levels for the Security Guard/Maintenance Worker. Soil was excavated at the northeastern edge of the quarry bottom. During soil removal activities, a large amount of construction and miscellaneous debris was encountered between the surface layer and bedrock [approximately 1-2 ft below ground surface (bgs)]. Some debris (e.g., transite and roofing materials) was suspected to contain asbestos; therefore, the materials were sampled and sent for analysis. Results revealed that the transite and roofing materials within the excavation were ACM, containing greater than 1% asbestos. Figure 2-3 presents the area of soil that was removed from the quarry bottom. Approximately 1,100 tons of soil and construction debris (all considered friable ACM) was removed from RQL and transported and disposed at the American Landfill in Waynesburg, Ohio.

After removing and disposing of the soil and construction debris, the areas were backfilled and graded to their original height. An approved wetland seed mixture was put in the disturbed areas within the quarry bottom.

After site restoration, soil removal activities ceased and the U.S. Army and Ohio EPA agreed to re-evaluate remedial alternatives as a Fundamental Post-ROD Change, using site-specific determination per NCP Section 300.435(c)(2) and prescribed under the *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (USEPA 1999). The ROD Amendment was approved after Alternative 8: Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use was selected as the CERCLA remedy for this AOC.

2.2.3.2 Wetland Restoration

The Original RD anticipated disturbance of 1.71 acres of the isolated wetland in the quarry bottom. Since soil excavation was discontinued due to the identification of unexpected materials, only 0.5 acres of the wetland were disturbed. In accordance with the Ohio EPA Requirements for the Isolated Wetland presented in the Original RD (USACE 2010), the disturbed areas from soil removal activities in July 2010 were backfilled and graded to their original elevations. The approved wetland seed mixture was spread in the disturbed areas within the quarry bottom. The site was inspected after the seed was put in place. Once the seed established 70% coverage, stormwater controls were removed.

In September 2013, a wetland delineation of the entire quarry bottom was performed to assess impacts of the partial soil removal. A letter report of the 2013 wetland delineation is presented in Attachment A. The results were compared to the wetland delineation conducted in 2008, prior to soil removal activities. The wetland in the quarry bottom (designated as RQL-3) showed an increase in size (4.039 acres in 2008 to 4.081 acres in 2013) and had an increase in score using the Ohio Rapid Assessment Method (ORAM) (Ohio EPA 2001). The 2008 wetland delineation scored 37.5 on the ORAM and the 2013 wetland delineation scored a 39.5, which classifies the wetland as a Modified Category 2 wetland.

The wetland in the impacted area has been restored to (at minimum) its original condition. The overall increase in size and ORAM score indicate improvements to the wetland in the quarry bottom. As such, the U.S. Army has met the intent of restoration and requirements specified in the Original RD.

2.3 ANTICIPATED FUTURE LAND USE

Camp Ravenna will be used for military training. Due to residual contamination and asbestos at RQL, the future use at the AOC will be Restricted Access.

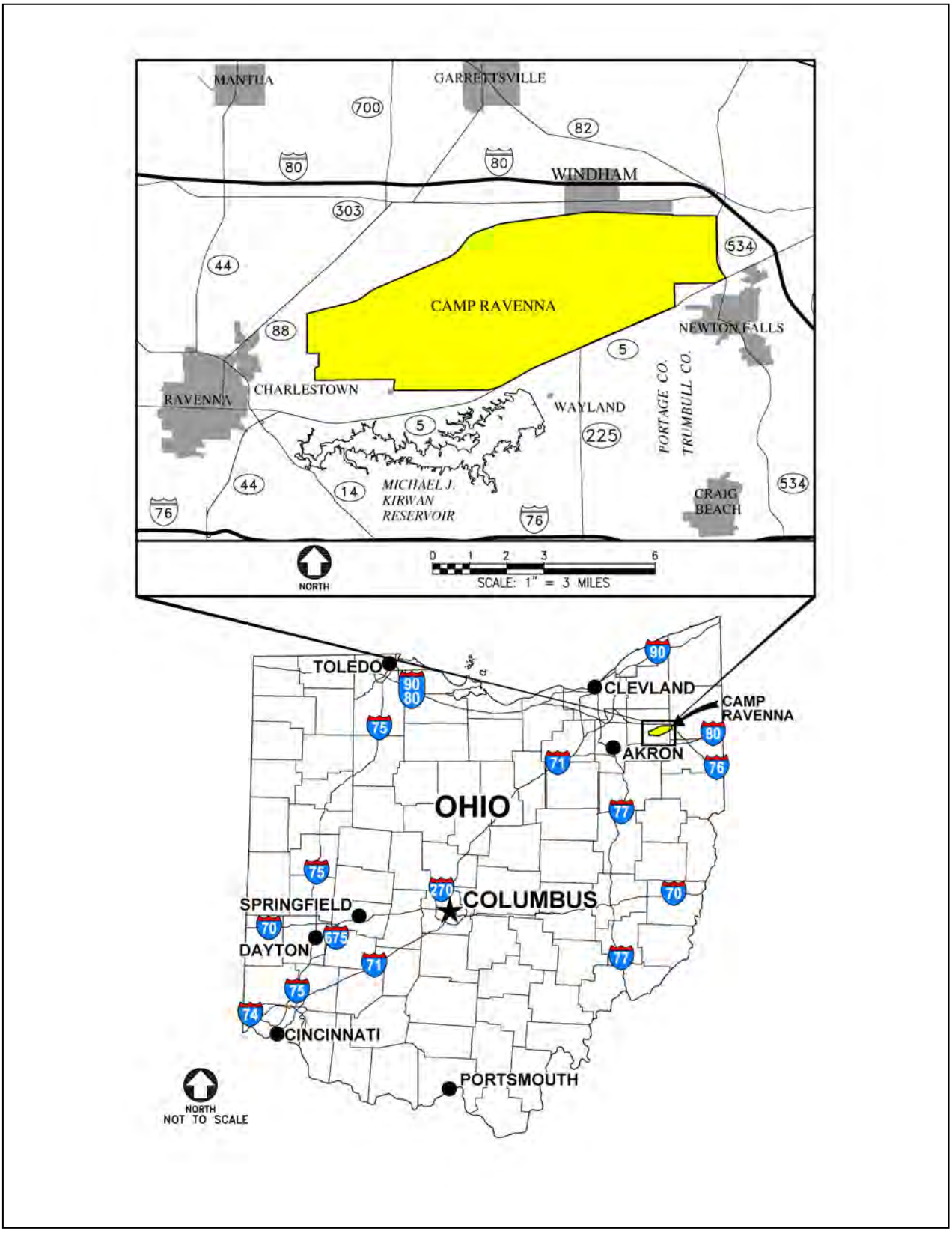

Figure 2-1. General Location and Orientation of Camp Ravenna

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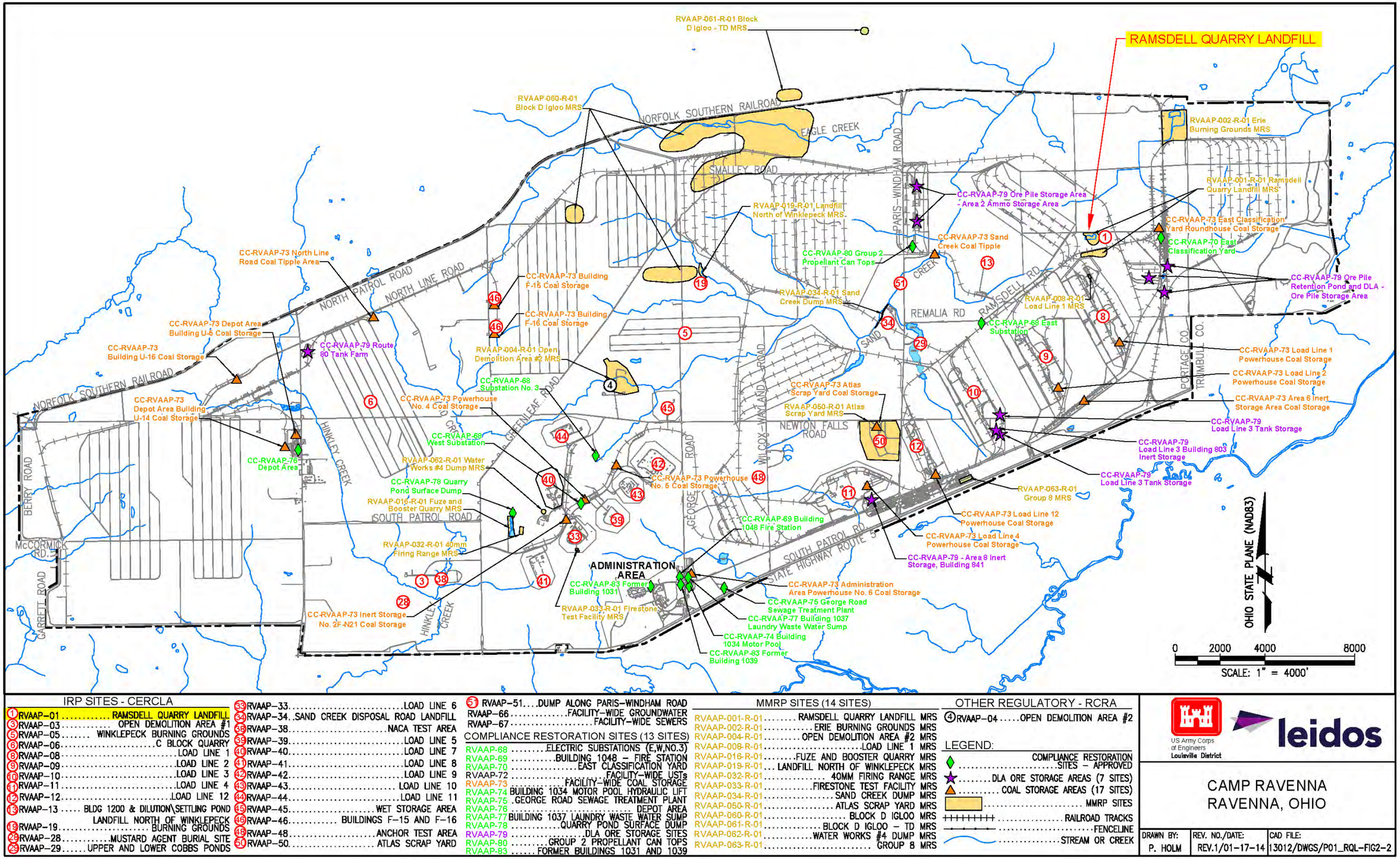

IRP SITES - CERCLA

1	RVAAP-01	RAMSDELL QUARRY LANDFILL	
3	RVAAP-03	OPEN DEMOLITION AREA #1	
5	RVAAP-05	WINKLEPECK BURNING GROUNDS	
6	RVAAP-06	C BLOCK QUARRY	
8	RVAAP-08	LOAD LINE 1	
9	RVAAP-09	LOAD LINE 2	
10	RVAAP-10	LOAD LINE 3	
11	RVAAP-11	LOAD LINE 4	
12	RVAAP-12	LOAD LINE 12	
13	RVAAP-13	BLDG 1200 & DILUTION\SETTLING POND LANDFILL NORTH OF WINKLEPECK	
19	RVAAP-19	BURNING GROUNDS	
28	RVAAP-28	MUSTARD AGENT BURIAL SITE	
29	RVAAP-29	UPPER AND LOWER COBBS PONDS	
33	RVAAP-33	LOAD LINE 6	
34	RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	
38	RVAAP-38	NACA TEST AREA	
39	RVAAP-39	LOAD LINE 5	
40	RVAAP-40	LOAD LINE 7	
41	RVAAP-41	LOAD LINE 8	
42	RVAAP-42	LOAD LINE 9	
43	RVAAP-43	LOAD LINE 10	
44	RVAAP-44	LOAD LINE 11	
45	RVAAP-45	WET STORAGE AREA	
46	RVAAP-46	BUILDINGS F-15 AND F-16	
48	RVAAP-48	ANCHOR TEST AREA	
50	RVAAP-50	ATLAS SCRAP YARD	
51	RVAAP-51	DUMP ALONG PARIS-WINDHAM ROAD	
	RVAAP-66	FACILITY-WIDE GROUNDWATER	
	RVAAP-67	FACILITY-WIDE SEWERS	

COMPLIANCE RESTORATION SITES (13 SITES)

RVAAP-68	ELECTRIC SUBSTATIONS (E,W,NO.3)
RVAAP-69	BUILDING 1048 – FIRE STATION
RVAAP-70	EAST CLASSIFICATION YARD
RVAAP-72	FACILITY-WIDE USTs
RVAAP-73	FACILITY-WIDE COAL STORAGE
RVAAP-74	BUILDING 1034 MOTOR POOL HYDRAULIC LIFT
RVAAP-75	GEORGE ROAD SEWAGE TREATMENT PLANT
RVAAP-76	DEPOT AREA
RVAAP-77	BUILDING 1037 LAUNDRY WASTE WATER SUMP
RVAAP-78	QUARRY POND SURFACE DUMP
RVAAP-79	DLA ORE STORAGE SITES
RVAAP-80	GROUP 2 PROPELLANT CAN TOPS
RVAAP-83	FORMER BUILDINGS 1031 AND 1039

MMRP SITES (14 SITES)

RVAAP-001-R-01	RAMSDELL QUARRY LANDFILL MRS
RVAAP-002-R-01	ERIE BURNING GROUNDS MRS
RVAAP-004-R-01	OPEN DEMOLITION AREA #2 MRS
RVAAP-008-R-01	LOAD LINE 1 MRS
RVAAP-016-R-01	FUZE AND BOOSTER QUARRY MRS
RVAAP-019-R-01	LANDFILL NORTH OF WINKLEPECK MRS
RVAAP-032-R-01	40MM FIRING RANGE MRS
RVAAP-033-R-01	FIRESTONE TEST FACILITY MRS
RVAAP-034-R-01	SAND CREEK DUMP MRS
RVAAP-050-R-01	ATLAS SCRAP YARD MRS
RVAAP-060-R-01	BLOCK D IGLOO MRS
RVAAP-061-R-01	BLOCK D IGLOO – TD MRS
RVAAP-062-R-01	WATER WORKS #4 DUMP MRS
RVAAP-063-R-01	GROUP 8 MRS

OTHER REGULATORY - RCRA

4 RVAAP-04	OPEN DEMOLITION AREA #2

LEGEND:

- COMPLIANCE RESTORATION SITES – APPROVED
- DLA ORE STORAGE AREAS (7 SITES)
- COAL STORAGE AREAS (17 SITES)
- MMRP SITES
- RAILROAD TRACKS
- FENCELINE
- STREAM OR CREEK

US Army Corps of Engineers
Louisville District

leidos

CAMP RAVENNA
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV.1/01-17-14	13012/DWGS/P01_RQL-FIG2-2

Figure 2-2. Location of AOCs at Camp Ravenna

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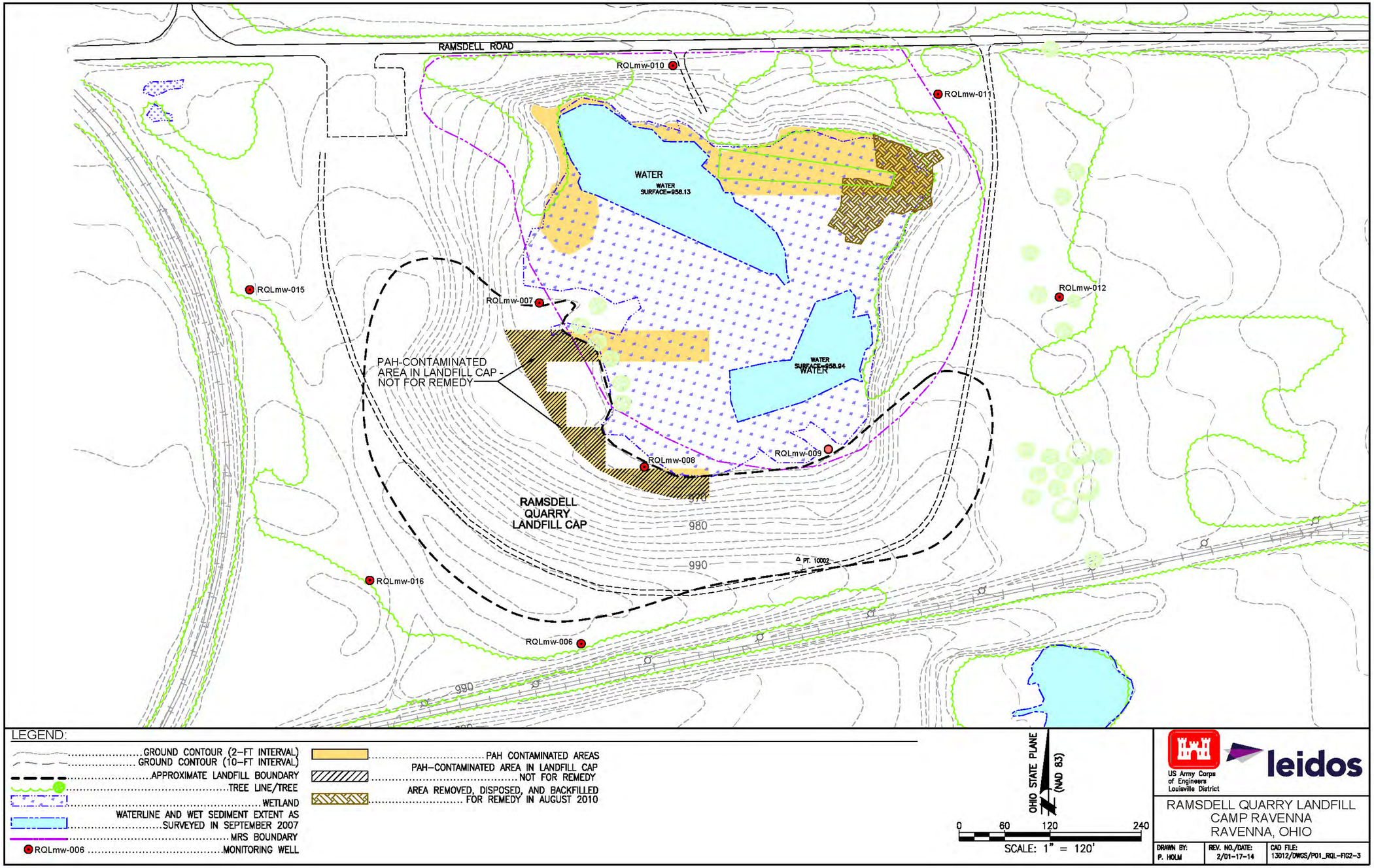

Figure 2-3. RQL Site Features

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3.0 PROJECT ORGANIZATION AND COORDINATION

This section presents the project organization and describes the project team coordination. Remedial activities will be overseen by USACE and implemented by Leidos and remedial construction subcontractors. Leidos and qualified subcontractors are responsible for installing fencing and signage and removing and disposing of surficial ACM. Ohio EPA is the regulatory authority governing work on this remedial action.

3.1 PROJECT ORGANIZATION

An organizational chart for implementation of the RD is presented in Figure 3-1. Key personnel responsibilities are summarized below.

3.1.1 USACE Contracting Officer's Technical Representative

The USACE Contracting Officer's Technical Representative (COTR) duties include overseeing Leidos to ensure work is completed in accordance with this RD. The USACE COTR also coordinates responses for any unexpected materials encountered.

3.1.2 OHARNG/ARNG Restoration Representative

The on-site OHARNG Restoration Representative or the on-site ARNG Restoration Representative (as an alternate) will be responsible for signing waste profiles, manifests, and necessary permits. An OHARNG/ARNG Restoration Representative will also assist in coordinating between Leidos and Vista Sciences Corporation.

3.1.3 Ohio Environmental Protection Agency

The Ohio EPA is the regulatory agency for this project. The Ohio EPA will review project documents and ensure that the RD/remedial action are completed in accordance with the RD and regulatory requirements.

3.1.4 Leidos Project Manager

The Leidos Project Manager administers the management, implementation, and quality of this RD and remedial action. The Leidos Project Manager provides oversight to ensure all contractual requirements are properly satisfied. This individual ensures all project goals and objectives are met in a high-quality, timely manner. The Leidos Project Manager is responsible for tracking the project schedule and informing the USACE COTR of any deviations to the schedule. The Leidos Project Manager provides the U.S. Army and USACE COTR with notifications of project implementation and information regarding any quality assurance (QA) and non-conformance issues for this remedial action.

3.1.5 Leidos Construction Manager

The Leidos Construction Manager also serves as the Field Operations Manager, as defined in Section 3.7 of the *Facility-wide Sampling and Analysis Plan for Environmental Investigations* (USACE 2011b) (herein referred to as the FWSAP). The Leidos Construction Manager is responsible for project control, implementing remedial activities in accordance with this RD, and managing the technical performance and quality of the remedial action. The Leidos Construction Manager is responsible for overseeing subcontractors, adhering to QA/quality control (QC) field procedures and the Site Safety and Health Plan (SSHP), coordinating with Camp Ravenna personnel and the USACE COTR, managing any investigation-derived wastes (IDW), documenting field work, and preparing field change orders, if required.

3.1.6 Leidos Quality Assurance/Quality Control Officer

The Leidos QA/QC Officer coordinates with the Leidos Construction Manager to ensure the requirements of the RD CQAP and *Facility-wide Quality Assurance Project Plan for Environmental Investigations* (USACE 2011c) (herein referred to as the FWQAPP) are met.

The Leidos QA/QC Officer also ensures the required submittals are on time and are high quality. The Leidos QA/QC Officer is responsible for reviewing and approving variances during field activities before work continues and designing and supervising the implementation of audit/surveillance plans. The Leidos QA/QC Officer is responsible for completing a Non-conformance Report (NCR) that documents when activities do not comply with the approved procedures or specifications within this RD. A copy of Leidos' NCR form is presented in Attachment B. The Leidos QA/QC Officer reports directly to the Leidos Project Manager and informs the Leidos Project Manager and Leidos Construction Manager of all information and decisions reported.

3.1.7 Leidos Health and Safety Manager

The Leidos Health and Safety Manager establishes health and safety policies and procedures supporting project and office activities and verifies safe work practices and conditions. The Leidos Health and Safety Manager ensures these policies are, at a minimum, in accordance with the *Facility-wide Safety and Health Plan for Environmental Investigations* (USACE 2011d) (herein referred to as the FWSHP), as well as AOC-specific addenda, if applicable. The Leidos Health and Safety Manager reports directly to the Leidos Project Manager and will inform the Leidos Construction Manager of all information and decisions reported.

3.1.8 Subcontractor Construction Supervisor

The Subcontractor Construction Supervisor implements specific contracted components of this RD. The Subcontractor Construction Supervisor is responsible for properly performing specified remedial activities in accordance with this RD, adhering to QA/QC field procedures and the CQAP, implementing the SSHP, coordinating field personnel activities, and documenting field activities. The

Subcontractor Construction Supervisor reports directly to the Leidos Construction Manager.

3.1.9 Subcontractor Site Safety and Health Officer

The Subcontractor Site Safety and Health Officer (SSHO) is responsible for implementation of and adherence to the SSHP. The SSHO will verify and approve that specified health and safety procedures outlined in the SSHP adequately protect on-site personnel during field activities. The SSHO will ensure that health and safety procedures are modified to meet changing needs, if required. The SSHO will also ensure all on-site personnel (including visitors) strictly adhere to the SSHP throughout field activities conducted for the duration of the project. The SSHO reports to the Leidos Construction Manager.

3.1.10 Asbestos Abatement Subcontractor

The Asbestos Abatement Subcontractor will implement the asbestos cleanup activities specified in the Asbestos Abatement Plan (AAP). The Asbestos Abatement Subcontractor will provide a Superintendent/Competent Person to oversee the asbestos cleanup activities, an Asbestos Hazard Abatement Worker to assist in the asbestos cleanup, and an Asbestos Hazard Evaluation Specialist to identify ACM and confirm all surficial ACM has been removed.

3.1.11 Unexploded Ordnance Technician

The UXO Technician is responsible for ensuring that MEC are either avoided during fence installation and ACM cleanup activities, or that appropriate measures are taken if MEC is encountered. The UXO Technician reports to the Leidos Construction Manager.

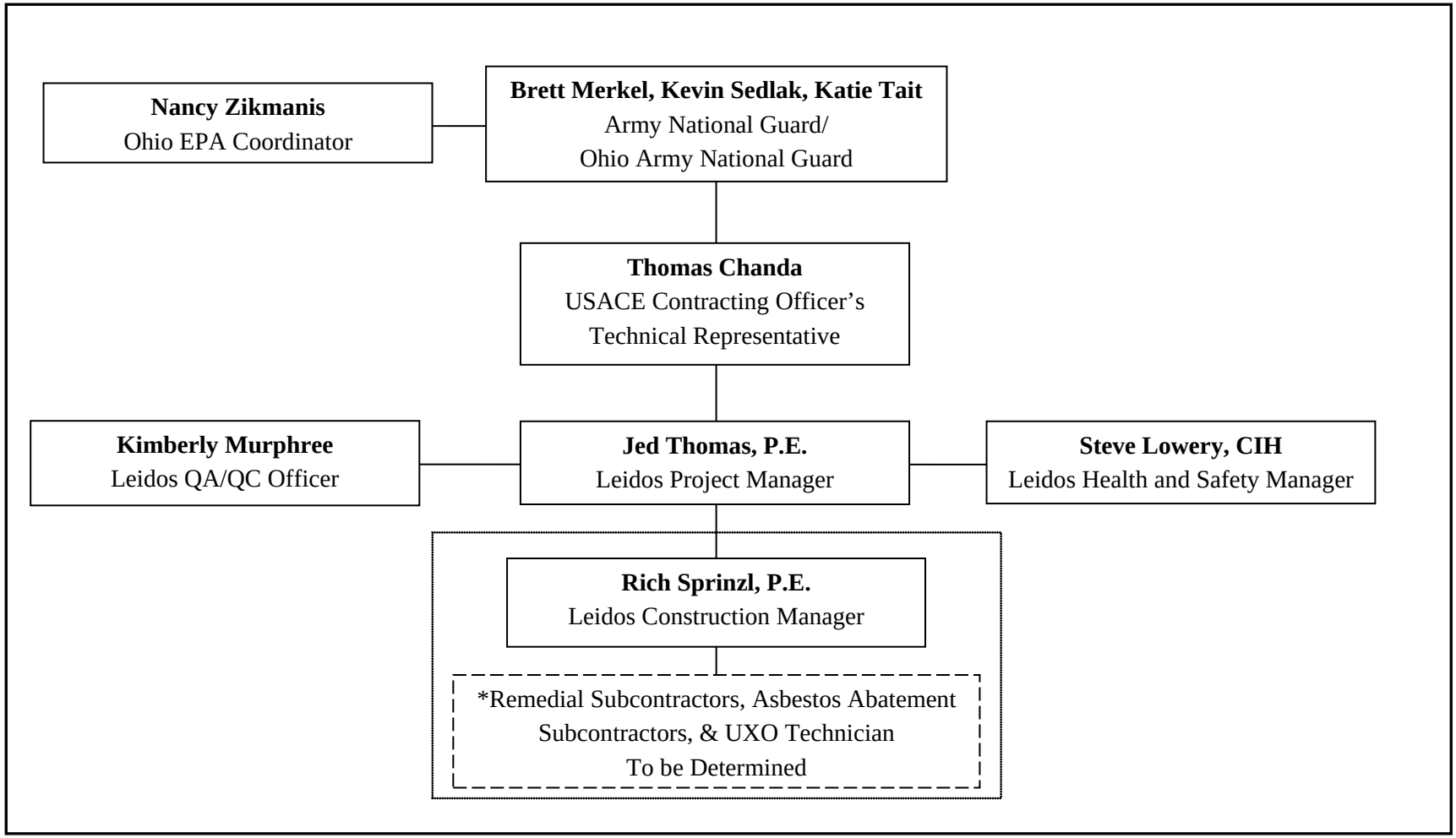

Figure 3-1. Organizational Chart for Implementation of the Remedial Design

4.0 REMEDIAL ACTION OBJECTIVE

The remedial action objective for RQL is to protect future receptors from remaining COCs in soil above CUGs and residual asbestos by restricting access to the AOC. The selected modified remedy will provide physical and administrative controls for the AOC to minimize or eliminate potential exposure for receptors that are not granted access to RQL. Once the fence and signage are installed, surficial ACM is removed, and LUCs are in place (Attachment D), this remedy will result in reduced potential exposure to contaminated soil and ACM by National Guard receptors. Additionally, the fence will create a deterrent to prevent unauthorized activities on the closed, sanitary landfill cap within RQL.

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5.0 CONSTRUCTION MOBILIZATION

This section describes construction mobilization and site preparation activities required to implement the remaining activities specified in this RD. An AAP has been included as an appendix to the SSHP to outline asbestos cleanup activities. Design drawings (Attachment C) detailing remedial action requirements are referenced as appropriate throughout this section.

5.1 SITE PREPARATION

This section describes site preparation activities that must be performed by the Subcontractor prior to beginning construction activities at the site. Site preparation activities consist of several elements designed to maximize access to the site and prevent migration of soil during construction, including:

- Enacting pre-mobilization activities;
- Performing utility clearance;
- Conducting MEC avoidance;
- Establishing site controls and access;
- Setting up construction support facilities;
- Clearing vegetation; and
- Employing BMPs for storm water control.

5.1.1 Pre-mobilization Activities

Prior to mobilizing construction equipment, a site walk will be performed to establish the locations of the fence lines and gates. The visual review will be performed to ensure the fence does not impact the landfill cap. The locations are depicted in Attachment C, Drawing C-3.

5.1.2 Utility Clearance

Leidos and the Subcontractor will contact the OHARNG/ARNG Restoration Representative and Vista Sciences Corporation to perform a utility clearance. No utilities are known to exist within the quarry bottom and at the perimeter of RQL; however, adjustments to the locations of the fence will be made based on any identified utilities (underground and aboveground).

In the event an unmarked utility is discovered during fence installation, all work will stop immediately and the OHARNG/ARNG Restoration Representative, USACE COTR, and Leidos Project Manager will be notified immediately. Camp Ravenna personnel will determine the disposition of the discovered utility.

Camp Ravenna personnel and Leidos will collaborate on any necessary actions in order to continue remedial activities. If the discovery of an unmarked utility results in a change to the scope, objectives, or schedule of this RD, Leidos will notify the U.S. Army and USACE COTR for concurrence on

proposed revisions and/or corrective actions.

5.1.3 MEC Avoidance

A UXO Technician specifically trained in MEC identification, explosive items, and/or ordnance will perform a visual and magnetometer survey of the proposed locations of the fence post and will be present during the cleanup of surficial ACM within the quarry bottom. In the event an anomaly is detected, the UXO Technician will mark anomaly with a pin flag and that area will be avoided. The UXO Technician will be responsible for contacting the Subcontractor SSHO and Leidos Construction Manager regarding its discovery. The Leidos Construction Manager will contact the Leidos Project Manager, USACE COTR, and OHARNG/ARNG Restoration Representative. In the event that MEC interferes with the surficial ACM cleanup in the quarry bottom area, activities will cease in that area until measures for further evaluation of path forward.

5.2 SITE CONTROL, ACCESS, AND SUPPORT FACILITIES

The project site will be controlled at ingress and egress points. Site controls will include:

- Controlling and monitoring access to the project work sites, and
- Adhering to the Traffic Management Plan (Attachment C, Drawing C-6) and Camp Ravenna traffic rules.

The use of two-way radios and cell phones is permitted at the Camp Ravenna. Workers at RQL must be able to contact Camp Ravenna Main Gate at all times.

5.3 EQUIPMENT STAGING AREA

The Subcontractor will reuse the existing equipment staging area, just south of Ramsdell Road (Attachment C, Drawing C-3), to provide construction support and stage fencing materials. The Subcontractor will provide a portable toilet for the duration of remedial activities.

5.4 VEGETATION CLEARING

Vegetation clearing will be coordinated with OHARNG. Clearing and grubbing will primarily involve felling and removing trees located along the specified fence locations in order to allow safe equipment access and installation by the Subcontractor. Clearing and grubbing will also be performed at the northeast corner of fence locations to allow large mowing equipment to access areas outside of the fence line. A staging area will be finalized with OHARNG, but the current staging area is at the roadside opening just west of the Ramsdell Road and Snow Road intersection. Trees larger than 4 inches in diameter will be cut and neatly stacked at RQL, away from fencing activities. Trees less than 4 inches in diameter will be cut into manageable pieces and chipped. Tree stumps will be removed, if necessary, and placed away from fence lines.

5.5 STORM WATER CONTROL BEST MANAGEMENT PRACTICES

The Subcontractor will install storm water controls prior to initiating fencing activities in accordance with this section of the RD. BMPs will be employed to protect the construction area (fence lines) from storm water run-off. Erosion and sedimentation controls will include both non-structural BMPs and structural BMPs. Non-structural BMPs to be employed at the project site include:

- Minimizing disturbance;
- Phasing construction operations; and
- Maintaining good housekeeping practices.

Structural BMPs to be employed at the site include:

- Construction entrance/exit; and
- Straw wattles/bales.

To further minimize erosion and sediment run-off potential, no work will be performed during periods of inclement weather, as determined by the Leidos Construction Manager.

The existing construction entrance and equipment staging area will be maintained by the Subcontractor to ensure that no dirt/mud is tracked onto the road. In general, straw wattles and/or bales will be installed downgradient of the fence line sections near drainage ditches. The straw wattles/bales will undergo daily inspections during fencing installation. As discussed in Section 10.1, ruts and depressions along equipment movement areas and construction support areas will be re-graded, seeded, and mulched where necessary.

Erosion/sedimentation control features will remain in place until site restoration activities are completed and vegetation is restored as determined by the Leidos Construction Manager, USACE COTR, and U.S. Army. The Subcontractor will inspect storm water controls on a daily basis while site remedial activities are being conducted.

5.6 PREVENTIVE MAINTENANCE

Preventive maintenance will be performed on equipment to ensure proper operation and to detect potential leaks before they occur. Good housekeeping practices will be maintained at all times during construction activities. All employees will practice due diligence to prevent any damage to the storm water control measures. Containers will be provided at all necessary locations for collecting trash and general construction debris. Fueling activities will be conducted at the staging area away from storm water conveyances.

5.7 DUST AND WIND CONTROLS

All access roads and all other work areas within the project boundaries will be maintained free from

soil that could cause a hazard or nuisance. Dust generation activities may occur during fencing installation, ACM cleanup, and transportation. Dust control will be maintained by keeping traffic on improved roads, maintaining the posted speed limit, and applying pre-approved water as required.

During instances of high winds resulting in excessive dust, additional dust control measures or work stoppage may be required. The Subcontractor SSHO will be responsible for visual dust monitoring. At a minimum, visual monitoring of fugitive dust emissions will be conducted daily during representatively normal operating conditions.

5.8 GOOD HOUSEKEEPING

Good housekeeping practices are designed to maintain a clean and orderly work environment. Good housekeeping measures will include a minimum of:

- Disposing and picking up garbage and waste material regularly;
- Inspecting equipment daily and performing material inspections for leaks and/or conditions that could potentially lead to a discharge of a petroleum product, chemical or waste;
- Performing preventative maintenance on equipment to ensure it operates properly and to help detect potential leaks before they occur; and
- Ensuring that spill cleanup procedures outlined in Section 13.1.2 of the FWSHP are understood by employees, contractors, and/or subcontractors, and established storage areas are away from streams and water bodies. The storage area will also be away from direct traffic routes to prevent accidental spills.

6.0 FENCE INSTALLATION

This section describes fence installation activities to be performed in support of this RD. Design Drawings (Attachment C) that detail remedial action requirements for installing the fencing and associated activities are referenced as appropriate throughout this section.

6.1 FENCE INSTALLATION

The fence will be a combination of a chain-link security fence and five-strand, high tensile wire fence. The specified fence locations for RQL in Alternative 8 are presented on Attachment C, Drawing C-3. The total estimated length of the fence is 3,175 ft.

6.1.1 Chain-link Fence Installation

An estimated 925 ft of chain-link security fence with industrial galvanized steel wire mesh will be installed at the northern perimeter of RQL along Ramsdell Road once sufficient vegetation clearing has been performed by the Subcontractor. The fence and gate locations and specifications are presented in Attachment C, Drawings C-3, C-4, and C-5.

Soil will be excavated at post locations to at least 8-inch diameter and 3 ft deep with appropriate hand tools or mechanical equipment in accordance with specifications in Attachment C. The excavated soil will be spread uniformly along the fence line. Each fence post will be set with concrete (conforming to ASTM C 94, having a minimum compressive strength of 3,000 PSI at 28 days) and allowed to cure for at least seven days before any stress is applied. The tops of the concrete footings will be level with the ground, crowned to provide drainage, and troweled smooth.

The chain link fabric will be fastened to the top reinforcing wire, and the lower edge of the fabric will be fastened to the bottom tension wire. Fabric will be installed on the security (Ramsdell Road) side of fence. The 6-ft high chain-link fence will have a maximum gap of 4 inches between the fence and the ground.

In addition, two double-swing galvanized steel chain-link gates (6 x 9 ft gate leaves) will be installed along Ramsdell Road; one gate will be near the equipment staging area (northwestern area of RQL), and the second gate will be northeast of RQLmw-011. Fabric will match the adjacent fence. The gates will be secured to 4-inch diameter posts and set in concrete footings. Gate accessories, hinges, latches, center stops, keepers, and necessary hardware of quality required for industrial and commercial application will be used. Latches will permit padlocking.

All runs of fence will present the same general appearance. No used, re-rolled, or open seam steel will be permitted in posts, gate frames, rails or braces. The installation area will be left free of debris caused by the installation of the fence.

6.1.2 High Tensile Wire Fence Installation

A five-strand, high tensile wire fence will be installed at the eastern, southern, and western perimeters of RQL when vegetation is cleared. Approximately 2,250 ft of high tensile wire fence will be installed. The high tensile wire fence will be 5 ft high and be mounted on galvanized or coated metal posts at 10 ft on centers. Metal posts will be driven into the ground using typical fencing equipment (e.g., post driver); therefore, excavation will not be necessary for these fence posts. Any submittal for a different type of fence post (e.g., treated wood) will be reviewed by Leidos Project Manager, USACE COTR, OHARNG, and ARNG prior to mobilization.

The high tensile wire fence locations and specifications are also shown on Attachment C, Drawings C-3 and C-5.

6.2 UNEXPECTED MATERIALS

The selected remedy specifies the fence installation outside of the quarry bottom; therefore, the fence installation is not within the munitions response site, and MEC and ACM are not expected to be encountered. If any unsafe or unexpected site condition or material (e.g., MEC, ACM, drums, sanitary trash) is encountered during any phase of the remedial activities (installation of fence or signage), work will stop immediately and the Leidos Project Manager, USACE COTR, and OHARNG/ARNG Restoration Representative will be notified immediately. The condition will be assessed and a joint determination will be made regarding the fence placement. Work will not resume until approval has been granted by the USACE COTR. If the discovery results in a change to the scope, objectives, or schedule of this RD, Leidos will notify the USACE COTR for concurrence on proposed revisions and/or corrective actions.

7.0 ASBESTOS CLEANUP ACTIVITIES

After the perimeter fence is installed, there is no additional requirement for ACM removal, as access and land use restrictions at RQL will ensure no visible emissions will be released to the outside air in accordance with Ohio Administrative Code (OAC) 3745-20-01. However, as part of this remedy, a BMP to remove ground surface ACM will be implemented. The ACM will be removed by a licensed asbestos abatement professional using non-intrusive, no digging methods (e.g., removal by hand) to provide adequate protection for future land use of general foot traffic by U.S. Army and OHARNG personnel performing activities such as surveying, sampling, essential security, safety, periodic maintenance, and natural resources management.

An AAP is included as an appendix to the SSHP that specifies the notifications and submittals required prior to and during asbestos cleanup activities and provides access and controls for the site during asbestos activities, including site setup, asbestos cleanup details, air monitoring, protective equipment, decontamination, and site closeout specific to ACM cleanup activities. In accordance with Section 5.1.3, a UXO Technician will be present during the cleanup of surficial ACM within the quarry bottom to provide training to all project field staff in the recognition and avoidance of MEC/MC/MPPEH.

After cleanup activities have taken place, a clearance inspection will be conducted. A visual inspection will be completed by the Asbestos Hazard Evaluation Specialist to ensure all surficial ACM has been removed from the quarry bottom. A “Certification of Visual Inspection” will be completed and signed by the Asbestos Hazard Evaluation Specialist and included in the Remedial Action Report.

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8.0 ASBESTOS SIGNAGE INSTALLATION

The Subcontractor will provide and install permanent warning signs around RQL on the gates and on the chain-link and high tensile wire fence at 300 ft centers to warn of the ACM hazard in the quarry bottom. Approximately 12 signs will be installed around the perimeter of RQL. The signs will meet the requirements of OAC 3745-20-07(B)(1)(b) and include a 20 x 14 inch upright format warning sign with white background that displays the following with black letters at least one inch high:

KEEP OUT
RESTRICTED ACCESS SITE
AUTHORIZED PERSONNEL ONLY

DANGER
ASBESTOS WASTE DISPOSAL SITE
DO NOT CREATE DUST
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

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9.0 SITE RESTORATION

Site restoration will begin after the fencing is installed in accordance with Section 6.0 of this RD. The Subcontractor will restore the site to the required conditions set forth in this section. At a minimum, this will include:

- Re-grading of disturbed areas, if necessary;
- Re-vegetation (fence lines, equipment movement areas, and construction support areas); and
- Removal of sediment controls.

9.1 RE-GRADING

Soil from post hole excavations will be spread uniformly adjacent to the fence line. Where necessary, ruts and depressions along equipment movement areas and construction support areas will be backfilled with clean fill, re-graded, seeded, and mulched. The final grade of all areas disturbed during remedial activities will be approved by the Leidos Construction Manager.

9.2 RE-VEGETATION

The Subcontractor is responsible for restoring vegetative cover (i.e., grass) in any areas disturbed or damaged by fence installation and/or equipment movement within seven days. Re-seeding with the appropriate Camp Ravenna-approved seed mixture (i.e., open-area) and straw mulching will be performed at the discretion of the Leidos Construction Manager or OHARNG/ARNG Restoration Representative in accordance with the RD.

The Subcontractor will use a Camp Ravenna-approved "open area" seed mixture for permanent cover for construction areas disturbed during field activities (e.g., fence lines). Table 9-1 presents the seed mixture and application specifications. Fertilizer and lime are not needed for seeding with native seed mixes.

Table 9-1. Open Area Seed Mixture for Camp Ravenna

Seed Type	Mixture %
Nodding Wild Rye (*Elymus Canadensis*)	23.5%
Virginia wild rye (*Elymus virginicus*)	25%
Little Bluestem (*Schizachyrium scoparium*)	22%
Partridge Pea (*Chamaecrista fasciculate*)	18.75%
Thin-leaved Coneflower (*Rudbeckia triloba*)	7.75%
Brown fox sedge (*Carex vulpinoidea*)	1.5%
Black-eyed Susan (*Rudbeckia hirta*)	1.5%
Add 20 lbs/acre of Annual Rye Grass (*Lolium multiflorum*) to the broadcast mix and 15 lbs/acre to the drilled mix. Specifications: Broadcast at 18 lbs/acre, drilled at 12 lbs/acre. Mulch with a minimum of 3 bales of straw per 1,000 square feet.	

9.3 REMOVING EROSION CONTROLS

If any sediment or erosion control measures are installed, the controls will remain in place until the grass is established with a density of at least 70% coverage in all disturbed construction areas, in accordance with Ohio Rainwater and Land Development guidance (ODNR 2006). The site will be inspected weekly until the construction areas achieve at least 70% vegetation coverage. Once the construction areas achieve the 70% coverage, the erosion control measures will be removed and disposed.

10.0 WASTE CHARACTERIZATION AND DISPOSAL

This section describes waste characterization, transportation, and waste disposal activities that will be performed in support of implementing this RD. Wastes include remedial waste (e.g., ACM, vegetation). All waste will be properly handled, labeled, characterized, and managed in accordance with Section 8.0 of the FWSAP, federal and state of Ohio Large-Quantity Hazardous Waste Generator Requirements, and Camp Ravenna Waste Management Guidelines. All waste will be appropriately accounted for as soon as possible and prior to conclusion of the project.

10.1 WASTE STREAM IDENTIFICATION

Waste generated during remedial activities will be managed to prevent the potential release of contamination. The following types of waste may be generated:

- Vegetation (brush and small trees);
- Excess concrete and wash fluids for concrete equipment;
- ACM waste;
- Sanitary waste; and
- Personal protective equipment (PPE) and contact waste (e.g., plastic tarps, ground cloths).

In general, proper waste minimization procedures will be employed to limit the volume of waste generated. These procedures will include:

- Re-using materials that do not require decontamination;
- Minimizing the volume of decontamination fluids;
- Minimizing contact with potentially contaminated materials;
- Minimizing foot and vehicle traffic through potentially contaminated areas; and
- Utilizing good housekeeping practices.

10.2 WASTE STREAM MANAGEMENT

Table 10-1 presents and discusses each potential waste stream for this RD. Characteristics for each waste stream include: the point of generation, on-site staging and processing, characterization requirements, and method of final disposition.

Table 10-1. Waste Characterization and Disposal

Waste Stream Identification	Point of Generation	On-Site Staging and Processing	Characterization Requirements	Final Disposition
Surface Vegetation (trees and shrubs)	In fence line area, vegetation will be cut to a height of not greater than three inches above the ground surface.	Trees greater than four inches in diameter will be cut and stacked neatly at the AOC away from remedial activities. A staging area will be finalized with OHARNG, but the current staging area is at the roadside opening just west of the Ramsdell Road and Snow Road intersection. Trees less than four inches in diameter will be cut into manageable pieces and chipped. Wood chips will be spread over the AOC by the subcontractor.	No characterization required.	Cut or chipped vegetation will remain at the AOC.
Excess Concrete and Wash fluids for Concrete Equipment	In the fence line area, concrete will be mixed on site or brought on by a mixing truck. Efforts will be made to eliminate or minimize generation of excess concrete. Minimal amounts of wash fluids for concrete equipment are expected.	The concrete will be mixed as needed in the equipment staging area or brought onsite by a haul truck. Wash fluids used to clean concrete residues on equipment will be minimized as practical and containerized for characterization.	One representative sample of wash fluids will be collected and characterized in accordance with Section 8.4 of the FWSAP.	Wash fluids will be removed from the AOC by a licensed waste disposal contractor and disposed at an approved disposal facility permitted to accept the waste. Excess concrete will be contained, allowed to solidify, and disposed at an approved disposal or recycling facility.
Surficial ACM	Surficial ACM will be removed using non-intrusive methods in the quarry bottom.	ACM will be hand-removed and placed into a double-lined roll-off container or 55-gallon drum.	Previous RA sampling identified construction debris containing asbestos greater than 1% and friable per Ohio EPA. No further characterization required.	Removed from the AOC by a licensed waste disposal contractor and disposed at an approved disposal facility permitted to accept the waste.
Sanitary Waste Non-contaminated (e.g., garbage, paper waste, silt, fence, and non-indigenous solids)	Primarily generated by personnel working at the site during remedial activities.	Collected daily in plastic-lined trash cans and moved to a designated area in equipment staging area.	No characterization required.	Disposed in a licensed solid waste disposal facility in accordance with local, state and federal regulations.

Table 10-1. Waste Characterization and Disposal (continued)

Waste Stream Identification	Point of Generation	On-Site Staging and Processing	Characterization Requirements	Final Disposition
PPE (gloves, boot covers, disposable full-body coveralls) and Contact Waste (plastic sheeting)	Generated by asbestos workers on a daily basis.	PPE that comes into contact with ACM requires temporary disposal in 55-gallon drums and ultimate disposal at a permitted waste facility. PPE that does not come into contact with ACM will be collected in trash bags and disposed daily in a Camp Ravenna or project-specific dumpster.	Characterized in accordance with Section 8.4 of the FWSAP. Generally, PPE will be characterized for disposal based upon the material it was in contact with (previous remedial sampling concluded that the ACM contained greater than 1% asbestos).	PPE will be disposed in accordance with Section 8.5 of the FWSAP. It will be disposed as either sanitary waste or as ACM in a permitted waste facility.

AOC = Area of Concern
DOT = Department of Transportation
FWSAP = Facility-wide Sampling and Analysis Plan
IDW = Investigation-Derived Waste
Ohio EPA = Ohio Environmental Protection Agency
PPE = Personal Protective Equipment
QAPP = Quality Assurance Project Plan
RQL = Ramsdell Quarry Landfill
TAL = Target Analyte List
TCLP = Toxicity Characteristic Leaching Procedure

10.3 FIELD STAGING OF GENERATED WASTES

A Field Staging Area (FSA) will be the existing equipment staging area for staging all drums (or other containers) of waste generated during the project (presented in Table 10-1). The FSA will be managed according to the requirements of Section 8.3 of the FWSAP. This FSA may also be used to stage equipment and materials required to implement this RD.

Final inventories of remedial waste will be taken and provided to the OHARNG/ARNG Restoration Representative by the designated Leidos Construction Manager.

10.4 WASTE CONTAINERIZATION AND LABELING

Bulk and containerized asbestos waste shall be packed, labeled, and transported according to U.S. Department of Transportation Regulations 49, Code of Federal Regulations (CFR) 173.216, and 49 CFR 173.240. All removed ACM, plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the abatement work area shall be packed into double bagged sealable 6-mil plastic bags. The bags shall be marked with labels required by Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1001 and/or 1910.1200 and 1926.1101. The container will either be immediately transported to a disposal facility approved for accepting friable ACM or will be staged in the FSA awaiting transport to a permitted disposal facility.

All waste storage containers (e.g., roll-off container, drums) will be a suitable size, leak proof, and constructed of materials compatible with the materials to be contained. Waste storage containers will be properly labeled prior to placement of material.

The Subcontractor will be responsible for waste characterization, container labeling, transportation and final disposal at a state of Ohio or federal-approved treatment, storage, or disposal facility of all decontamination liquids. The OHARNG/ARNG Restoration Representative will approve all waste profiles and waste manifests for the disposal of project IDW to approved disposal facility.

All waste containers will be labeled prior to placing ACM in them. All ACM containers (drums) will be labeled in accordance with Section 8.2 of the FWSAP. Each waste container will be labeled to ensure easy identification and proper management. Prior to placing ACM into a container, a "Regulated Waste" label for ACM waste containing the following information will be affixed to the outside of the container:

- Project name;
- Contents;
- Date waste was first placed into the container;
- Source location(s); and
- Emergency contact name and telephone number.

In addition, a label will be applied to any ACM waste container stating:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
R.Q., ASBESTOS
CLASS 9
NA 2212, III

10.5 TRANSPORTATION, STORAGE, AND DISPOSAL

The management, transportation, and disposal of all waste streams will be coordinated with the OHARNG/ARNG Restoration Representative. All transportation paperwork (manifests or shipping papers) and on-road haul truck placards will be prepared by the Subcontractor Construction Supervisor in accordance with federal, state, and local regulatory requirements, and disposal facility requirements. A draft of the transportation paperwork containing "base" information will be submitted to the OHARNG/ARNG Restoration Representative for review and approval a minimum of one week prior to shipment of any material. The approved transportation paperwork will then be completed as appropriate by the Leidos Construction Manager in the field during remedial activities. The OHARNG/ARNG Restoration Representative will be responsible for custody of manifest copies and submittal to Ohio EPA and United States Environmental Protection Agency (USEPA) as part of the annual reporting for Camp Ravenna hazardous waste generation and management.

Waste will be transported by licensed waste haulers to OHARNG/ARNG- and Leidos-approved licensed off-site disposal facilities. All transportation requirements, including proper labeling,

placarding, and weight limits will be followed. All manifests, shipping documents, and disposal facility approval letters will be provided to Leidos and incorporated into the Remedial Action Report.

The OHARNG/ARNG Restoration Representative will sign all waste profiles and waste manifests for the disposal of project wastes at an approved disposal facility. All manifests, shipping documents, and disposal facility approval letters will be provided to Leidos and incorporated into the Remedial Action Report.

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11.0 CONSTRUCTION QUALITY ASSURANCE PLAN

This section presents the CQAP. The CQAP describes the inspection procedures and documentation required to ensure fencing installation, sign installation, ACM cleanup, and restoration activities occur according to the requirements of this RD.

Protocols for reporting test results, certifying compliance with construction requirements, correcting construction deficiencies, and documenting such corrections are provided. This section also addresses the review and documentation requirements necessary to comply with the site restoration details contained herein.

11.1 RESPONSIBILITY AND AUTHORITY

11.1.1 Responsibility

The organizational chart presented in Figure 2-1 outlines the management structure that will be used to implement fencing installation activities in accordance with this RD. The functional responsibilities of key personnel were described in Section 2.1. The assignment of personnel to each position was based on the following:

- Qualifications;
- Experience; and
- Training.

The Leidos QA/QC Officer and Leidos Construction Manager, in coordination with the USACE COTR, will ensure the completed remedial activities conform to the RD, design drawings, specifications, and any necessary permit conditions. The Leidos Project Manager will verify completion of these activities.

The Leidos Construction Manager will monitor fencing installation and site restoration activities. The Leidos Construction Manager or designee will be on site during work activities to ensure that all components of this RD are fulfilled.

11.1.2 Administration and Operation

The QA/QC organization is administered by the Leidos QA/QC Officer in concert with the Leidos Construction Manager. The Leidos Construction Manager will be supported by the Subcontractor Construction Supervisor and technical staff (engineers, scientists, and technicians) as necessary.

All vendors supplying materials used for site restoration and storm water control will supply materials from manufacturing facilities with established QC programs.

Results of the manufacturer QC procedures will be submitted to the QA/QC Officer for review, evaluation, and documentation prior to beginning field activities.

11.2 PERSONNEL QUALIFICATIONS

All QA/QC personnel will be properly trained for their job function. The Leidos Construction Manager is key to the inspection and certification program. The Leidos Construction Manager will have demonstrated knowledge of specific construction practices relating to fencing, earthwork, regulations and specifications, observation and testing procedures, and documentation procedures. The Leidos Construction Manager will also be experienced in performing similar duties on previous jobs in which comparable construction activities took place.

11.3 ACCESS PROTOCOL

11.3.1 Facility Access Protocol

Facility access requests will be made through Vista Sciences Corporation. Vista Sciences Corporation will coordinate facility access approval through OHARNG. All personnel approved to enter Camp Ravenna must provide government-issued identification (e.g., driver's license, passport) at the entrance. Upon entry and exit to Camp Ravenna, each person is required to sign a roster annotating the time of day and the area they are working at or visiting.

All personnel and vehicles must enter Camp Ravenna through the Camp Ravenna Main Gate (8451 State Route 5, Ravenna, OH 44266) and are subject to search and inspection. Weapons, lighters (or similar fire starters), and alcoholic beverages are prohibited within Camp Ravenna; prohibited items may be placed with security personnel while onsite. Security personnel will confiscate prohibited items discovered during inspections.

11.3.2 Construction Area Access Protocol

All supervisors, workers, and site visitors entering the construction area must provide training records specified in the SSHP prior to entering the construction area and/or exclusion zones. Site visitors arriving throughout the day must: 1) undergo a briefing by the Leidos Construction Manager or Subcontractor SSHO; and 2) provide necessary training records and documentation prior to approaching or entering the exclusion zone. All site visitors must be approved by the Leidos Construction Manager and Subcontractor SSHO to enter the construction area and/or exclusion zones.

11.3.3 Traffic Rules and Protocol

The Subcontractor will comply with all Ohio and Camp Ravenna traffic rules. Speed limits will be maintained as posted around the main entrance area of the facility. The Subcontractor will not exceed the posted speed limits of 35 miles per hour (mph) during daylight hours and 25 mph at night while on all other Camp Ravenna main roads. A speed limit of 10 mph around the project area will be maintained. At no time will the Camp Ravenna main roads be blocked by the Subcontractor during remediation activities. Traffic flow must be maintained on at least half of the roadway width at all times. Prior to starting any activity that will obstruct traffic flow, approval will be obtained from the OHARNG/ARNG Restoration Representative and Leidos Construction Manager.

11.4 DAILY PLANNING BRIEFINGS

At the start of the project, the Subcontractor will participate in a pre-work briefing on objectives, health and safety, proposed deviations, and project schedule with the Leidos Construction Manager.

In addition to daily tailgate briefings conducted in accordance with the SSHP, the Subcontractor and Leidos will participate in daily planning briefings to determine the plan of action for the work day. This briefing will include, at a minimum, the following:

- A discussion of the planned activities for the work day;
- Planned area of fencing;
- MEC and ACM awareness;
- Weather considerations;
- Deliveries;
- Transportation schedule;
- Scheduled forecast; and
- Issues which would result in an impact to the project.

11.5 INSPECTION ACTIVITIES

Inspections will be completed to verify acceptability of materials, prevent spills, and assess effectiveness of storm water and dust generation controls. The scope and frequency of each type of inspection is described below.

11.5.1 Spill Control

The Leidos Construction Manager will conduct daily inspections to verify spill equipment is maintained and no spills have occurred. During fencing installation, if any visual or olfactory indicators suggest the presence of potentially contaminated soil or potential ACM, the employee will report to the Leidos Construction Manager. The Subcontractor will provide all necessary on-site spill equipment (e.g., granulated clay, absorbent blankets, PPE, shovels, containers). All on-site workers will maintain good housekeeping practices (as discussed in Section 5.8).

11.5.2 Dust Control

Dust generation activities may occur during fencing installation, material handling, and equipment movement on paved and unpaved roads. The Subcontractor will minimize dust generation by keeping vehicles on improved roads, limiting speeds to a 10 mph maximum on the access roads, and applying water for dust suppression purposes as required. Water used for dust control will be clean (e.g., obtained from sources with approval of the Leidos Construction Manager or potable water obtained from an off-site source). The use of additives will not be permitted. Engineering controls will be implemented to minimize the potential for dust generation. The Subcontractor SSHO will conduct daily inspections during representatively normal operating conditions.

11.6 SPILL RESPONSE

Spills will be responded to as presented in Section 13.1.2 of the FWSHP and Camp Ravenna Spill Plan. In the event of a spill or leak, the employee making the discovery will immediately notify the Subcontractor SSHO and the Leidos Construction Manager. These spills can include, but are not limited to, releases of fuels, lubricants, and hydraulic fluids.

The Leidos Construction Manager will ensure the spill is reported to Camp Ravenna Range Control and documented on a Camp Ravenna First Responder Spill/Release Response Actions form (Attachment B). OHARNG will be responsible to contact the Ohio EPA if the spill is over a "reportable quantity" (25 gallons or more) or it is in water.

11.7 DOCUMENTATION

11.7.1 Field Documentation

This project will include daily inspection and quality summary reports, which will be signed and dated by the Leidos Construction Manager. These reports will be submitted to the Leidos Project Manager.

The daily reports may include:

- Summary of activities performed at the project site;
- Weather information;
- Inspection activities (e.g., storm water controls, spill-control barriers, equipment staging/fueling areas);
- Departures from the approved RD;
- Problems encountered during field activities;
- Subcontractor submittals; and/or
- Subcontractor certifications (e.g., health and safety records).

Copies of the construction activity forms, checklists, and daily reports are included in Attachment B.

11.7.2 Remedial Action Report

Upon completion of remedial activities, a Remedial Action Report will be prepared by Leidos. The Remedial Action Report will document:

- The project was performed in accordance with this RD (i.e., complied with requirements, technical specifications, construction drawings, and other relevant contract documents) and all applicable regulations, including surface water and air regulations;
- Documentation of any approved field variances from this RD (e.g., unforeseen site condition, change in material); and
- Corrective actions and achievement of remedial goals.

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12.0 REFERENCES

ODNR (Ohio Department of Natural Resources) 2006. *Rainwater and Land Development, Ohio's Standards for Stormwater Management, Land Development, and Urban Stream Protection.* 2006.

Ohio EPA (Ohio Environmental Protection Agency) 2001. *Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms*. February 2001.

Ohio EPA 2004. *Director's Final Findings and Orders in the matter of U.S. Department of the Army, Ravenna Army Ammunitions Plant*. June 2004.

USACE (United States Army Corps of Engineers) 2006. *Feasibility Study for Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. March 2006.

USACE 2009. *Record of Decision for Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* March 2009.

USACE 2010. *Remedial Design for the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. June 2010.

USACE 2011a. *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio.* September 2011.

USACE 2011b. *Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 2011.

USACE 2011c. *Facility-Wide Quality Assurance Project Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 2011.

USACE 2011d. *Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 2011.

USACE 2013. *Record of Decision Amendment for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* May 2013.

USEPA (United States Environmental Protection Agency) 1999. *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. July 1999.

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ATTACHMENT A
SEPTEMBER 2013 WETLAND DELINEATION LETTER REPORT

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October 22, 2013

Mr. Jed Thomas
Leidos, Inc.
8866 Commons Blvd
Twinsburg, OH 44087
TEL: (330) 405-5802
Email: jed.h.thomas@leidos.com

Re: Wetland Delineation
Approximately 4 acres at the Ramsdell Quarry Site
Camp Ravenna, Ohio

Dear Mr. Thomas:

EnviroScience conducted a wetland delineation and functional assessment of the wetland basin at the bottom of the former Ramsdell Quarry landfill site at Camp Ravenna, Trumbull County, Ohio. The purpose of the field visit was to fulfill the agency monitoring requirements for the project by determining the size and quality of the wetland and comparing it to the results of the delineation conducted by EnviroScience in 2008.

METHODS

The delineation and ORAM were completed by Michael A. Liptak, Ph.D., who conducted the pre-construction delineation and ORAM in 2008. Field work was completed on September 24, 2013. The wetland boundaries were delineated according to the procedures outlines in the 1987 USACE Manual and the 2010 Regional Supplement for the Northcentral and Northeast Region, and a map was generated showing the 2013 wetland boundary (Attachment A). Sample plots were placed in typical upland and wetland areas (Attachment B). Flagging was placed at the wetland upland boundary, and all sample plots and wetland boundary flags were located using a submeter-accurate Trimble GeoXH. Photographs were taken to document the sample plots and the wetland (Attachment C). The wetland's functional status was evaluated using the Ohio Rapid Assessment Method for Wetland, v.5.0 (ORAM). ORAM data forms are found in Attachment D.

RESULTS

Wetland RQL-3 is an emergent wetland with small areas of scrub-shrub and submersed aquatic vegetation. Its dominant species are *Phragmites australis* (common reed), *Typha angustifolia* (narrowleaf cattail) and *Phalaris arundinacea* (reed canary grass) in the emergent areas, with the exception of the northeast area, which was seeded with a diverse wetland seed mix and currently is dominated by *Sagittaria latifolia* (broadleaf arrowhead), *Echinochloa crus-galli* (barnyard grass), and *Sparganium eurycarpum* (common bur-reed). The scrub shrub areas are located around the edges of the wetland and are dominated by

shrub willows such as *Salix interior* (sandbar willow). The deeper areas of the pond are located at the northwest corner. These areas are dominated by *Utricularia gibba* (humped bladderwort) and *Najas flexilis* (nodding waternymph).

In 2008, Wetland RQL-3 was 4.039 acres in size, and scored 37.5 on the ORAM, classifying it as Modified Category 2 Wetland. In 2013, Wetland RQL-3 is 4.081 acres in size, and scored 39.5 on the ORAM, which classifies it as a Modified Category 2 wetland.

If you have any questions or would like more information, please contact me by phone at (330) 688-0111, or email me at mliptak@EnviroScienceInc.com.

Respectfully,

Michael A. Liptak, Ph.D.
Senior Ecologist
Certified Senior Ecologist (ESA)

Enc: proposal

EnviroScience
5070 Stow Road
Stow, OH 44224
Toll Free: 800-940-4025 | Office: 330-688-0111 | Fax: 330-688-3858

Attachment A

Figures

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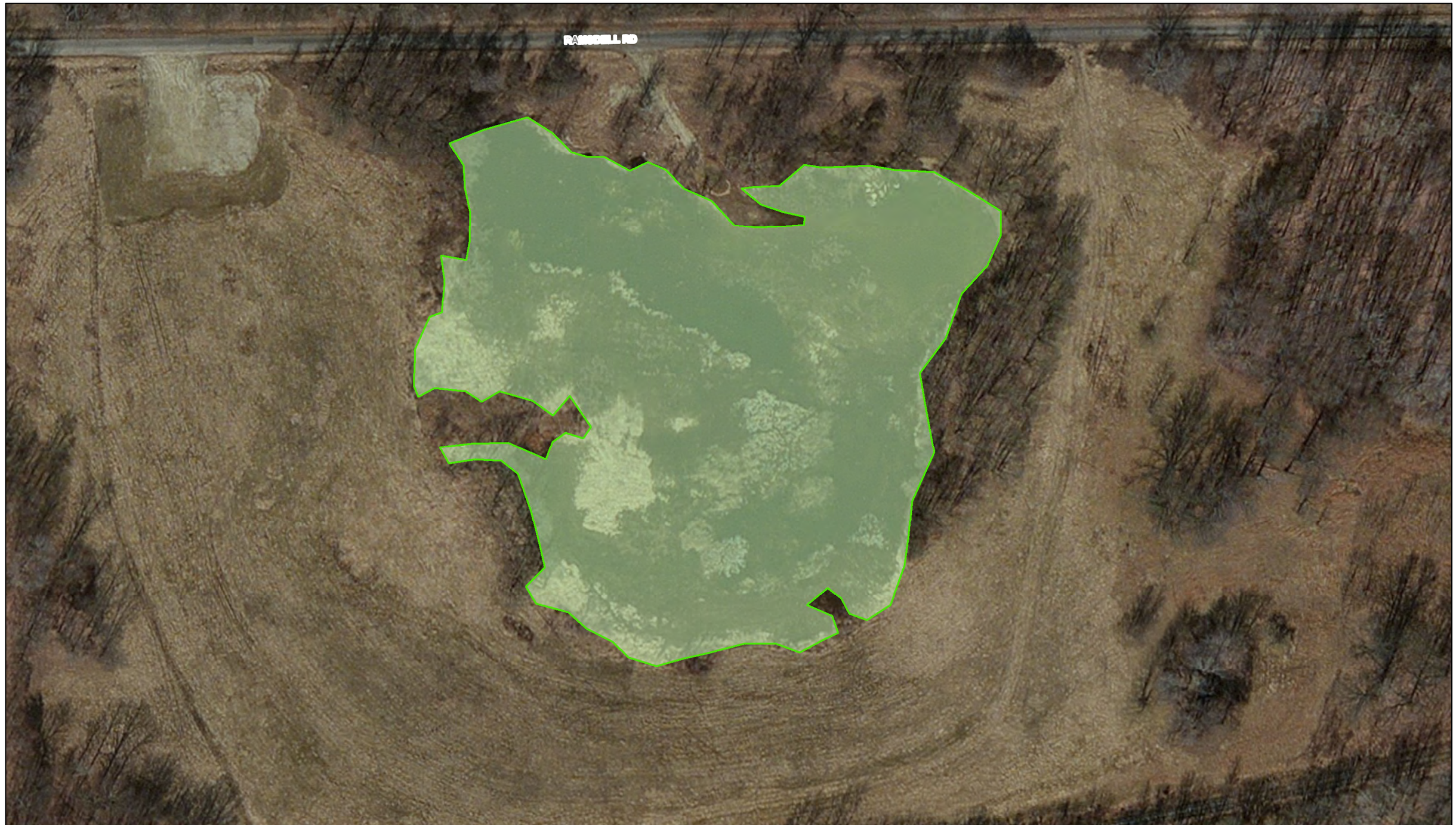

Figure 1. Ramsdell Quarry Landfill
Camp Ravenna Joint Military Training Center

2013 Wetland (4.081 ac)

140 70 0 140 Feet

40 20 0 40 Meters

N

EnviroScience
Excellence In Any Environment

Date: 10/1/2013 Path: P:\Ecological Survey\Wetlands\SAIC\6187_Ramsdell_Quarry\GIS\Fig1_RamsdellQuarry.mxd

Basemap courtesy of Microsoft (2012).

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Attachment B

Sample Plot Forms

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WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ramsdell Quarry City/County: Paris Twp., Portage County Sampling Date: 9/24/2013

Applicant/Owner: SAIC State: OH Sampling Point: 1

Investigator(s): Michael Liptak Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): Lat: Long: Datum: WGS1984

Soil Map Unit Name: NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** **No** X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Upland Slope

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches): 0
Water Table Present?	Yes	No X	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches): 0

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No signs of hydrology

VEGETATION – Use scientific names of plants. Sampling Point: 1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rubus allegheniensis*	10	Yes	FACU
2. *Salix alba*	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	15 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Lotus corniculatus*	50	Yes	FACU
2. *Symphyotrichum lateriflorum*	40	Yes	FAC
3. *Solidago rugosa*	20	No	FAC
4. *Cirsium arvense*	20	No	FACU
5. *Phalaris arundinacea*	20	No	FACW
6. *Erechtites hieraciifolia*	10	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	160 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	60	x 3 =	180
FACU species	80	x 4 =	320
UPL species	10	x 5 =	50
Column Totals:	175 (A)		600 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	90	10YR 4/6	10			Loamy/Clayey	Prominent redox concentrations
10-16	10YR 4/2	90	10YR 5/8	10			Loamy/Clayey	Prominent redox concentrations
16-20	2.5Y 4/3	90	2.5Y 6/2	10				Faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Ramsdell Quarry City/County: Paris Twp., Portage County Sampling Date: 9/24/2013

Applicant/Owner: SAIC State: OH Sampling Point: 2

Investigator(s): Michael Liptak Section, Township, Range:

Landform (hillside, terrace, etc.): basin at bottom of slope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): Lat: Long: Datum: WGS1984

Soil Map Unit Name: NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No	**within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
former landfill in basin

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches):	2
Water Table Present?	Yes	No X	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
surface water present within radius of plot

VEGETATION – Use scientific names of plants. Sampling Point: 2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix alba*	50	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	150	x 2 =	300
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		300 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Mucky Loam/Clay	
								REFUSAL AT 8 INCHES

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- X Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal

Depth (inches): 8+

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Attachment C

Photographs

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Photo 1. Sample Plot 1 in upland field.

Photo 2. Sample Plot 2 in Wetland RQL-3.

Photo 3. Seeded area showing increased diversity.

Photo 4. Deep water area.

Photo 5. *Utricularia* and *Najas* in deep water area.

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Attachment D

ORAM v.5.0 Data Sheets

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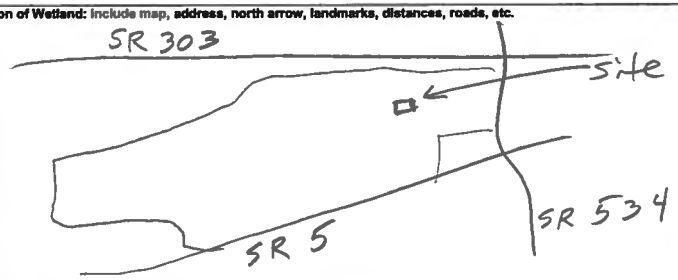
Ramsdell Quarry Landfill

Background Information

Name:	Michael Liptak
Date:	10/22/13
Affiliation:	EnviroScience, Inc.
Address:	5070 Stow Rd, Stow OH 44224
Phone Number:	330-688-0111
e-mail address:	mliptak@EnviroScienceInc.com
Name of Wetland:	RQL-3
Vegetation Communit(ies):	PEM
HGM Class(es):	

Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate	41.21223°N, 81.01832°W
USGS Quad Name	Windham
County	Portage
Township	Windham
Section and Subsection	
Hydrologic Unit Code	05030103
Site Visit	9.24.13
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	✓

Name of Wetland:	RQL-3
Wetland Size (acres, hectares):	3.0

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Comments, Narrative Discussion, Justification of Category Changes:

Isolated Depression at former Ramsdell Quarry. Mostly dominated by invasive species.

Final score :	39.5	Category:	2

Ramsdell Quarry Landfill

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.		✓
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

Ramsdell Quarry Landfill

8b	**Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamagrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schecheria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Ramsdell Quarry Landfill

ORAM v. 5.0 Field Form Quantitative Rating

Site: RQL - 3 (ISOLATED) Rater(s): MICHAEL LIPTAK Date: 10/22/13

Metric 1. Wetland Area (size).

3 (max 6 pts.) | 3 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

8 (max 14 pts.) | 11 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

4

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

4

Metric 3. Hydrology.

18 (max 30 pts.) | 29 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/intermittent surface water (3)
- [x] Perennial surface water (lake or stream) (5)

6

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

2

3c. Maximum water depth. Select only one and assign score.

- [x] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [ ] <0.4m (<15.7in) (1)

3

3d. Duration inundation/saturation. Score one or dbl check.

- [x] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

4

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

3

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [x] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [x] road bed/RR track
- [x] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

7.5 (max 20 pts.) | 36.5 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

2.5

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

2

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

3

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [x] toxic pollutants
- [x] shrub/sapling removal
- [x] herbaceous/aquatic bed removal
- [x] sedimentation
- [x] dredging
- [ ] farming
- [ ] nutrient enrichment

36.5 subtotal this page

last revised 1 February 2001 jjm

ORAM v. 5.0 Field Form Quantitative Rating

Site: RQL - 3 (ISOLATED) Rater(s): MICHAEL LIPTAK Date: 10/22/13

36.5 subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 36.5 (subtotal)

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

3 (max 20 pts.) | 39.5 (subtotal)

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale.

- [1] Aquatic bed
- [1] Emergent
- [1] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

3

6b. Horizontal (plan view) Interspersion. Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [x] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

2

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [x] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

-5

6d. Microtopography. Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

3

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

39.5

End of Quantitative Rating. Complete Categorization Worksheets.

Ramsdell Quarry Landfill

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	8	
	Metric 3. Hydrology	18	
	Metric 4. Habitat	7.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE	39.5	Category based on score breakpoints 2

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	(NO)	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	(NO)	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	(YES) Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	(NO) Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

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ATTACHMENT B
CONSTRUCTION FORMS AND CHECKLISTS

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FIRST RESPONDER SPILL/RELEASE RESPONSE ACTIONS

Units or contractors performing training or other operations at Camp Ravenna shall be responsible for adhering to the provisions identified in the Camp Ravenna Integrated Contingency Plans (ICP). A copy of the ICP may be obtained from the Camp Ravenna Environmental Supervisor. Following discovery of a spill (any size), the procedures outlined below shall be executed where applicable:

1. **If necessary, initiate evacuation of the immediate area.**

2. **Notify Camp Ravenna Range Control via two-way radio or by calling (614) 336-6041, and report information contained on the "First Responder Reporting Form" if it is known or can reasonably be determined. This form has been copied on the opposite side of this page. If Range Control cannot be reached, contact a Camp Ravenna OSC (listed below).**

3. **Stop spill flow when possible without undue risk of personal injury.**

4. **If trained, contain the spill using available spill response equipment or techniques.**

5. **Make spill scene OFF LIMITS to unauthorized personnel.**

6. **Restrict all sources of ignition when flammable substances are involved.**

7. **Report to the OSC upon his/her arrival to the scene.**

8. **Turn in a completed copy of the Camp Ravenna First Responder Form to Camp Ravenna Range Control for ALL releases, even ones cleaned up by the reporter.**

TELEPHONE NUMBER

When Camp Ravenna Range Control is not available, the Camp Ravenna OSC must to be contacted by the discoverer/first responder following a release if it is in water, at or above a reportable quantity (25 gallons or more of POL), a hazardous or extremely hazardous substance, a hazardous waste, or involves fire, explosion, or is otherwise a major incident.

NAME	JOB TITLE	OFFICE	24 HOUR
Camp Ravenna Range Control	Operations and Training	(614)336-6041	Contact Alternate
Tim Morgan (Primary OSC)	Environmental Supervisor	(614)336-6568	(330)322-7098
Katie Tait	Environmental Specialist	(614)336-6136	Contact Alternate
SFC Chad Baucum	Range Operations	(614)336-6562	(330)575-6585
MAJ Richard Saphore	Logistics Officer	(614)336-6790	Contact Alternate
LTC Ed Meade	Garrison Commander	(614)336-6560	(614)307-0493

Off-site (from Camp Ravenna area code 614 phones)

Windham Fire Department ……..…9-1-330-326-2222
Portage County Sheriff ……..… 9-1-330-296-5100
Trumbull County Police, Fire Department and Hazmat…… 911

SEE REVERSE FOR FIRST RESPONDER REPORTING FORM

FIRST RESPONDER REPORTING FORM

(Print all information)

Collect as much of the information on the top half of this form as possible before making initial notification. Complete the top and bottom of the form before turning in to Camp Ravenna.

Name of individual reporting spill: _____

When did the spill occur (Date and Time)? _____

Spill Location (Building or area name / number, indoors or out; if vehicle involved, type and bumper number):
_____

What was spilled? _____ How much was spilled? _____

Rate at which material is currently spilling. _____

Extent of spill travel? _____

Did the spill reach water (ditch, creek, stream, pond, well head) _____

Number of injured personnel and type injuries, if applicable. _____

Do you need the Fire Department to respond to protect life, property, and environment? _____

Unit: _____ State: _____ Report Date & Time: _____

On Scene Coordinator Name and Grade: _____ Phone: _____

How did the spill occur (be specific). _____

_____

What remedial action was taken? _____

_____

Was soil and absorbent material generated? _____ How much? _____

What is the location of the soil and absorbents? _____

Was the Environmental Office contacted (yes or No, date and time)? _____

Who did you talk to in the Environmental Office? _____

Was the site cleared by the Env. Office (Yes or No, date and time)? _____

Who cleared the site (name and grade, date and time)? _____

Initial information is critical. Get as much information as you can, but don't hesitate to make the initial notification if a spill is moving or worsening rapidly!

This form must be completed for all releases and turned-in to Camp Ravenna Range Control within 24 hours.

RVAAP Ramsdell Quarry Landfill Remedial Action

DAILY REPORT		DATE:
Weather Condition	**A.M.**	
	P.M.	
Subcontractors On-Site		
Equipment On-Site		
Visitors On-Site		
Work Performed		
Unexpected Materials Encountered		
Soil Characteristics and Properties		
Schedule Status/Update		
Deviations from Approved Removal Plans and Specifications		
Summary of Communications		
Corrective Action and/or Recommendations for Corrective Action		
Comments		

Completed by: _____ QA by _____

RVAAP Ramsdell Quarry Landfill Remedial Action
Manifest Log

Disposal Date	Type of Waste	Source/ Location	Date of Generation	Transporter	Truck License No.	Disposal Facility	Waste Profile No.	Manifest Document No.	Facility Quantity (tons)	Copy of manifest leaving site (Y/N)	Signed Manifest Rec'd (Y/N)	Signed Manifest to Regs (Y/N)	Notes

RVAAP Ramsdell Quarry Landfill Remedial Action
Visitor Log

I have been briefed on the potential hazards on the work site. I hereby agree to comply with all safety requirements during my visit and will follow the instructions of the Site Safety and Heath Officer.

Print Name	Signature	Agency	Date/Time	Reason for Visit

RVAAP Ramsdell Quarry Landfill Remedial Action
Health and Safety Plan Signature Log

I have reviewed and understand the contents of the Health and Safety Plan. I hereby agree to comply with all the requirements outlined herein.

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

Signature: _____ Date: _____

Print Name: _____ Agency: _____

NONCONFORMANCE REPORT	DATE OF NCR	NCR NUMBER
	LOCATION OF NONCONFORMANCE	PAGE OF
INITIATOR (NAME/ORGANIZATION/ PHONE)	FOUND BY	DATE FOUND
RESPONSIBLE ORGANIZATION/INDIVIDUAL		PROGRAM
		PROJECT

DESCRIPTION OF NONCONFORMANCE | NONCONFORMANCE CATEGORY:

A INITIATOR DATE QA/QC OFFICER DATE CAR REQ'D YES ☐ NO ☐

DISPOSITION:

PROBABLE CAUSE:

ACTIONS TAKEN TO PREVENT RECURRENCE:

B PROPOSED BY: NAME DATE

JUSTIFICATION FOR ACCEPTANCE:

C RESPONSIBLE MANAGER: NAME DATE

CONCURRENCE WITH DISPOSITION AND CLOSURE

REINSPECTION/RETEST REQUIRED YES ☐ NO ☐ IF YES; DATE RESULT

D QUALITY ASSURANCE: NAME DATE

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ATTACHMENT C
DESIGN DRAWINGS

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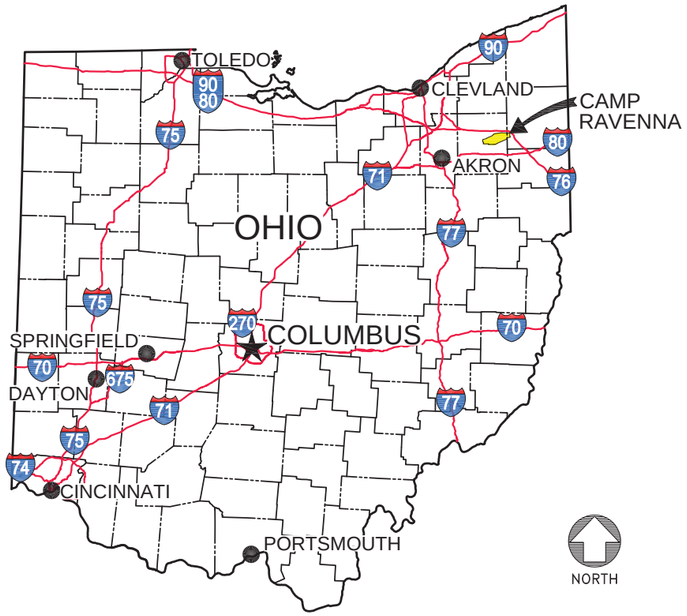
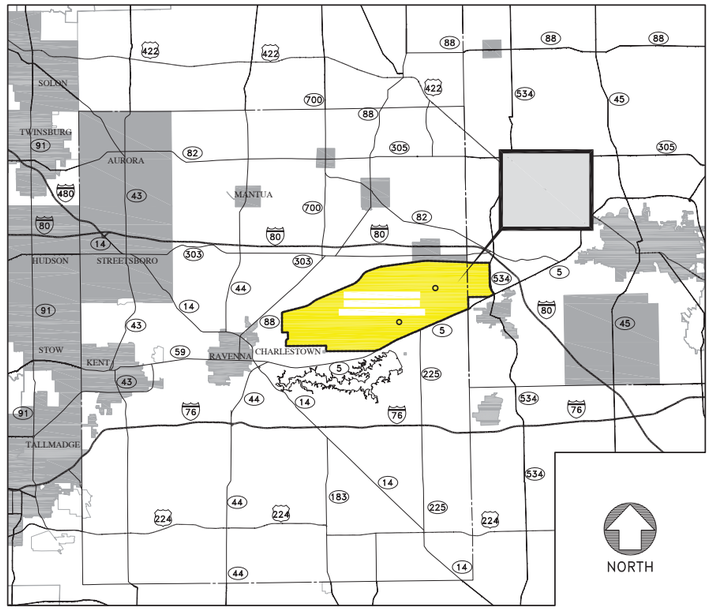
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
RAVENNA ARMY AMMUNITION PLANT -
RAMSDELL QUARRY LANDFILL REMEDIAL DESIGN



LOCATION MAP
NOT TO SCALE



NOT TO SCALE

THIS REMEDIAL DESIGN ADDRESSES THE INSTALLATION OF APPROXIMATELY 3200 FEET OF CHAIN-LINK SECURITY FENCE AND HIGH-TENSILE WIRE FENCE AROUND THE PERIMETER OF THE RAMSDELL QUARRY LANDFILL AREA OF CONCERN ON THE CAMP RAVENNA JOINT MILITARY TRAINING CENTER IN RAVENNA, OHIO.

SCOPE OF WORK

U.S. Army Engineer District
Corps of Engineers
Louisville, Kentucky

US Army Corps of Engineers ®
Louisville District

leidos

Engineering of Ohio, Inc.

STATE OF OHIO
RICHARD SPRINZL
E-74889
REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: R. SPRINZL	APPROVED BY: J. THOMAS				CHECKED BY
DRAWN BY: P. HOLM	CHECKED BY: J. THOMAS				DRAWN BY
SCALE: NOT TO SCALE	C-1_RGL.DWG				DESCRIPTIONS
DATE: 01/15/2014	PROJECT NO. 13012\DWGS\P01_				DATE
					REV.

PROJECT:

DRAWING TITLE:

CLIENT:
US Army Corps of Engineers ®
Louisville District

leidos

C-1
DRAWING NUMBER

GENERAL NOTES

1. HEREINAFTER, THE TERM "SUBCONTRACTOR" IN THESE DESIGN DRAWINGS SHALL REFER TO THE ENTITIES (I.E., THE SUBCONTRACTOR AND/OR ITS SUBCONTRACTOR[S]) IMPLEMENTING THE RQL REMEDIAL DESIGN (RD) UNLESS OTHERWISE NOTED.
2. THE SUBCONTRACTOR SHALL COMPLETE ALL ACTIVITIES ASSOCIATED WITH THE PROJECT IN COMPLIANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND REQUIREMENTS.
3. THE SUBCONTRACTOR SHALL EXECUTE ALL REMEDIAL ACTIVITIES IN ACCORDANCE WITH THE RQL RD, DRAWINGS, SPECIFICATIONS, AND ATTACHMENTS.
4. THE SUBCONTRACTOR SHALL SUPPLY ALL EQUIPMENT, MATERIALS, AND LABOR TO PERFORM THE CONTRACT REQUIREMENTS INCLUDING ALL WORKER SAFETY EQUIPMENT.
5. THE SUBCONTRACTOR SHALL COMPLY WITH SITE ACCESS PROTOCOLS.
6. ACCESS TO CAMP RAVENNA SHALL BE THROUGH THE MAIN GATE POST 1 LOCATED OFF STATE ROUTE 5. THIS GATE IS GUARDED AND SHALL REQUIRE ADDITIONAL TIME TO GAIN ACCESS. THE SUBCONTRACTOR SHALL BE REQUIRED TO ALLOW FOR DELAYS WITHOUT ADDITIONAL CHARGES TO LEIDOS OR THE U.S. ARMY.
7. TOPOGRAPHIC MAPPING DATA IS BASED ON SURVEY AND AERIAL PHOTOGRAPH INFORMATION. MINOR DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS SHALL NOT BE CAUSE FOR ADDITIONAL PAYMENT. IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING CONDITIONS, ELEVATIONS, AND DIMENSIONS PRIOR TO THE START OF CONSTRUCTION AND NOTIFY LEIDOS OF CONFLICTS.
8. THE SUBCONTRACTOR SHALL REQUEST LEIDOS TO CONTACT THE OHARNG/ARNG RESTORATION REPRESENTATIVE AT LEAST 28 CALENDAR DAYS PRIOR TO CONSTRUCTION ACTIVITIES TO COORDINATE UTILITY SURVEY AND CLEARANCES. THE IDENTIFICATION AND LOCATION OF UTILITIES ON THESE DRAWINGS IS BASED ON BEST AVAILABLE INFORMATION AT TIME OF PREPARATION AND MAY NOT BE REPRESENTATIVE OF ACTUAL SITE CONDITIONS.
9. STORMWATER CONTROLS SHALL BE INSTALLED PRIOR TO INITIATION OF ANY CONSTRUCTION ACTIVITY THAT MAY CAUSE EROSION OR SEDIMENTATION. STORMWATER CONTROL MEASURES SHALL BE MAINTAINED AND REINSTALLED AS NECESSARY FOR THE DURATION OF CONSTRUCTION AND RESTORATION ACTIVITIES.
10. AT A MINIMUM THE SUBCONTRACTOR SHALL PLACE EROSION CONTROLS WHERE INDICATED ON THE DRAWINGS. ADDITIONAL CONTROLS MAY BE REQUIRED, DEPENDING ON SITE CONDITIONS. EROSION CONTROL MEASURES SHALL MEET ALL FEDERAL AND STATE REQUIREMENTS.
11. IF UNEXPECTED MATERIALS, SUCH AS MEC, SANITARY TRASH, BUILDING DEBRIS, ASBESTOS (E.G., TRANSITE), OR ARCHEOLOGICAL ARTIFACTS ARE DISCOVERED DURING REMEDIAL ACTIVITIES, THE SUBCONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY LEIDOS, WHO WILL THEN NOTIFY THE OHARNG/ARNG RESTORATION REPRESENTATIVE AND USACE COTR. THE SUBCONTRACTOR SHALL NOT RESUME WORK UNTIL APPROVAL IS GRANTED BY THE U.S. ARMY, LEIDOS, AND THE SITE SAFETY AND HEALTH OFFICER.
12. SHOULD THE SUBCONTRACTOR DISCOVER UTILITIES NOT SHOWN ON THE DRAWINGS, FENCING ACTIVITIES SHALL STOP IMMEDIATELY AND THE SUBCONTRACTOR SHALL NOTIFY LEIDOS. WHO WILL THEN NOTIFY THE OHARNG/ARNG RESTORATION REPRESENTATIVE AND USACE COTR, AND THE SUBCONTRACTOR SHALL DETERMINE THE DISPOSITION OF THE DISCOVERED UTILITY. THE SUBCONTRACTOR SHALL NOT RESUME WORK UNTIL APPROVAL IS GRANTED BY THE U.S. ARMY, LEIDOS, AND THE SITE SAFETY AND HEALTH OFFICER.
13. NO WORK SHALL TAKE PLACE DURING INCLEMENT WEATHER (AS DETERMINED BY THE LEIDOS CONSTRUCTION MANAGER) TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT RUNOFF.
14. DURING INSTANCES OF HIGH WINDS, WHICH COULD RESULT IN EXCESSIVE DUST, THE LEIDOS CONSTRUCTION MANAGER RESERVES THE RIGHT TO REQUIRE ADDITIONAL DUST CONTROL OR TO STOP WORK. THE SUBCONTRACTOR SHALL BE REQUIRED TO ALLOW FOR DELAYS WITHOUT ADDITIONAL CHARGES TO LEIDOS.
15. THE SUBCONTRACTOR SHALL NOT ALLOW HAUL TRUCKS TO TRACK SOIL/MUD ONTO PUBLIC OR CAMP RAVENNA ROADWAYS. THE SUBCONTRACTOR SHALL INSPECT ALL HAUL TRUCKS WITHIN THE INSPECTION AREA BEFORE RELEASE TO PUBLIC ROADS. ALL HAUL TRUCKS SHALL BE COVERED PRIOR TO DEPARTURE FROM THE PROJECT SITE.
16. THE SUBCONTRACTOR IS RESPONSIBLE FOR IMMEDIATELY REMOVING ANY MATERIAL SPILLED ON ROADWAYS OR TRACKED DURING IMPLEMENTATION OF THIS REMEDIAL DESIGN. THE SUBCONTRACTOR SHALL NOTIFY LEIDOS OF ANY OCCURRENCES.
17. ALL HAUL TRUCKS TRAVELING WITH WASTE ON PUBLIC ROADS SHALL HAVE A BILL OF LADING OR MANIFEST SIGNED BY THE OHARNG/ARNG RESTORATION REPRESENTATIVE.
18. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL CAMP RAVENNA, FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS FOR THE PROTECTION OF ALL PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS ALSO THE SUBCONTRACTOR'S RESPONSIBILITY TO INITIATE, MAINTAIN, AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK AND IN ACCORDANCE WITH THE RQL SITE SAFETY AND HEALTH PLAN (SSHP).
19. ALL SUBCONTRACTOR EMPLOYEES WORKING ON-SITE MUST ATTEND DAILY HEALTH AND SAFETY TAILGATE MEETINGS PRIOR TO THE START OF THE DAY'S CONSTRUCTION ACTIVITIES THAT WILL BE CONDUCTED BY THE LEIDOS CONSTRUCTION MANAGER AND THE SITE SAFETY AND HEALTH OFFICER.
20. LOCKOUT/TAGOUT PROCEDURES SHALL COMPLY WITH OSHA REQUIREMENTS.
21. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE NATIONAL ELECTRIC CODE.
22. ALL FUEL AND/OR PETROLEUM PRODUCTS (E.G., LUBRICANTS) SHALL BE STORED AT THE EQUIPMENT STAGING AREA WITHIN SECONDARY CONTAINMENT. FUEL STORAGE CONTAINERS WILL BE DOUBLE LEAK-PROOF WITH A REGULATORY STANDARD AMOUNT OF FREE-BOARD. ALL FUEL CONTAINERS AND/OR TANKS WILL BE PROPERLY PLACARDED AND SECURED ACCORDING TO OSHA AND DOT REGULATIONS AND ADEQUATE SPILL CLEANUP EQUIPMENT AND MATERIALS WILL BE MAINTAINED AT THE FUEL-STORAGE SITE.
23. ALL STORMWATER CONTROLS SHALL BE INSPECTED DAILY AND REPAIRED/REPLACED AS NEEDED.
24. THE PROJECT SITE IS CONSIDERED TO BE THE RAMSDELL QUARRY LANDFILL (RQL) AREA OF CONCERN (AOC).
25. THE SUBCONTRACTOR WILL PROVIDE ALL NECESSARY ON-SITE SPILL EQUIPMENT (E.G. GRANULATED CLAY, ABSORBENT BLANKETS, PPE, SHOVELS, CONTAINERS) IN A SAFE AND DRY LOCATION(S) READILY ACCESSIBLE TO ALL OF ITS EMPLOYEES OR RESPONDING PERSONNEL. ALL SUBCONTRACTOR EMPLOYEES ON-SITE SHALL BE TRAINED ON THE LOCATION(S), THE PROPER USE OF SPILL EQUIPMENT, CLEAN-UP TECHNIQUES AND DISPOSAL OF IMPACTED MATERIAL (E.G. SOILS) IN THE EVENT OF A SPILL.
26. REMEDIAL DESIGN WORK PLAN AND SPECIFICATIONS SUPERSEDE DRAWINGS DETAILS IN EVENT OF CONFLICTS.
27. UXO TECHNICIANS WILL BE ON-SITE THROUGHOUT THE REMEDIAL ACTIVITIES.
28. A SPILL KIT, FIRST AID KIT, AND SITE SPECIFIC SAFETY AND HEALTH PLAN (SSHP) SHALL BE MAINTAINED ON-SITE BY THE SUBCONTRACTOR DURING CONSTRUCTION ACTIVITIES. THE SUBCONTRACTOR IS RESPONSIBLE FOR KEEPING THE SPILL KIT AND FIRST AID KIT SUPPLIED AS NECESSARY.
29. PRIOR TO THE START OF DAILY CONSTRUCTION ACTIVITIES THE SITE HEALTH AND SAFETY OFFICER IN CONJUNCTION WITH THE UXO TECHNICIAN WILL CONDUCT AND RECORD DAILY TAILGATE MEETINGS ADDRESSING THE POTENTIAL HAZARDS ASSOCIATED WITH THE PLANNED CONSTRUCTION ACTIVITIES.

MATERIAL NOTES

1. EROSION AND SEDIMENTATION CONTROLS - PLACEMENT AND ANCHORING OF EROSION AND SEDIMENTATION CONTROL SHALL BE COMPLETED IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS, AND OHIO RAINWATER AND LAND DEVELOPMENT MANUAL (ODNR 2006).
2. FENCING MATERIALS SHALL MEET THE SPECIFICATIONS ON DRAWINGS C-4 AND C-5.

LIST OF SPECIFICATIONS

1. OHIO ARMY NATIONAL GUARD APPROVED GRASS SEED MIXES FOR OPEN AREA SEED MIXTURE FOR CAMP RAVENNA (PRESENTED IN SECTION 9 OF THE RD)

ESTIMATED RESTORATION MATERIAL QUANTITIES

MATERIAL TYPE	QUANTITY
STRAW WATTLES/BALES (L.F.)	50
SEED (LBS.)(3)	11

NOTES:

1. ASSUMING AN APPLICATION RATE OF 30 LBS./ACRE, IN CONSTRUCTION SUPPORT AREAS AND FENCE LINE.

LEGEND FOR ALL DRAWINGS

- TREE LINE
- ROADWAY
- ACCESS ROAD
- 2' CONTOUR
- 10' CONTOUR
- LANDFILL BOUNDARY (APPROX.)
- CONSTRUCTION BOUNDARY
- MRS BOUNDARY
- POTENTIAL MAXIMUM SURFACE WATER ELEVATION
- WETLAND AREA
- WATER, SURVEYED SEPT. 2007
- UTILITY POLE
- SURVEY CONTROL POINT
- MONITORING WELL LOCATION
- CHAIN LINK FENCE
- HIGH TENSILE WIRE FENCE
- P1 PHOTOGRAPH NUMBER WITH VIEW DIRECTION
- 1 / C-8 DETAIL WITH DRAWING SHEET NUMBER
- RAILROAD
- STONE – NO. 2
- HAUL TRUCK TRAFFIC ROUTE

△ SURVEY CONTROL POINT
5/8" x 30" CAPPED REBAR LABELED "KS ASSOCS INC. TRAVERSE"

STATE OF OHIO RICHARD SPRINZL E-74889 REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: R. SPRINZL
APPROVED BY: J. THOMAS
DRAWN BY: P. HOLM
CHECKED BY: J. THOMAS
SCALE: NOT TO SCALE
DATE: 06/10/2013
PROJECT NO.

REV.	DATE	DESCRIPTIONS	DRAWN BY	CHECKED BY

PROJECT:

DRAWING TITLE:

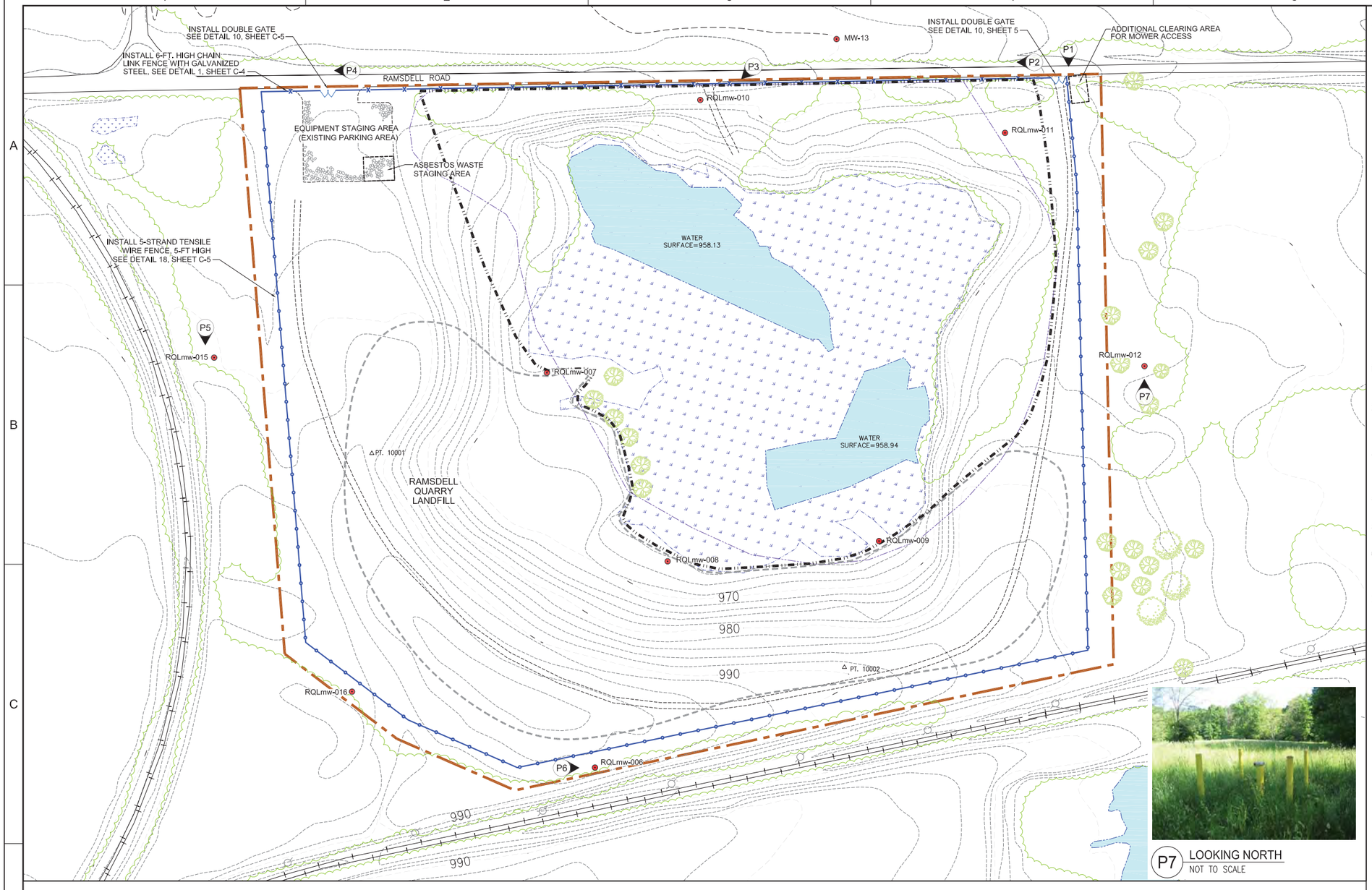
US Army Corps of Engineers® Louisville District

CLIENT:

leidos

C-2

DRAWING NUMBER



P7 LOOKING NORTH
NOT TO SCALE

LEGEND:

- TREE LINE
- ROADWAY
- ACCESS ROAD
- 2' CONTOUR
- 10' CONTOUR
- LANDFILL BOUNDARY (APPROX.)
- EXCLUSION ZONE & ACM SURVEY AND REMOVAL AREA
- CONSTRUCTION BOUNDARY
- MRS BOUNDARY
- POTENTIAL MAXIMUM SURFACE WATER ELEVATION
- WETLAND AREA
- WATER, SURVEYED SEPT. 2007
- UTILITY POLE
- SURVEY CONTROL POINT
- MONITORING WELL LOCATION
- CHAIN LINK FENCE
- HIGH TENSILE WIRE FENCE
- P1 PHOTOGRAPH NUMBER WITH VIEW DIRECTION

NOTES:

1. DRAWINGS AND NOTES SERVE ONLY AS GUIDELINES. ALL STORMWATER CONTROLS SHALL MEET OHIO'S "RAINWATER AND LAND DEVELOPMENT" STANDARDS.
2. CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN A MANNER TO MINIMIZE IMPACTS TO TREES AND GRASSY AREAS. DISTURBED AREAS WILL BE REGRADED AND RESEEDED AS NECESSARY.
3. ACCESS IMPROVEMENTS SHALL BE REQUIRED AS NEEDED TO SUPPORT CONSTRUCTION ACTIVITIES. IMPROVEMENTS SHALL PREVENT DUST, TIRE RUTTING, AND SEDIMENTATION TO LOW-LYING AREAS.
4. TREES AND VEGETATION SHALL BE MANAGED IN ACCORDANCE WITH SECTION 5 OF THE RQL RD.
5. THE MEC AVOIDANCE SPECIALIST WILL PROVIDE OVERSIGHT OF FENCE INSTALLATION.
6. THE SUBCONTRACTOR SHALL TAKE CARE TO PROTECT EXISTING MONITORING WELLS. THE SUBCONTRACTOR WILL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO WELLS AS A RESULT OF CONSTRUCTION ACTIVITIES.
7. THE SUBCONTRACTOR WILL PROVIDE PERMANENT WARNING SIGNS AROUND RAMSDELL QUARRY LANDFILL (RQL) ON THE GATES AND ON THE CHAIN LINK AND HIGH TENSILE WIRE FENCE AT 100 FOOT CENTERS TO WARN OF THE ASBESTOS-CONTAINING MATERIAL HAZARD IN THE QUARRY BOTTOM. APPROXIMATELY 35 SIGNS WILL BE INSTALLED AROUND THE PERIMETER OF RQL. THE SIGNS SHALL MEET THE REQUIREMENTS OF OHIO ADMINISTRATIVE CODE 3745-20-07(B)(1)(b) INCLUDING 20x14 INCH UPRIGHT FORMAT WARNING SITE AND DISPLAY THE FOLLOWING WITH LETTER SIZES OF AT LEAST ONE INCH "DANGER ASBESTOS WASTE DISPOSAL SITE DO NOT CREATE DUST BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH" (SEE DETAIL 11, SHEET C-5).

P1 LOOKING SOUTH
NOT TO SCALE

P2 LOOKING WEST
NOT TO SCALE

P3 LOOKING SOUTH-WEST
NOT TO SCALE

P4 LOOKING WEST
NOT TO SCALE

P5 LOOKING SOUTH
NOT TO SCALE

P6 LOOKING EAST
NOT TO SCALE

NORTH
0 25 50 100
SCALE: 1" = 50'

STATE OF OHIO RICHARD A. SPRINZL E-74889 REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: R. SPRINZL	APPROVED BY: J. THOMAS			CHECKED BY
DRAWN BY: P. HOLM	CHECKED BY: J. THOMAS			DRAWN BY
SCALE: 1" = 50'	C:\13012\DWGS\PX1_C-3_RQL.DWG		DESCRIPTIONS	
DATE: 04/07/2014	PROJECT NO.: 13012			DATE
				REV.

PROJECT: RAMSDELL QUARRY LANDFILL REMEDIAL DESIGN

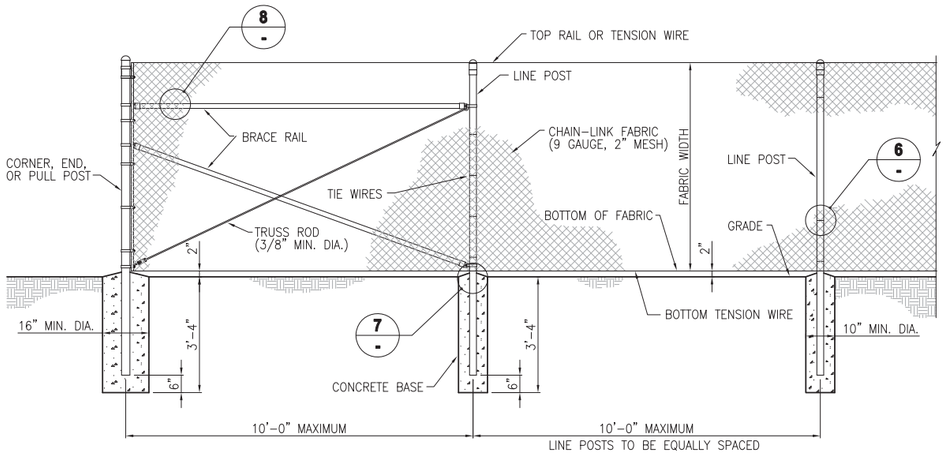
DRAWING TITLE: FENCE INSTALLATION PLAN

CLIENT: US Army Corps of Engineers Ravenna Army Ammunition Plant Ravenna, Ohio

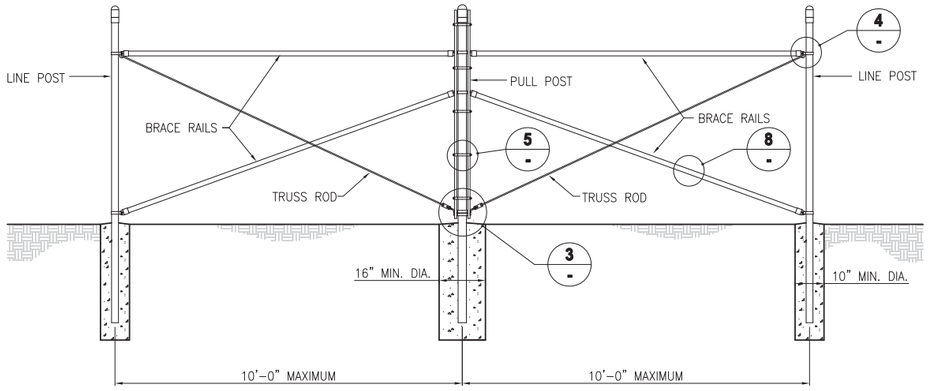
US Army Corps of Engineers® Louisville District

leidos

C-3
DRAWING NUMBER

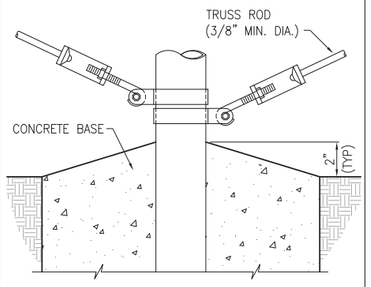


1 / C-3 FE5 CHAIN-LINK SECURITY FENCE DETAIL
SCALE: 1/2" = 1'–0"

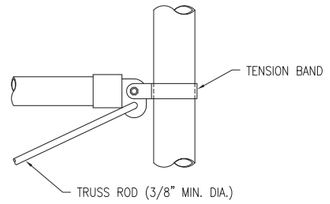


NOTE:
PROVIDE BRACE PANEL WHENEVER STRAIGHT RUNS EXCEED 500 FEET.

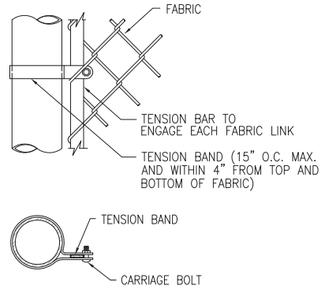
2 BRACE PANEL DETAIL
SCALE: 1/2" = 1'–0"



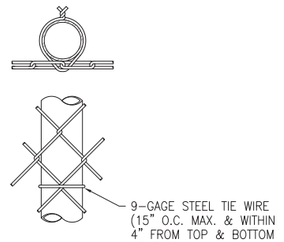
3 TRUSS ROD & BAND FASTENING DETAIL
SCALE: 3" = 1'–0"



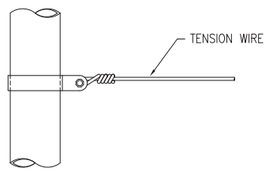
4 BRACE RAIL CLAMP DETAIL
SCALE: 3" = 1'–0"



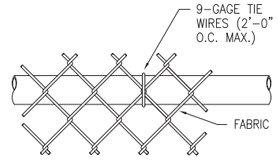
5 END OR GATE POST FASTENING DETAIL
SCALE: 3" = 1'–0"



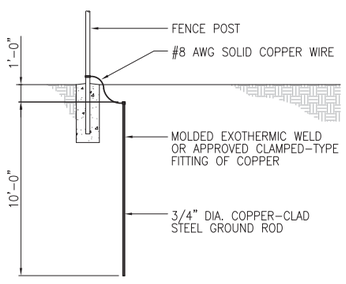
6 LINE POST ATTACHMENTS DETAIL
SCALE: 3" = 1'–0"



7 TENSION BAND DETAIL
SCALE: 3" = 1'–0"



8 TOP OR BRACE RAIL ATTACHMENT DETAIL
SCALE: 3" = 1'–0"



9 GROUNDING DETAIL
NOT TO SCALE

1.) FENCING SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02821A "FENCING". THE FENCE WILL CONSIST OF 72" WIRE FABRIC.

2.) WIRE TIES, RAILS, POSTS, AND BRACES SHALL BE CONSTRUCTED ON THE SECURE SIDE OF THE FENCE ALIGNMENT. CHAIN–LINK FABRIC SHALL BE PLACED ON THE OPPOSITE SIDE OF THE SECURE AREA.

3.) C–SECTION POSTS SHALL BE INSTALLED SO THAT THE VOID INSIDE THE POST IS COMPLETELY FILLED WITH CONCRETE UP TO THE TOP OF THE FOUNDATION.

4.) FOR POST DATA SEE STEEL POST SCHEDULE.

	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)
USE AND SECTION	FABRIC 72"
CORNER, END & PULL POSTS TUBULAR – ROUND	2.375" O.D.
LINE POSTS TUBULAR – ROUND	1.90" O.D.
TOP, BOTTOM & BRACE RAILS TUBULAR – ROUND	1.66" O.D.

STATE OF OHIO · RICHARD A. SPRINZL · E-74889 · REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: R. SPRINZL	APPROVED BY: J. THOMAS		CHECKED BY
DRAWN BY: P. HOLM	CHECKED BY: J. THOMAS		DRAWN BY
SCALE: NOT TO SCALE		DESCRIPTIONS	
DATE: 01-16-2014			DATE
PROJECT NO.			REV.

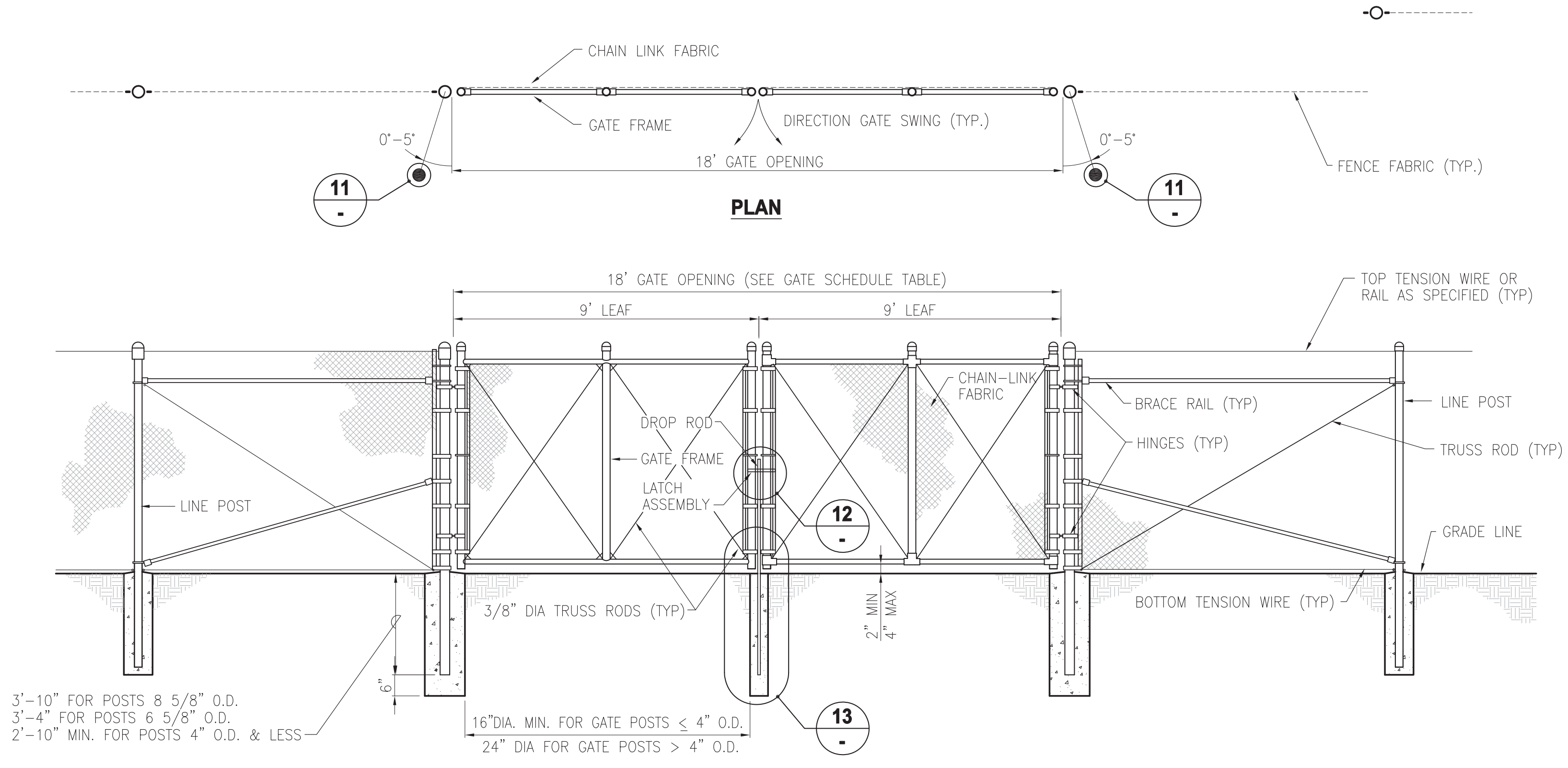
PROJECT:

DRAWING TITLE:

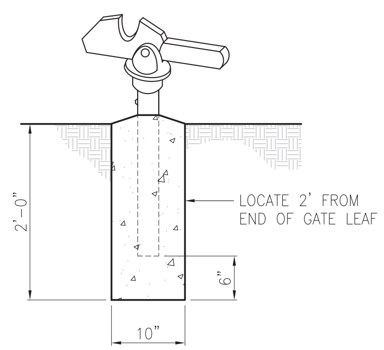
CLIENT: US Army Corps of Engineers® Louisville District

leidos

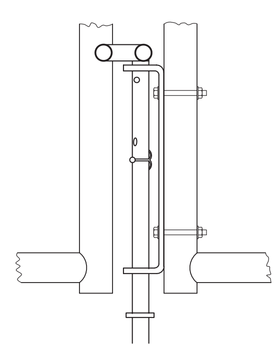
C-4
DRAWING NUMBER



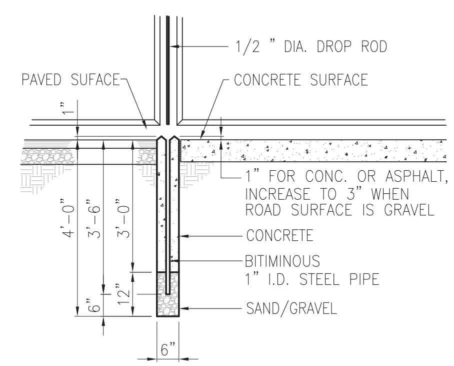
10 / C-3 DOUBLE SWING GATE (TYPE FE5 FENCE) DETAIL
SCALE: 1/2" = 1'-0"



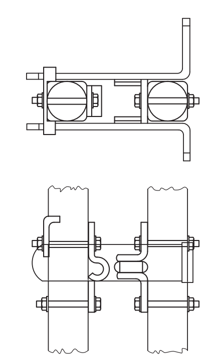
11 / - GATE KEEPER DETAIL (TO HOLD GATE OPEN)
NOT TO SCALE



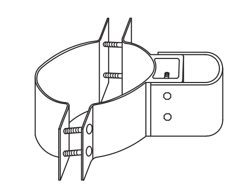
12 / - DROP ROD ASSEMBLY DETAIL
NOT TO SCALE



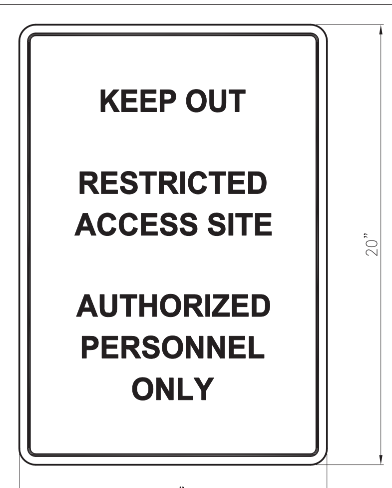
13 / - DROP ROD FOUNDATION DETAIL
NOT TO SCALE



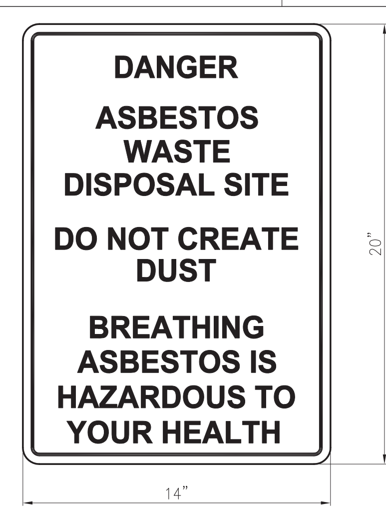
14 / - LATCH ASSEMBLY DETAIL
NOT TO SCALE



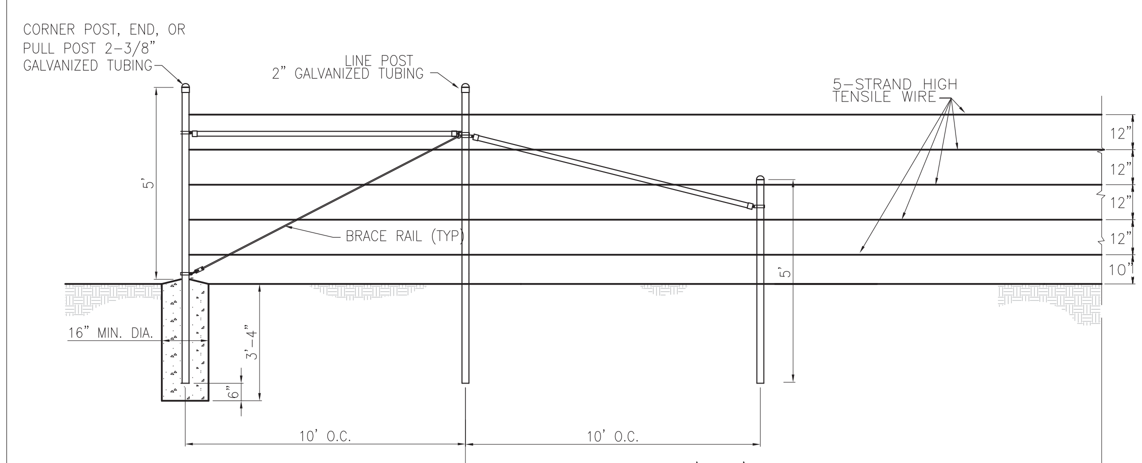
15 / - STANDARD HINGE DETAIL
NOT TO SCALE



16 / - WARNING SIGN DETAIL
NOT TO SCALE



17 / - WARNING SIGN DETAIL
NOT TO SCALE



18 / C-3 5-STRAND HIGH TENSILE WIRE FENCE DETAIL & BRACE ASSEMBLY
SCALE: 1/2" = 1'-0"

1. DETAILS SHOWN ARE TO CLARIFY REQUIREMENTS AND ARE NOT INTENDED TO LIMIT OTHER TYPE OF FENCE SECTIONS AND METHODS OF INSTALLATION.
2. SWING GATES SHALL BE CONSTRUCTED WITH DROP RODS, PADLOCKS, LATCH ASSEMBLY AND GATE KEEPERS EXCEPT AS NOTED.
3. ALL GATE FRAMES SHALL BE A MINIMUM 1.90" NOMINAL (ROUND). GATE FRAMES SHALL BE OF WELDED CONSTRUCTION OR SHALL BE ASSEMBLED USING HEAVY FITTINGS. AT CONTRACTOR'S OPTION A WELDED HORIZONTAL BRACE MAY BE USED IN LIEU OF TRUSS RODS TO BRACE ALL WELDED GATE FRAMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER RIGID CONSTRUCTION OF ALL GATES SUPPLIED.
4. GATES SHALL BE DESIGNATED AS FOLLOWS: FENCE TYPE - FE5, FENCE HEIGHT - 72 INCHES, TYPE OPENING - SO (SINGLE) & DO (DOUBLE)HINGE - RA (STANDARD)OPENING - SEE GATE SCHEDULE TABLE EXAMPLES: FE5-48-SO-HO-6.
5. THE CHAIN LINK FENCE THE SPACING OF END OR CORNER PANEL AND BRACE PANEL OF 10' AND 9' IS MAXIMUM. WHEN CORNER OR END PANEL CONFLICTS WITH A GATE, BRACE PANELS, OR TWO CORNER PANELS CONFLICT, BRACING AND SPACING OF POSTS SHALL BE ALTERED TO PROVIDE ADEQUATE BRACING AS REQUIRED.

GATE LEAF WIDTH (NOMINAL)	OUTSIDE DIMENSION (NOMINAL)
6' OR LESS	2.875" OD
MORE THAN 6' TO 13'	4.0" OD
MORE THAN 18'	8.625" OD

STATE OF OHIO
RICHARD SPRINZL
E-74889
REGISTERED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTIONS	DRAWN BY	CHECKED BY

DESIGNED BY: R. SPRINZL
APPROVED BY: J. THOMAS
DRAWN BY: P. HOLM
CHECKED BY: J. THOMAS
SCALE: NOT TO SCALE
PROJECT NO.: 13012/DWGS/P01_C-5_RDL.DWG
DATE: 03/07/2014

PROJECT:

DRAWING TITLE:

US Army Corps of Engineers® Louisville District

CLIENT:

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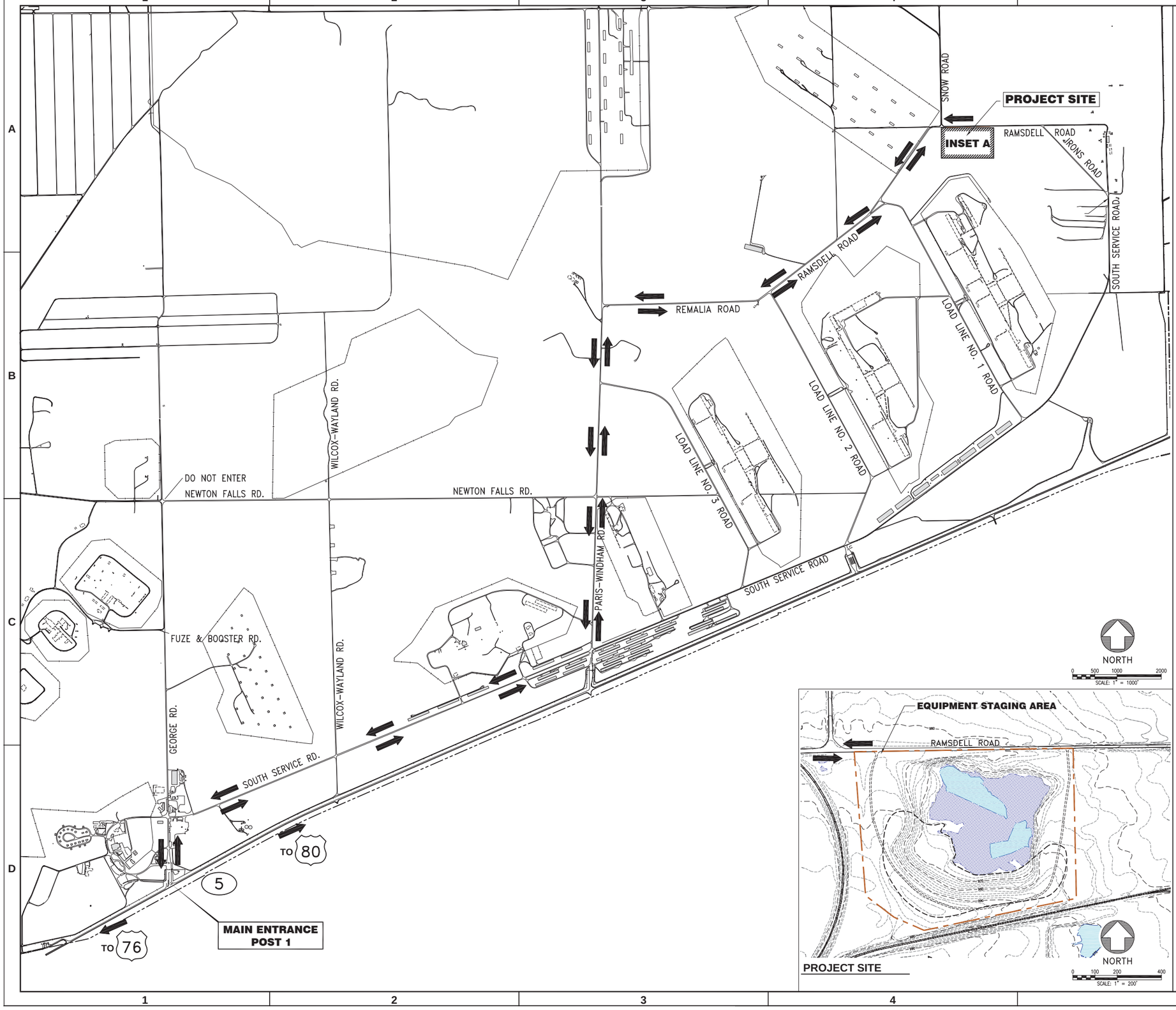
C-5
DRAWING NUMBER



PROJECT SITE

FENCE
ROADWAY
CONSTRUCTION BOUNDARY
EXISTING BUILDING
FORMER BUILDING LOCATION
TRUCK TRAFFIC ARROW

1. ALL VEHICLES MUST ENTER CAMP RAVENNA THROUGH THE MAIN ENTRANCE POST 1 (8451 STATE RT. 5, RAVENNA, OHIO 44266).
2. ALL VEHICLES AND CONTENTS ARE SUBJECT TO SEARCH AND INSPECTION.
3. WEAPONS OR ALCOHOL ARE NOT ALLOWED ONSITE. PROHIBITED ITEMS MAY BE LEFT WITH SECURITY WHILE ONSITE. SECURITY WILL CONFISCATE ANY PROHIBITED ITEMS DISCOVERED DURING INSPECTIONS.
4. ALL PERSONNEL ENTERING CAMP RAVENNA MUST COMPLETE SECURITY FORMS AND COORDINATE ENTRY WITH VISTA SCIENCES CORPORATION (330-872-8010) AND OHARNG BEFORE ARRIVING AT THE FACILITY.
5. ALL ON-ROAD HAUL TRUCKS WILL ADHERE TO ODOT TRANSPORTATION GUIDELINES. THE SUBCONTRACTOR IS RESPONSIBLE FOR ENSURING TRUCKS DO NOT EXCEED 80,000 lbs GROSS WEIGHT.
6. ALL HAUL TRUCKS WILL HAVE OPERATIONAL LOAD COVERS IN GOOD CONDITION (I.E., FREE OF HOLES, TEARS). LOADS WILL BE COVERED PRIOR TO DEPARTING THE PROJECT AREA AND WILL STAY IN PLACE UNTIL UNLOADING AT THE APPROVED DISPOSAL SITE.
7. ON-ROAD HAUL TRUCKS HAULING ASBESTOS WASTE SHALL BE LINED AND SEALED IN ACCORDANCE WITH THE APPROVED DISPOSAL FACILITY REQUIREMENTS. CLASS 9 PLACARDING IS REQUIRED FOR HIGHWAY TRUCKS HAULING ASBESTOS.
8. SPEED LIMITS WILL BE MAINTAINED AS POSTED AROUND THE MAIN ENTRANCE AREA OF THE FACILITY. SPEED LIMITS OF 35 MILES PER HOUR (MPH) DURING DAYLIGHT HOURS AND 25 MPH AT NIGHT WILL BE MAINTAINED ON ALL CAMP RAVENNA MAIN ROADS.
9. ROADS SHALL NOT BE BLOCKED. CAMP RAVENNA TRAFFIC SHALL BE MAINTAINED ON AT LEAST ONE HALF OF THE ROADWAY WIDTH AT ALL TIMES.
10. SUBCONTRACTOR SHALL CONFIRM NO OVERHEAD HAZARDS (I.E., POWER LINES), MANHOLES, AND WATER VALVES WILL IMPEDE REMEDIAL ACTIVITIES.
11. THE SUBCONTRACTOR WILL BE RESPONSIBLE TO REPAIR ANY DAMAGES TO CAMP RAVENNA ROADS AS A RESULT OF HIS OR HIS SUBCONTRACTORS ACTIONS.

STATE OF OHIO
RICHARD SPRINZL
E-74889
REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: R. SPRINZL
APPROVED BY: J. THOMAS
DRAWN BY: P. HOLM
CHECKED BY: J. THOMAS
SCALE: 1" = 1000'
DATE: 01/16/2014
PROJECT NO.

REV.	DATE	DESCRIPTIONS	DRAWN BY	CHECKED BY

PROJECT:

DRAWING TITLE:

CLIENT:

US Army Corps of Engineers®
Louisville District

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C-6
DRAWING NUMBER

ATTACHMENT D
LAND USE CONTROL REMEDIAL DESIGN
(FOR INSERTION TO APPENDIX A OF THE PROPERTY MANAGEMENT PLAN)

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LIST OF EACH AOC/MRS (WITH LUCS) IN APPENDIX A, SPECIFIC LUCS, AND REVISION DATES

AOC/MRS	Appendix Section	Land Use Controls	Date Section added to the PMP	Revision or Update
RVAAP-01 Ramsdell Quarry Landfill	A-2	The LUCs for the RQL AOC are as follows: • Maintenance of the 6 ft high chain-link security fence at the northern perimeter of RQL and a five-strand, high tensile wire fence at the eastern, southern, and western perimeters. Maintenance of the closed sanitary landfill. • All activities must be in compliance with established digging restrictions and established exposure limits. o All digging or excavation within the quarry bottom is prohibited due to the residual asbestos and contamination. o Digging and excavation on the landfill cap is regulated by the post-closure care plan and the Ohio solid waste regulations. • Permanent warning signs will be installed and maintained around RQL on the gates and on the chain-link and high tensile wire fence at 300 ft centers to warn of the ACM hazard in the quarry bottom. The signs will meet the requirements of OAC 3745-20-07(B)(1)(b). • As no soil disturbing activities are allowed within the quarry bottom, OSHA asbestos awareness training set forth at 29 CFR 1926.1101(k)(9)(vii) is not required. Any personnel entering the quarry bottom will be briefed of the asbestos hazards.		

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APPENDIX A-2: RAMSDELL QUARRY LANDFILL – (RVAAP-01)

A-2.1. BACKGROUND

Ramsdell Quarry Landfill (RQL) was initially a stone quarry that operated until 1941. During operations, the quarry was excavated 30 to 40 ft below existing grade. The excavated sandstone and quartzite pebble conglomerate was used for road and construction ballast. From 1946 to the 1950s, the bottom of the quarry was used to burn waste explosives from Load Line 1. Reportedly, 18,000 500-lb (225-kg) incendiary or napalm bombs were burned and liquid residues from annealing operations were disposed of in the quarry.

Between 1941 and 1989, the western and southern sections of the abandoned quarry were used for landfill operations. No information is available regarding landfill disposal activities from 1941 to 1976, and no information is available on other activities at the quarry from the 1950s to 1976. Only nonhazardous solid waste was deposited in RQL from 1976 until it was closed in 1989. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the State of Ohio. The sanitary landfill was closed in 1990 under State of Ohio solid waste regulations. A clay cap was placed on the former permitted landfill area covering approximately 4 acres of the AOC.

A-2.2. PUBLICATIONS

The following publications can be located on www.rvaap.org or in established information repositories:

- Final Record of Decision Amendment for the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 24 May 2012.

- Revised Final Modified Proposed Plan for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC 2012. 6 June 2012.

- Final Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 2 September 2011.

- Revised Final Remedial Design for RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 17 June 2010.

- Final Record of Decision for the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 24 March 2009.

- Wetlands and Other Waters Delineation Report Remedial Action Areas at Ramsdell Quarry Landfill, Load Line 12, and Fuze and Booster Quarry Landfill/Ponds at the Ravenna Army

Ammunition Plant and Ravenna Training and Logistics Site, Ravenna, Ohio. EnviroScience. 29 December 2008.

- Final Proposed Plan for Soil and Dry Sediment at Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. March 2007

- Revised Final Feasibility Study for Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. October 2006.

- Final Sampling and Analysis Plan Addendum No. 2 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. June 2006

- Final Phase I Remedial Investigation Report for Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. September 2005

- Final Project Management Plan Performance-Based Contract for Six Environmental Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 14 July 2005

- Final Phase I Remedial Investigation December 2004 Follow-On Groundwater Sampling at RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. June 2005.

- Final Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. October 2003.

- Final Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. October 2003.

- Final Report on the Groundwater Investigation of the Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. August 2000.

- April 1999 Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 4 June 1999.

- Final February 1999 Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. 15 April 1999.

- Final Initial Phase Report, Groundwater Investigation, Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. January1999.

- Final October 1998 Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation at the Ravenna Army Ammunition Plant, Ravenna, Ohio. 30 December 1998.

- Final Sampling and Analysis Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. SAIC. June 1998.

- Final Closure Inspection of RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Ohio EPA. September 1990.

A-2.3. SITE LOCATION AND DESCRIPTION

RQL encompasses approximately 14 acres in the northeastern portion of Camp Ravenna. RQL includes old-field communities with patches of forests and grasslands. The land surface in a large portion of the AOC slopes into a former quarry, which occupies most of the AOC. The quarry bottom is about 40 ft below the surrounding area. Former quarry operations resulted in the removal of much of the original soil.

Surface water runoff collects in an isolated wetland in the bottom of the former quarry. There is no surface water drainage outlet from the quarry. When water is present in the wetland, the water depth is usually less than 4 ft. The drainage ways and ditch lines outside of the quarry, located along access roads and the former rail line in the southern part of the AOC, only contain water during rain events.

A-2.4. LAND USE

RQL will be managed as restricted access due to residual asbestos and contamination and the closed landfill at the AOC.

A-2.5. REMEDY OBJECTIVES

Where applicable, the previously applied remedies at RQL consisted of excavation of contaminated soil and installation of the fence to preclude likely exposure through human contact. Following these remedies, hazardous substances, pollutants, or contaminants remained at levels greater than those that allow unlimited use and unrestricted exposure. Therefore a component of the remedial action includes Land Use Controls (LUCs) (see item A-2.6 below). Because LUCs will be used as part of the remedy, any property owner subsequent to the federal government will be required to enter into an environmental covenant meeting the requirements of ORC Section 5301.82.

A-2.6. LAND USE CONTROLS

The RQL AOC-specific LUCs were designed considering specific parameters developed for Restricted Access. The LUCs for RQL are as follows:

- All activities must be in compliance with established digging restrictions and established exposure limits.
  - All digging or excavation within the quarry bottom is prohibited due to the residual asbestos and contamination.
  - Digging and excavation on the landfill cap will be regulated by the post-closure care plan and the Ohio solid waste regulations.
- Permanent warning signs will be installed and maintained around RQL on the gates and on the chain-link and high tensile wire fence at 300 ft centers to warn of the ACM hazard in the quarry bottom. The signs will meet the requirements of OAC 3745-20-07(B)(1)(b).
- As no soil disturbing activities are allowed within the quarry bottom, OSHA asbestos awareness training set forth at 29 CFR 1926.1101(k)(9)(vii) is not required. Any personnel entering the quarry bottom will be briefed of the asbestos hazards.

A-2.7. MONITORING AND REPORTING

Periodic monitoring of LUCs, in the form of site inspections, will be conducted by the Army to confirm that the LUCs remain effective and still meet LUC objectives for continued remedy protectiveness. Site inspections will be conducted on an annual basis. Inspections of the solid waste landfill will be conducted in accordance with State of Ohio solid waste regulations and the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* (Ohio EPA 2004).

The Annual RQL-LUC Inspection Reports will be submitted to the Ohio EPA for review and approval as they are completed. The RQL-LUC Inspection Forms for RQL and other AOCs/MRSs will be summarized in an Annual LUC Report for each year. The Annual LUC Report will be submitted to the Ohio EPA for review and approval.

The Annual LUC Report will evaluate the status and effectiveness of LUCs with a description of how any LUC deficiencies or inconsistent uses were addressed. The Annual LUC Reports will be used in part for the preparation of the CERCLA 121(c) Five-Year Review. As part of the Annual LUC Report, a written certification will be submitted stating whether or not the LUCs remain in place and are effective.

ATTACHMENT E
SITE SAFETY AND HEALTH PLAN

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Final

Remedial Design
for Soil and Dry Sediment
at RVAAP-01 Ramsdell Quarry Landfill
Attachment E: Site Safety and Health Plan

Ravenna Army Ammunition Plant
Ravenna, Ohio

GSA Contract No. GS-10F-0076J
Delivery Order No. W912QR-12-F-0020

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

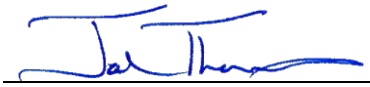
leidos

Leidos Engineering of Ohio, Inc.
8866 Commons Boulevard
Twinsburg, Ohio 44087

April 9, 2014

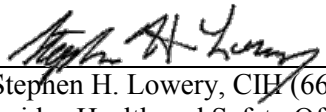
APPROVALS

Site Safety and Health Plan
Remedial Design for Soil and Dry Sediment
at RVAAP-01 Ramsdell Quarry Landfill
Ravenna Army Ammunition Plant, Ravenna, Ohio



Jed Thomas, PE
Leidos Project Manager
330-405-5802

3/23/2014
Date



Stephen H. Lowery, CIH (6620 CP)
Leidos Health and Safety Officer
405-701-3158

3/23/2014
Date

J.M. Crenshaw
ECI Operation HS Manager
865-406-2659

3/23/2014
Date

Final

Remedial Design
for Soil and Dry Sediment
at RVAAP-01 Ramsdell Quarry Landfill

Attachment E: Site Safety and Health Plan
Version 1.0

Ravenna Army Ammunition Plant
Ravenna, Ohio

GSA Contract No. GS-10F-0076J
Delivery Order No. W912QR-12-F-0020

Prepared for:
U.S. Army Corps of Engineers
600 Martin Luther King, Jr. Place
Louisville, Kentucky 40202

Prepared by:
Leidos Engineering of Ohio, Inc.
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Twinsburg, Ohio 44087

April 9, 2014

TABLE OF CONTENTS

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ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-containing Material
AOC	Area of Concern
bgs	below ground surface
Camp Ravenna	Camp Ravenna Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Chemical of Concern
CPR	Cardiopulmonary Resuscitation
EH&S	Environmental Health and Safety
EM	Engineer Manual
ER	Engineering Regulation
ft	feet
FWSHP	Facility-wide Safety and Health Plan
HHRA	Human Health Risk Assessment
kg	kilogram
lb	pound
m	meter
MEC	Munitions and Explosives of Concern
Ohio EPA	Ohio Environmental Protection Agency
PPE	Personal Protective Equipment
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RQL	Ramsdell Quarry Landfill
RVAAP	Ravenna Army Ammunition Plant
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
USACE	U.S. Army Corps of Engineers
U.S. Army	U.S. Department of the Army

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1.0 INTRODUCTION

Leidos has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District, to provide environmental services to attain Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory closure at the Ramsdell Quarry Landfill (RQL) area of concern (AOC) within the former Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. The Remedial Design (RD) describes the implementation process for the selected modified remedy for soil and dry sediment at RQL as stated in the *Record of Decision (ROD) Amendment for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013).

This work is being performed in accordance with U.S. General Services Administration Environmental Advisory Services Contract GS-10-F-0076J, Delivery Order W912QR-12-F-0020. In addition, planning and performance of all work is being conducted in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* dated June 10, 2004 (Ohio EPA 2004).

1.1 PURPOSE

The purpose of this site safety and health plan (SSHP) is to describe potential hazards that may be encountered during the implementation of the *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2014) and provide a hazard risk analysis. This SSHP will also outline staff organization, qualifications, responsibilities, and training requirements; identify required personal protective equipment (PPE); and present monitoring and standard operating procedures needed to implement the RD.

1.2 SCOPE

Two separate field mobilization activities are covered under this SSHP: (1) cleanup and disposal of asbestos-containing material (ACM) exposed at the quarry bottom by a Subcontractor; and (2) installation of a fence around the perimeter of the landfill that encompasses (but does not disturb) the quarry bottom by a Subcontractor. These activities will be performed independently of each other so as not to expose fence installation workers to ACM during cleanup activities. Fence workers are not at risk of being exposed to ACM during installation activities. The SSHP scope covers all health and safety components of fence installation activities and should be used in conjunction with Appendix E.2: Asbestos Abatement Plan, for the ACM cleanup and disposal activities. The following elements of the fence installation (as presented in the RD) are covered under this SSHP:

- Pre-mobilization activities for fence installation (e.g., fence line staking, utility clearance),
- Mobilization and site setup (e.g., clearing and grubbing, installing storm water controls),
- Munitions and explosives of concern (MEC) avoidance support activities;

- Installing chain-link and high tensile wire fence and access gates around AOC perimeter;
- Installing asbestos warning signs on perimeter security fence;
- Restoring the site (e.g., re-grading, seeding); and
- Demobilization.

The fence will be installed outside the quarry bottom with the identified ACM and the closed sanitary landfill. Health and safety precautions for removing, transporting, and disposing surficial ACM using non-intrusive, no digging methods (e.g., removal by hand) within quarry bottom are to be conducted in accordance with Appendix E.2: Asbestos Abatement Plan.

1.3 POTENTIAL HAZARDS AND EXPOSURE

Potential hazards posed by the planned tasks include injury from ordnance and explosives, lifting, heavy equipment, noise, fuel fires, chemical exposure, temperature extremes, stinging/biting insects, poisonous plants, drowning, snakes, and asbestos exposure (only for workers performing ACM removal).

The potential for chemical overexposure appears to be very low, based on the nature of planned tasks and review of available data. The Subcontractor Site Safety and Health Officer (SSHO) will observe all site tasks during daily safety inspections and will use professional judgment and appropriate monitoring results to determine if upgrading PPE is required. A detailed analysis of these hazards and specific appropriate controls is presented in Table 3-3.

Activities performed during the fence installation will be performed in Level D PPE, and personnel will use chemical-resistant gloves when handling potentially contaminated materials. If one of several action levels is exceeded or the potential for increased risk becomes apparent during field activities, protective procedures and protective clothing will be upgraded as necessary by the SSHO. PPE requirements for the ACM cleanup are presented in Appendix E.2: Asbestos Abatement Plan.

1.4 HEALTH AND SAFETY PROGRAM

Leidos formal policy, stated in the Environmental Health and Safety (EH&S) Program manual, is to take every reasonable precaution to protect the health and safety of our employees, the public, and the environment. To this end, the former Ravenna Army Ammunition Plant (RVAAP) *Facility-Wide Safety and Health Plan for Environmental Investigations* (USACE 2011) (herein referred to as the FWSHP) and this SSHP collectively set forth the specific procedures required to protect Leidos personnel involved in field activities. These plans are driven by requirements contained in the most current revisions of the USACE *Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, Engineering Regulation (ER)-385-1-92* (USACE 2007a)*; Safety and Health Requirements for Munitions and Explosives of Concern Operations, ER-385-1-95* (USACE 2007b)*;* and the USACE *Safety and Health Manual, Engineer Manual (EM)-385-1-1* (USACE 2008), which are available online via the USACE web site. Leidos activities are also subject

to the requirements of the Leidos Corporate EH&S Program and associated procedures. All field personnel are required to comply with the requirements of these programs and plans.

In addition, Subcontractors are responsible for providing their employees with a safe work place, and these plans do not relieve Subcontractors of this responsibility. Subcontractors must have and use their own safety programs and plans in compliance with applicable regulations. This SSHP was developed in accordance with Ohio Administrative Code 3745-20-01 and 3745-20-05, 40 Code of Federal Regulations (CFR) Part 763; and USACE Safety and Health Requirements Manual (EM) 385-1-1. An Asbestos Abatement Plan that was developed in accordance with EM 385-1-1 section 06.B.05 (2) and 29 CFR 1926.1101 is included as Appendix E.2.

The FWSHP addresses program issues and hazards and hazard controls common to the entire installation. This SSHP serves as a lower tier document to the FWSHP that addresses the hazards and controls specific to implementation of the *Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2014). Copies of the FWSHP and this SSHP will be present at the work site during all fieldwork.

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2.0 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

2.1 FACILITY DESCRIPTION

The facility, consisting of 21,683 acres, is located in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 kilometers (3 miles) east/northeast of the City of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the City of Newton Falls. The facility, previously known as RVAAP, was formerly used as a load, assemble, and pack facility for munitions production. As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the United States Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard for use as a military training site (Camp Ravenna). References in this document to RVAAP relate to previous activities at the facility as related to former munitions production activities or to activities being conducted under the restoration/cleanup program.

2.2 RAMSDELL QUARRY LANDFILL DESCRIPTION

RQL encompasses approximately 14 acres in the northeastern portion of Camp Ravenna. RQL was initially a stone quarry that operated until 1941. During operations, the quarry was excavated 30-40 ft below existing grade. The excavated sandstone and quartzite pebble conglomerate was used for road and construction ballast. From 1946 to the 1950s, the bottom of the quarry was used to burn waste explosives from Load Line 1. Reportedly, 18,000 225-kg (500 lb) incendiary or napalm bombs were burned and liquid residues from annealing operations were disposed of in the quarry.

Between 1941 and 1989, the western and southern sections of the abandoned quarry were used for landfill operations. No information is available regarding landfill disposal activities from 1941 to 1976, and no information is available on other activities at the quarry from the 1950s to 1976. Only nonhazardous soil waste was deposited in RQL from 1976 until it was closed in 1989. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the state of Ohio. The sanitary landfill was closed in 1990 under state of Ohio solid waste regulations. A clay cap was placed on the former permitted landfill area that covers approximately four acres of the AOC. The installation and semi-annual monitoring of five groundwater monitoring wells were required for closure of the landfill.

RQL is currently managed as a restricted access area due to a closed landfill and the potential for MEC. Therefore, RQL is not used for military training activities. Current activities at RQL may include surveying, sampling, and other essential security, safety, and natural resources management activities.

2.3 PREVIOUS ACTIVITIES

A groundwater investigation (USACE 1999) was conducted in July 1998 that involved: (1) the installation and subsequent sampling of six new monitoring wells; (2) sampling the existing RQL landfill post-closure monitoring well system; (3) sampling the sediment and surface water within the

quarry; and (4) constructing a staff gauge within the main quarry pond. The follow-on phase of the investigation, which extended until July 15, 1999, included: (1) quarterly, dry season and wet season (storm event) sampling of the new monitoring well network and quarry pond surface water; (2) collecting long-term water levels from the new monitoring well network and quarry pond; (3) measuring monthly manual water levels from all wells and the pond staff gauge; and (4) collecting precipitation data.

A Phase I Remedial Investigation (RI) (USACE 2005b) was performed from 2003 to 2004 to determine the nature and extent of contamination in affected media (e.g., surface soils [0-1 ft below ground surface (bgs)] and groundwater). Data collected from the RI was used to conduct a quantitative baseline human health risk assessment (HHRA) and ecological risk assessment and to define the nature and extent of contamination at RQL. The *Feasibility Study for Ramsdell Quarry* (RVAAP-01) (USACE 2006) identified benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene as soil chemicals of concern (COCs) in the HHRA. The HHRA estimated the risks associated with dermal exposure to soil by a Security Guard/Maintenance Worker visiting the site 250 days a year for 25 years wearing short sleeves and operating heavy equipment.

Soil removal activities were initiated in accordance with the *Record of Decision for Soil and Dry Sediment for the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2009) and *Remedial Design for the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2010) in July 2010 to reduce the risk level to below acceptable risk levels for the Security Guard/Maintenance Worker. Soil was excavated at the northeastern edge of the quarry bottom. During soil removal activities, a large amount of construction and miscellaneous debris was encountered between the surface layer and bedrock (approximately 1-2 ft bgs). Some of the debris (e.g., transite and roofing materials) was suspected to contain asbestos; therefore, the materials were sampled and sent for analysis for asbestos. Results revealed that the transite and roofing materials within the excavation were ACM, containing greater than 1% asbestos. Approximately 1,100 tons of soil and construction debris (all considered friable ACM) were removed from RQL and transported and disposed offsite.

After site restoration, soil removal activities ceased and the U.S Department of the Army (U.S. Army) and Ohio EPA agreed to re-evaluate the remedial alternatives as a Fundamental Post-ROD Change. The re-evaluation of alternatives identified Alternative 8: Perimeter Fence as the newly selected remedial alternative that will be implemented in accordance with the *Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2014).

2.4 CONTAMINANTS

Table 2-1 lists COCs for the Resident Farmer and their respective maximum concentrations detected with discrete and Incremental Sampling Methodology in soil and dry sediment samples during the RI. Asbestos has also been identified as a hazard for the abatement activities and is discussed in further detail in Appendix E.2: Asbestos Abatement Plan. Asbestos is not identified as a hazard for the fence

installation activities, as the fence will be installed away from the ACM located within the quarry bottom.

Table 2-1. RQL Maximum Concentrations of Chemicals of Concern for Resident Farmer

Analyte	Units	RQL Maximum Detect
Metals		
Arsenic	mg/kg	30
Lead	mg/kg	3710
Semi-volatile Organics		
Benz(a)anthracene	mg/kg	1400
Benzo(a)pyrene	mg/kg	960
Benzo(b)fluoranthene	mg/kg	1200
Benzo(k)fluoranthene	mg/kg	580
Carbazole	mg/kg	460
Chrysene	mg/kg	1000
Dibenz(a,h)anthracene	mg/kg	180
Indeno(1,2,3-cd)pyrene	mg/kg	630

mg/kg = Milligram per kilogram.

RQL = Ramsdell Quarry Landfill.

Data is from *Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill (RVAAP-01).* Ravenna Army Ammunition Plant. September 2005, and *Feasibility Study for Ramsdell Quarry Landfill at Ravenna Army Ammunition Plant in Ravenna, Ohio.* March 2006. Airborne contaminate calculations were conducted using the maximum detected concentrations. Results, with the exception of lead, were too low to represent an airborne exposure health risk. Lead concentrations in dust are approximately equivalent to the nuisance dust permissible exposure limit (PEL) of 10 mg/kg indicating if visible dust is generated in RQL-039M during remedial activities there is a potential exposure to lead at the Occupational Safety and Health Administration (OSHA) PEL.

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3.0 HAZARD/RISK ANALYSIS

The purpose of the task hazard/risk analysis is to identify and assess potential hazards that may be encountered by personnel and to prescribe required controls. Table 3-1 presents a general checklist of hazards that may be posed by this project and indicates whether a particular major type of hazard is present. If additional tasks or significant hazards are identified during the work, this document will be modified by an addendum or field change order to include the additional information.

Table 3-1. Hazards Inventory

Yes	No	Hazard
	X	Confined space entry
	X	Excavation entry (excavation will be entered)
X		Heavy equipment (backhoe, powered auger, skidsteer)
X		Fire and explosion (fuels)
X		Electrical shock (utilities and tools)
X		Exposure to chemicals (contaminants and chemical tools)
X		Temperature extremes
X		Biological hazards (poison ivy, Lyme disease, West Nile disease)
	X	Radiation or radioactive contamination
X		Noise (powered auger, metal saw)
	X	Drowning
X		MEC (potential to encounter unexploded ordnance)
X		Exposure to asbestos

MEC = Munitions and explosives of concern.

Specific tasks covered by this SSHP in order to implement the RD are as follows:

- Technical oversight of field activities by Leidos personnel, such as the Subcontractor installing security fence and signage using heavy equipment and clearing vegetation with chainsaws, brushcutter, or heavy equipment, as required;
- MEC avoidance support performed by Leidos or Subcontractor.

Tasks specific to removing, transporting, and disposing surficial ACM are discussed in Appendix E.2: Asbestos Abatement Plan.

3.1 POTENTIAL EXPOSURES

Prior sampling results indicate that the primary COCs at RQL are semi-volatile organic compounds and lead. Table 3-2 contains information on the potential contaminants and hazards, as well as chemicals that will be used for the project. It is important to note that the contaminants listed in Table 3-2 have been detected in a number of locations at Camp Ravenna and might be expected to occur at any former operations area. Exposure to chemical tools, such as flammable fuels, is a possibility and will be controlled through standard safe handling practices.

ACM was also identified as a site hazard in the quarry bottom of RQL. Potential ACM exposure is discussed in Appendix E.2: Asbestos Abatement Plan.

3.2 TASK-SPECIFIC HAZARD ANALYSIS

Table 3-3 presents task-specific hazards, relevant hazard controls, and required monitoring, if appropriate, for all of the planned tasks associated with installing the fence in the RD.

Table 3-2. Potential Exposures

Chemical[a]	TLV/PEL/STEL/IDLH[b]	Health Effects/ Potential Hazards[c]	Chemical and Physical Properties[c]	Exposure Route(s)[c]
Benzo(a)pyrene (and other similar PAHs)	TLV/TWA: 0.1 mg/m^3, A2 PEL/TWA: 0.2 mg/m^3 IDLH: 80 mg/m^3	Suspected human carcinogen per NIOSH, dermatitis, bronchitis	Black or dark-brown amorphous residue FP: NA; IP: NA	Inhalation Contact
Lead	TLV/TWA: 0.1 mg/m^3, A2 PEL/TWA: 0.05 mg/m^3 IDLH: 100 mg/m^3	Weakness, anorexia, abdominal pain, anemia	A heavy, ductile, soft gray solid FP: NA; IP: NA UEL:NA; LEL: NA	Inhalation Ingestion Contact
Gasoline (used for fuel)	TLV/TWA: 300 ppm, A2 IDLH: Ca	Potential carcinogen per NIOSH, dizziness, eye irritation, dermatitis	Liquid with aromatic odor FP: -45°F; VP: 38-300 mm	Inhalation Ingestion Absorption Contact
Silica Dust (from concrete mixing)	TLV/TWA: 0.05 mg/m^3 PEL (8-hour TWA) for crystalline silica	Cough, difficulty breathing, wheezing, decreased pulmonary function; progressive respiratory symptoms; irritant to eyes; potential cancer	Solid; colorless; odorless VP: 0 mmHg; FP: NA; IP: NA	Inhalation Contact
Asbestos	TWA: 0.1 f/cc Exclusion Limit: 1.0 f/cc (30 min.) (ACGIH) 0.1 f/cc	Asbestosis, difficulty breathing, interstitial fibrosis, restricted pulmonary function, finger clubbing, eye irritant, potential cancer	White/greenish/blue/gray-green fibrous odorless solid	Inhalation Ingestion Skin/Eye Contact

[a]The potential chemicals were obtained from the *Phase I Remedial Investigation Report*s for RQL (USACE 1998, 2005a and 2005b).
[b]From 2013 Threshold Limit Values, *American Conference of Governmental Industrial Hygienists.*
[c]From NIOSH Guide to Chemical Hazards web site.

A2 = Suspected human carcinogen.
A3 = Not classifiable as a human carcinogen.
ACGIH = American Conference of Governmental Hygienists.
Ca = Potential occupational carcinogen.
eV = Electron volts.
f/cc = Fibers per cubic centimeter.
FP = Flash point.
IDLH = Immediately dangerous to life and health.
IP = Ionization potential.
LEL = Lower explosive limit.
mg/m^3 = Milligram/cubic milligram.
mm = Millimeters.
mmHg = Millimeter of mercury.
NA = Not applicable.
NIOSH = National Institute for Occupational Safety and Health.
PAH = Polycyclic aromatic hydrocarbons.
PEL = Permissible exposure limit.
ppm = Parts per million.
RQL = Ramsdell Quarry Landfill.
STEL = Short-term exposure limit.
TLV = Threshold limit value.
TWA = Time-weighted average.
UEL = Upper explosive limit.
USACE = U.S. Army Corp of Engineers.
VP = Vapor pressure.

Table 3-3. Activity Hazard Analysis

Date Prepared: June 19, 2013
Project: Ramsdell Quarry Landfill Remedial Action
Job: Site Mobilization and Demobilization
Prepared By: Rich Sprinzl, Leidos
Reviewed By: Steve Lowery, CIH, Leidos

Risk Assessment Code (RAC): M

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Recommended Protective Clothing & Equipment:
Level D PPE: Safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material, long-sleeve shirt and pants.

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Biological hazards (bees, mosquitoes, ticks, Lyme disease, poisonous plants, wasps, and snakes)	Level D PPE Use insect repellant and permethrin clothing treatment. Pant legs taped to boots to minimize tick entry or contact with harmful plants Inspect for ticks during the day and at the end of each work day (see FWSHP Section 10.18) Avoidance of accumulations of bird or bat droppings (see FWSHP Section 10.17) Protective ointments and/or specialized cleaners if working in areas with poisonous plants Site-specific instruction in recognition and avoidance of harmful plants and/or animals	L
	Temperature extremes	Administrative controls (see FWSHP Section 9.0) Heat stress controls at 80°F Cooled (shaded) or warmed break area depending on the season Routine breaks in established break area and unscheduled breaks, if needed (see FWSHP Section 9.0) Chilled water if temperature exceeds 70°F Monitoring – ambient temperature measurements at least twice daily. Temperatures greater than 85°F, temperatures less than 30°F, and the use of impermeable clothing require additional controls (see FWSHP Section 9.0) Site- and season-specific instruction in weather hazards and hazard controls	L
	Contact with MEC	Any investigation work within a MRS will follow MEC avoidance protocol. MEC avoidance will be conducted in MRS by a UXO technician. Avoid areas or withdraw all personnel from area, as directed by UXO technician, if ordnance or suspected ordnance is discovered. Monitoring - visual surveys for ordnance by UXO technician. Instrument surveys by UXO technicians in MRS	L

CELRL Form 1259, 1 November 2001 Previous Versions are Obsolete and Should Not Be Used

Table 3-3. Activity Hazard Analysis (continued)

Date Prepared: June 19, 2013
Project: Ramsdell Quarry Landfill Remedial Action
Job: Site Mobilization and Demobilization

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Exposure to chemicals	Wash face and hands and any other exposed areas prior to taking anything by mouth. HAZWOPER training and medical clearance	L
	Severe weather	Check weather prior to departure and reschedule if severe weather is forecasted. In case of severe weather, all personnel will move to a designated safe location if time permits. Suspend fieldwork if tornado warning issued. Suspend work from first evidence of lightning at least 30 minutes after the last sighting of lightning and/or last sound of thunder. Do not work in areas subject to flash flooding.	M
	Lifting	Compliance with Engineering Solutions EH&S Procedure 150 "Manual Lifting" to limiting individual lifts by Leidos personnel to 50 pounds. Verification/observation of lifting by Leidos personnel by FM.	L
	Slips, trips, and falls	Clean and organized work areas, keeping walkways and working areas clear, including snow, ice, and standing water	L
	Struck by moving/mobile equipment	Workers will maintain a safe distance equivalent to the full, extended reach of all moving/mobile equipment. Approach mobile/moving equipment only after getting permission of the operator. Maintain visual contact with equipment operators at all times.	M
Vehicle Operation	Vehicle accidents	Compliance with Engineering Solutions EH&S Procedure 110, Vehicle Operation. Vehicle operation (valid driver's license, seat belt use, routine vehicle inspections, no cell phone use while driving, compliance with applicable laws and regulations, and defensive driving). Visual inspection includes the vehicle and any associated items such as trailers or external cargo carriers. The operator verifies that the following items are present and functional: seatbelt(s), lights, turn signals, operating brakes, speedometer, fuel gage, horn, windshield, windshield wiper, defrosting/defogging system, rear view mirror, cab, non-slip surfaces on steps, and tires (approximately proper inflation) While driving on Camp Ravenna, facility personnel shall take necessary precautions to avoid hitting deer. Observe and maintain posted speed limits for both day and night driving conditions.	L

Equipment to be Used	Inspection Requirements	Training Requirements
Vehicles General hand tools, if necessary	Daily safety inspections of operations. Initial and at least weekly inspections of equipment All tools must be inspected daily and taken out of service if damaged Daily vehicle inspection	Properly trained personnel to operate equipment Valid driver's licenses Site-specific training including site hazard communication training CPR and first aid training for at least two on-site personnel and at least one person per field team

CELRL Form 1259, 1 November 2001 Previous Versions are Obsolete and Should Not Be Used

Table 3-3. Activity Hazard Analysis (continued)

Risk Assessment Code (RAC): M

Date Prepared: June 19, 2013
Project: Ramsdell Quarry Landfill Remedial Action
Job: Site Walk and/or Visual Survey
Prepared By: Rich Sprinzl, Leidos
Reviewed By: Steve Lowery, CIH, Leidos

Recommended Protective Clothing & Equipment:
Level D PPE: Safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material, long-sleeve shirt and pants.

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
Severity	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Biological hazards (bees, mosquitoes, ticks, Lyme disease, poisonous plants, wasps, and snakes)	Level D PPE Use Insect repellant and permethrin clothing treatment. Pant legs tucked into boots or otherwise closed with tape to minimize tick entry and contact with harmful plants Inspect for ticks during the day and at the end of each work day (see FWSHP Section 10.18) Avoidance of accumulations of bird or bat droppings (see FWSHP Section 10.17) Protective ointments and/or specialized cleaners if working in areas with poisonous plants Site-specific instruction in recognition and avoidance of harmful plants and/or animals	M
	Temperature extremes	Administrative controls (see FWSHP Section 9.0) Heat stress controls implemented at 80°F Cooled (shaded) or warmed break area depending on the season Routine breaks in established break area and unscheduled breaks if needed (see FWSHP Section 9.0) Chilled water if temperature exceeds 70°F Monitoring – ambient temperature measurements at least twice daily. Temperatures greater than 80°F, temperatures less than 30°F, and the use of impermeable clothing require additional controls (see FWSHP Section 9.0) Site- and season-specific instruction in weather hazards and hazard controls	L
	Contact with MEC	Any investigation work within a MRS will follow MEC avoidance protocol. MEC avoidance will be conducted in MRS by a UXO technician and will accompany site walk participants. Avoid areas or withdraw all personnel from area, as directed by UXO technician, if ordnance or suspected ordnance is discovered. Monitoring - visual surveys for ordnance by UXO technician. Instrument surveys by UXO technicians in MRS.	L

Table 3-3. Activity Hazard Analysis (continued)

Date Prepared: June 19, 2013
Project: Ramsdell Quarry Landfill Remedial Action
Job: Site Walk

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Exposure to chemicals	Wash face and hands and any other exposed areas prior to taking anything by mouth. HAZWOPER training and medical clearance	L
	Severe weather	Check weather prior to departure and reschedule if severe weather is forecasted. In case of severe weather, all personnel will move to a designated safe location if time permits. Suspend fieldwork if tornado warning issued. Suspend work from first evidence of lightning at least 30 minutes after the last sighting of lightning and/or last sound of thunder. Do not work in areas subject to flash flooding.	M
	Struck by moving/mobile equipment	Workers will maintain a safe distance equivalent to the full, extended reach of all moving/mobile equipment. Approach mobile/moving equipment only after getting permission of the operator. Maintain visual contact with equipment operators at all times.	M
	Slips, trips, and falls)	Clean and organized work areas, keeping walkways and working areas clear, including snow, ice, and standing water	L
	Exposure to asbestos	Personnel doing site walk will avoid any potential asbestos-containing material. Personnel will not handle any material identified in the quarry bottom.	L
Vehicle Operation	Vehicle accidents	Compliance with Engineering Solutions EH&S Procedure 110, Vehicle Operation. Vehicle operation (valid driver's license, seat belt use, routine vehicle inspections, no cell phone use while driving, compliance with applicable laws and regulations, and defensive driving). The visual inspection includes the vehicle and any associated items such as trailers or external cargo carriers. The operator verifies that the following items are present and functional: seatbelt(s), lights, turn signals, operating brakes, speedometer, fuel gage, horn, windshield, windshield wiper, defrosting/defogging system, rear view mirror, cab, non-slip surfaces on steps, and tires (approximately proper inflation) While driving on Camp Ravenna, facility personnel shall take necessary precautions to avoid hitting wildlife. Observe and maintain posted speed limits for both day and night driving conditions.	L

Equipment to be Used	Inspection Requirements	Training Requirements
Vehicles	Daily safety inspections of operations. Initial and at least weekly inspections of equipment Daily vehicle inspection	HAZWOPER 40-hr training and current refresher training Medical clearance Properly trained personnel to operate equipment Valid driver's licenses Site-specific training including site hazard communication training CPR and first aid training for at least two on-site personnel

Table 3-3. Activity Hazard Analysis (continued)

Date Prepared: June 19, 2013
Project: Ramsdell Quarry Landfill Remedial Action
Job: Construction Oversight
Prepared By: Rich Sprinzl, Leidos
Reviewed By: Steve Lowery, CIH, Leidos

Risk Assessment Code (RAC)

M

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Recommended Protective Clothing & Equipment:
Level D PPE: Safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material, long-sleeve shirt and pants.

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Biological hazards (bees, mosquitoes, ticks, Lyme disease, histoplasmosis, poisonous plants, wasps, and snakes)	Level D PPE Use insect repellant and permethrin clothing treatment. Pant legs tucked into boots or otherwise closed with tape to minimize tick entry and contact with harmful plants Inspect for ticks during the day and at the end of each work day (see FWSHP Section 10.18) Avoidance of accumulations of bird or bat droppings (see FWSHP Section 10.17) Protective ointments or specialized cleaners if working in areas with poisonous plants Site-specific instruction in recognition and avoidance of harmful plants and animals	L
	Temperature extremes	Administrative controls (see FWSHP Section 9.0) Heat stress controls implemented at 80°F Cooled (shaded) or warmed break area depending on the season Routine breaks in established break area and unscheduled breaks if needed (see FWSHP Section 9.0) Chilled water if temperature exceeds 70°F Monitoring – ambient temperature measurements at least twice daily Temperatures greater than 80°F, temperatures less than 30°F, and impermeable clothing require additional controls Site- and season-specific instruction in weather hazards and hazard controls	L
	Contact with MEC	Any investigation work within a MRS will follow MEC avoidance protocol. MEC avoidance will be conducted in MRS by a UXO technician for intrusive work and a UXO technician will accompany ACM removal teams. Avoid areas or withdraw all personnel from area, as directed by UXO technician, if ordnance or suspected ordnance is discovered. Monitoring - visual surveys for ordnance by UXO technician. Instrument surveys by UXO technicians in MRS.	L

CELRL Form 1259, 1 November 2001 Previous Versions are Obsolete and Should Not Be Used

Table 3-3. Activity Hazard Analysis (continued)

Date Prepared: June 19, 2013

Project: Ramsdell Quarry Landfill Remedial Action

Job: Construction Oversight

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
General	Lifting	Compliance with Engineering Solutions EH&S Procedure 150 "Manual Lifting" to limiting individual lifts by Leidos personnel to 50 pounds. Verification/observation of lifting by Leidos personnel by FM.	L
	Severe weather	Check weather prior to departure and reschedule if severe weather is forecasted. In case of severe weather, all personnel will move to a designated safe location if time permits. Suspend fieldwork if tornado warning issued. Suspend work from first evidence of lightning at least 30 minutes after the last sighting of lightning and/or last sound of thunder. Do not work in areas subject to flash flooding.	M
	Exposure to asbestos	Personnel doing site walk will avoid any potential asbestos-containing material. Personnel will not handle any material identified in the quarry bottom.	L
Oversight of Vegetation Clearing with Chainsaws and Heavy Equipment	General safety hazards (rotating machinery, contact with sharp edges, slips, and falls)	Level D PPE (see FWSHP Section 6.0) plus hard hat Only experienced operators provided by Subcontractor Personnel operating brush-clearing tools must maintain separation of at least 4.5 m (15 ft) Tools must be inspected daily and taken out of service if damaged Exclusion zone if there is a potential for entry of unauthorized personnel Leidos personnel will stay clear of all machinery operations at least twice the reach or throw of equipment	M
	Noise (chainsaw)	Leidos personnel will stay clear of all noisy operations.	M
	Exposure to chemicals	PPE (Level D) plus nitrile or equivalent gloves for contact with contaminated material. Washing face and hands prior to taking anything by mouth. Minimal contact Chemical containers labeled to indicate contents and hazard. MSDSs onsite for all chemicals in use.	L
Oversight of Fence and Signage Installation	General safety hazards (rotating machinery, suspended loads, moving equipment, slips, and falls)	Level D PPE (see FWSHP Section 6.0) Stay clear of construction area unless verifying installation. No employees under lifted loads At least two functional kill switches or switches that require continuous force to activate Functional back-up alarm Heavy equipment manual on-site Only experienced operators	L
	Noise	Leidos personnel will stay outside of high noise areas.	L
	Electric shock	Identification and clearance of overhead and underground utilities Monitoring - visual of all work areas 110-V electrical tools connected through GFCI Leidos personnel will not stand under or near overhead electrical lines	L
	Struck by equipment, fence materials	Level D+ PPE. Maintain general work area awareness, separate work area from fence installation equipment and moving parts where possible. Fence subcontractor will operate per their own health and safety programs, plans, and procedures and will provide trained and qualified personnel. Fence subcontractor will inspect the equipment at the start of each shift. No workers under suspended heavy loads	L

Table 3-3. Activity Hazard Analysis (continued)

Equipment to be Used	Inspection Requirements	Training Requirements
Fence Installation Equipment Support truck Hand tools, if necessary	Daily safety inspections of operations. Initial and at least weekly inspections of excavation equipment Daily vehicle inspection All tools must be inspected daily and taken out of service if damaged	HAZWOPER 40-hr training and current refresher training Medical clearance Site-specific training including site hazard communication training CPR and first aid training for at least two on-site personnel and at least one person per field team

CELRL Form 1259, 1 November 2001 Previous Versions are Obsolete and Should Not Be Used

CPR = Cardiopulmonary resuscitation.
EH&S = Environmental health and safety.
FM = Field manager.
FWSHP = Facility-wide Safety and Health Plan for Environmental Investigations.
GFCI = Ground fault circuit interrupter.
HAZWOPER = Hazardous waste site operations.
MEC = Munitions and explosives of concern.
MRS = Munitions response site.
MSDs = Material safety data sheets.
PPE = Personal protective equipment.
UXO = Unexploded ordnance.

4.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

This section presents the personnel (and their associated telephone numbers) responsible for site safety and health and emergency response. Table 4-1 identifies Leidos and Subcontractor staff that will fill key roles. See the FWSHP for information on the roles and responsibilities of key positions. Personnel involved in asbestos cleanup are included in Appendix E.2: Asbestos Abatement Plan.

Table 4-1. Staff Organization

Position	Name	Phone
Leidos Health and Safety Manager	Stephen H. Lowery, CIH	(405) 701-3158 C: (405) 919-4176
Leidos Environmental & Civil Infrastructure Operation Health and Safety Manager	Michael Crenshaw	(865) 481-4767 C: (865) 406-2659
Leidos Project Manager	Jed Thomas, P.E.	(330) 405-5802 C: (216) 214-2599
Leidos Construction Manager[1]	Richard Sprinzl, P.E.	(330) 405-5808 C: (330) 348-1378
Subcontractor Construction Supervisor	TBD	TBD
Subcontractor SSHO	TBD	TBD
MEC Avoidance Technician	TBD	TBD

[1] Construction Manager is equivalent to the Field Operations Manager in the FWSHP.

MEC = Munitions and explosives of concern.

P.E. = Professional engineer.

SSHO = Site Safety and Health Officer.

TBD = To be determined.

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5.0 TRAINING

The training requirements, from Section 5.0 of the FWSHP are summarized in Table 5-1 and in Table 3-3. Training requirements for asbestos cleanup are included in Appendix E.2: Asbestos Abatement Plan.

Table 5-1. Training Requirements

Training	Fence Worker/ Supervisor	UXO Technician	Leidos Construction Manager and Site Safety and Health Officer	Site Visitor
HAZWOPER (40-hr, 3-day on-the-job training)	—	√	√	—
HAZWOPER Annual Refresher (8 hr)	—	√	√	—
HAZWOPER Supervisors Training (8 hr)	—	—	√	—
General Hazard Communication Training	√	√	√	—
Hearing Conservation Training (for workers in hearing conservation program)	√	√	√	—
Pre-entry Briefing	√	√	√	√
Site-specific Hazard Communication (contained in pre-entry briefing)	—	√	√	√
Safety Briefing (daily and whenever conditions or tasks change)	√	√	√	√
Equipment-specific Training (Equipment Operators)	√	√	—	—

— = Not required.
√ = Required.
HAZWOPER = Hazardous waste site operations.
UXO = Unexploded ordnance.

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6.0 PERSONAL PROTECTIVE EQUIPMENT

General guidelines for selecting and using PPE are presented in the Section 6.0 of the FWSHP. Specific PPE requirements for this work are presented in the hazard/risk analysis section (Section 3.0) and Appendix E.2: Asbestos Abatement Plan for the asbestos cleanup activities.

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7.0 MEDICAL SURVEILLANCE

Medical surveillance requirements, as presented in Section 7.0 of the FWSHP, are summarized in Table 7-1. Medical surveillance requirements for asbestos cleanup are included in Appendix E.2: Asbestos Abatement Plan.

Table 7-1. Medical Surveillance Requirements

Baseline	Routine	Overexposure	Termination
Prior to work assessment	Every 12 months, unless greater frequency is deemed appropriate by attending physician. Not to exceed 2-year interval.	Upon developing symptoms or where exposure limits have been exceeded or suspected to have been exceeded.	Upon termination or re-assignment.

All medical exams will include (see Section 7.2 of the FWSHP):

- Collection of information on the employee's medical/work history;
- Physical exam by physician;
- Audiometry;
- Blood screen, such as Sequential Multiple Analyzer with computer;
- Chest P/A X-ray at intervals specified by the attending physician;
- Complete blood count;
- Electrocardiogram, for persons older than 45 or where medically indicated;
- Spirometry (forced expiratory volume/forced vital capacity); and
- Urinalysis (dipstick and microscopic).

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8.0 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

Airborne chemical concentrations will be assessed as appropriate to ensure that exposures do not exceed acceptable levels. Action levels, with appropriate responses, have been established for this monitoring. In addition to the specified monitoring, the Subcontractor SSHO may perform or require additional monitoring. The deployment of monitoring equipment will depend on the activities being conducted and the potential exposures involved. The minimum monitoring requirements and action levels for fence installation activities are presented in Table 8-1. Monitoring requirements for the asbestos cleanup and the responsibilities of the Asbestos Abatement Subcontractor are presented in Appendix E.2: Asbestos Abatement Plan.

Most fence installation activities are not expected to pose airborne exposure hazards due to the following:

- Work will be performed in open areas with natural ventilation;
- ACM cleanup and work will be completed under a separate mobilization so there is no potential hazard for the fence installation staff; and
- The most probable contaminants (metals and polycyclic aromatic hydrocarbons) are materials with relatively low vapor pressures and exposure can be controlled through dust suppression techniques.

Air monitoring of the breathing zone using a photoionization detector or equivalent during fence installation is not anticipated. However, the Subcontractor SSHO will examine site conditions and will contact the Leidos SSHO and initiate monitoring if there is any indication of potential airborne exposure.

Table 8-1. Monitoring Requirements and Action Limits

Hazard or Measured Parameter	Area	Interval	Limit	Action	Tasks
Noise	All areas perceived as noisy	Any area where there is some doubt about noise levels	85 dBA TWA	Require the use of hearing protection	Hearing protection will be worn around power augers, or other motorized fencing equipment
Visible airborne dust potentially containing SRCs	All	Continuously	Visible dust generation	Stop work; use dust suppression techniques such as wetting surface	All

dBA = Decibels, A-weighted.
H&S = Health and safety.
PAH = Polycyclic aromatic hydrocarbon.
PID = Photoionization detector.
PPE = Personal protective equipment.
ppm = Parts per million.
SRC = Site-related contaminant (e.g., PAHs, arsenic).
TWA = Time weighted average.

9.0 HEAT/COLD STRESS MONITORING

General requirements for heat/cold stress monitoring are contained in Section 9.0 of the FWSHP.

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10.0 STANDARD OPERATING SAFETY PROCEDURES

Standard operating safety procedures are described in Section 10.7 of the FWSHP. Dust generation may occur during fence post hole excavation. Prior to starting any ground/soil disturbance activity (e.g., clearing and grubbing, post hole excavating, grading), the area will be misted with water to prevent dust generation, if necessary. The Subcontractor SSHO will monitor ground disturbance activities to ensure dust is not being generated. In the event that any dust becomes visible, the activity will cease and the area will be misted with water. During instances of high winds resulting in excessive dust, when dust control measures are determined ineffective, work stoppage and/or additional PPE may be required as determined by the Subcontractor SSHO.

In addition, all access roads and work areas within the project boundaries will be maintained free from soil that could cause a hazard or nuisance. Dust control will be maintained by keeping vehicles on improved roads, maintaining the posted speed limit, and applying water as required. The Subcontractor will spray or mist water for dust control if airborne dust is observed. Water used for dust control will be clean (e.g., obtained from Camp Ravenna sources with approval of the U.S. Army Representative, or potable water from an off-site source). The use of additives for dust control will not be permitted.

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11.0 SITE CONTROL MEASURES

Site control measures are described in Section 11.0 of the FWSHP. No formal site control is expected to be necessary for fence installation, as the work areas are somewhat remote and bystanders are not anticipated. The installation is a controlled access facility and only authorized personnel will be allowed to access RQL. If the Subcontractor SSHO determines that a potential exists for unauthorized personnel to approach within 25 ft of a work zone or otherwise be at risk due to proximity, then additional site controls will be established as described in the FWSHP. Site control measures during asbestos cleanup and disposal are presented in Appendix E.2: Asbestos Abatement Plan.

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12.0 PERSONNEL HYGIENE AND DECONTAMINATION

It is the SSHO's responsibility to verify that personnel hygiene and decontamination processes are adequate to protect personnel and meet the requirements of Sections 06.M and 28 of the *USACE Safety and Health Requirements Manual* (USACE 2008). All personnel shall remove gloves and any other protective clothing once tasks are complete or when breaks are taken. Personnel are required to wash hands and face prior to eating, drinking, or smoking. This step may be accomplished with soap and water or disposable disinfectant wipes. Additionally, soap specially formulated to cut oils from poisonous plants will be available for all site personnel to use as directed by the manufacturer. The hygiene and decontamination procedures for asbestos removal activities are included in Appendix E.2: Asbestos Abatement Plan.

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13.0 EMERGENCY PROCEDURES AND EQUIPMENT

Emergency contacts, telephone numbers, directions to the nearest medical facility (Figure 16-3), and general procedures can be found in Section 13.0 of the FWSHP. Table 13-1 presents emergency phone numbers used during normal working hours (Monday through Friday, 8:00 am to 4:00 pm). All on-site emergencies must be coordinated through the **Camp Ravenna Main Gate [(330) 358-2017]**, who will coordinate the response. The Leidos Construction Manager (defined as the Field Operations Manager in the FWSHP) will remain in charge of all Leidos and Subcontractor personnel during emergency activities. The Camp Ravenna Main Gate will serve as the assembly point if it becomes necessary to evacuate the remedial location. During mobilization, the Leidos Construction Manager will verify that the emergency information in the FWSHP is correct.

Each field team shall have a cellular phone and/or a two-way radio capable of contacting Camp Ravenna Main Gate for communications purposes.

During field operations at least two on-site personnel will have cardiopulmonary resuscitation (CPR)/first aid training.

Table 13-1. Emergency Phone Numbers

Position	Phone
Camp Ravenna Main Gate (Police, Fire, Emergency Medical)	(330) 358-2017
Hospital (Robinson Memorial, Ravenna)	(330) 297-0811 / (330) 297-2850
WorkCare Clinic (Robinson Health Center, Streetsboro)	(330) 626-3455
WorkCare (for Leidos non-emergency care)	(888) 449-7787
Ohio Army National Guard Range Control	(614) 336-6041
Camp Ravenna Garrison Commander	(614) 336-6560
U.S. Army Representative Kevin Sedlak	Office: (614) 336-6000 x2053
Camp Ravenna Operation and Maintenance Contractor for site access requests Becky Haney, VISTA Sciences.	Office: (330) 358-7311
U.S. Army Corps of Engineers Tom Chanda	Office: (502) 315-6868
Ohio Environmental Protection Agency Nancy Zikmanis	Office: (330) 963-1160
Leidos Project Manager Jed Thomas	Office: (330) 405-5802 Cell: (216) 214-2599
Leidos Health and Safety Personnel Steve Lowery, CIH Mike Crenshaw Heather Miller	Office: (405) 701-3158 Cell: (405) 919-4176 Office: (865) 481-4767 Cell: (865) 406-2659 Office: (330) 405-5814 Cell: (330) 573-8671
Leidos Construction Manager Rich Sprinzl	Office: (330) 405-5808 Cell: (330) 348-1378

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14.0 LOGS, REPORTS, AND RECORD KEEPING

Daily Safety Inspection, Daily Health and Safety Summary, Tailgate Safety Meeting Log and USACE Accident Investigation Report forms are included in Appendix E.1 of this SSHP. The Leidos Construction Manager is responsible for completing these forms in accordance with the record keeping requirements listed in Section 14.0 of the FWSHP.

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15.0 REFERENCES

ACGIH (American Conference of Governmental Hygienists) 2013. Threshold Limit Values. 2013.

NIOSH (National Institute for Occupational Safety and Health) 2010. *NIOSH Pocket Guide to Chemical Hazards*. September 2010.

Ohio EPA (Ohio Environmental Protection Agency). *Director's Final Findings and Orders*. June 2004.

SAIC (Science Applications International Corporation) 2009. *Health and Engineering Sector Environmental, Health and Safety Program*. Multiple revisions of procedures within program. January 2009.

USACE (United States Army Corps of Engineers) 1998. *Phase I Remedial Investigation Report for High-Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 1998.

USACE 1999. *Initial Phase Report on the Groundwater Investigation, Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio*. January 1999.

USACE 2005a. *Phase I Remedial Investigation December 2004 Follow-On Groundwater Sampling at Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* June 2005.

USACE 2005b. *Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. September 2005.

USACE 2006. *Feasibility Study (FS) for Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. March 2006.

USACE 2007a. *Safety and Occupational Health Requirements for Hazardous, Toxic and Radioactive Waste (HTRW),* Engineering Regulation (ER)-385-1-92. May 2007.

USACE 2007b. *Safety and Health Requirements for Munitions and Explosives of Concern (MEC) Operations*, ER-385-1-95, March 2007.

USACE 2008. *Safety and Health Requirements Manual,* Engineer Manual (EM)-385-1-1. November 2008.

USACE 2009. *Record of Decision for Ramsdell Quarry Landfill (RVAAP-01) at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* March 2009.

USACE 2010. *Remedial Design for the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. June 2010.

USACE 2011. *Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 2011.

USACE 2013. *Record of Decision Amendment for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* May 2013.

USACE 2014. *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill*. 2014.

16.0 FACILITY AND HOSPITAL MAPS

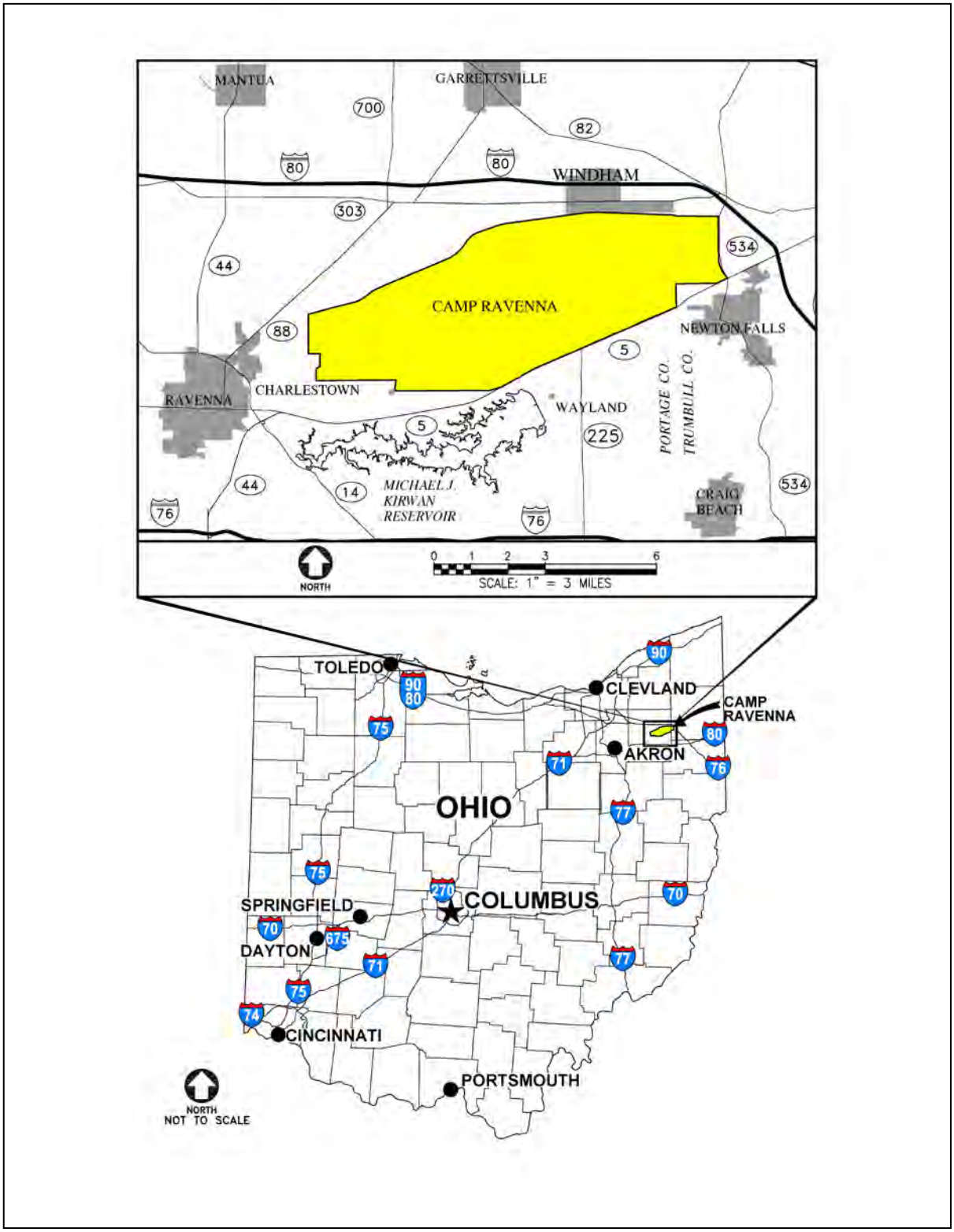

Figure 16-1. General Location and Orientation of Camp Ravenna

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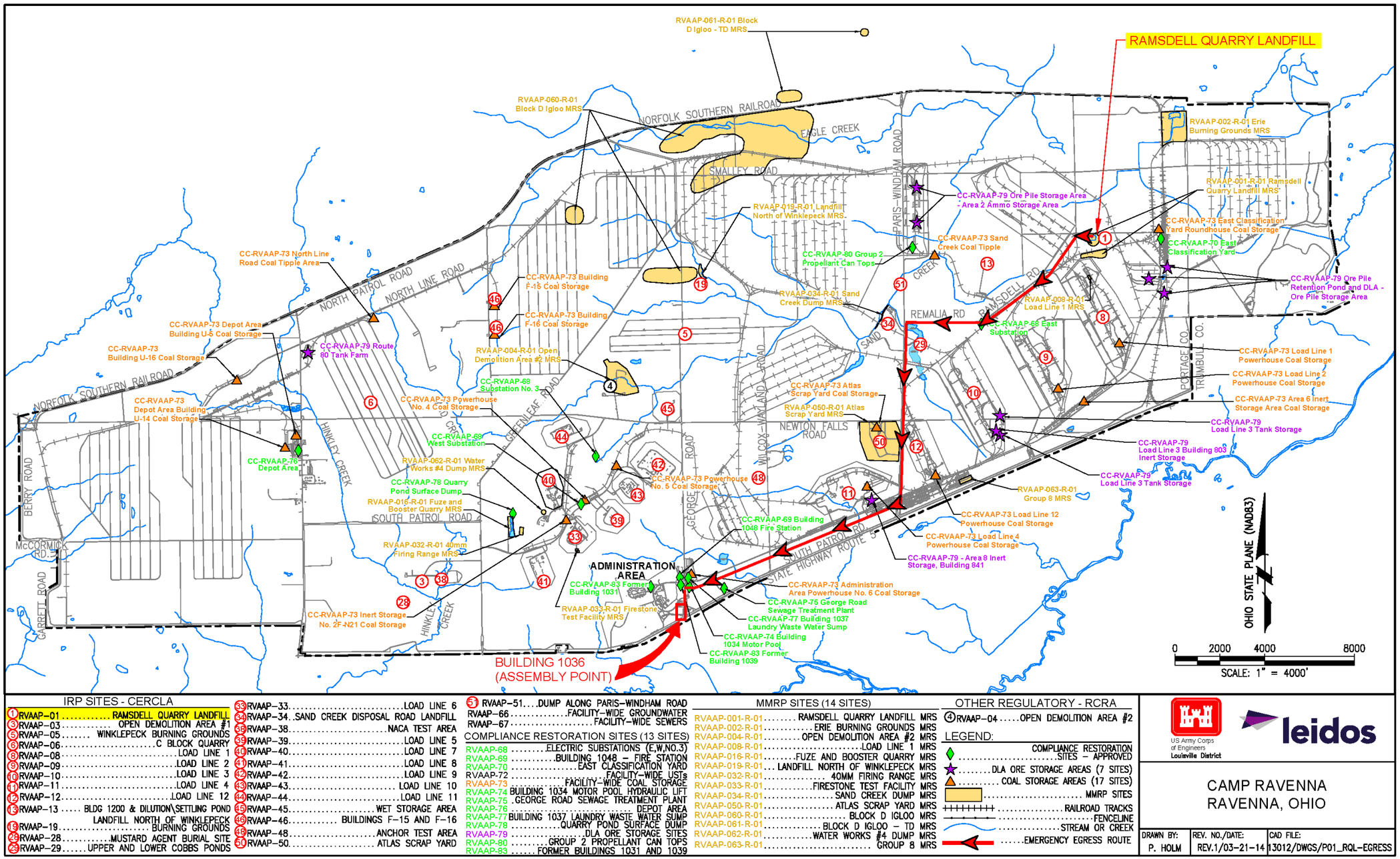

IRP SITES - CERCLA

1	RVAAP-01 ..... RAMSDELL QUARRY LANDFILL
3	RVAAP-03 ..... OPEN DEMOLITION AREA #1
5	RVAAP-05 ..... WINKLEPECK BURNING GROUNDS
6	RVAAP-06 ..... C BLOCK QUARRY
8	RVAAP-08 ..... LOAD LINE 1
9	RVAAP-09 ..... LOAD LINE 2
10	RVAAP-10 ..... LOAD LINE 3
11	RVAAP-11 ..... LOAD LINE 4
12	RVAAP-12 ..... LOAD LINE 12
13	RVAAP-13 ..... BLDG 1200 & DILUTION\SETTLING POND
	LANDFILL NORTH OF WINKLEPECK
19	RVAAP-19 ..... BURNING GROUNDS
28	RVAAP-28 ..... MUSTARD AGENT BURIAL SITE
29	RVAAP-29 ..... UPPER AND LOWER COBBS PONDS
33	RVAAP-33 ..... LOAD LINE 6
34	RVAAP-34 ..... SAND CREEK DISPOSAL ROAD LANDFILL
38	RVAAP-38 ..... NACA TEST AREA
39	RVAAP-39 ..... LOAD LINE 5
40	RVAAP-40 ..... LOAD LINE 7
41	RVAAP-41 ..... LOAD LINE 8
42	RVAAP-42 ..... LOAD LINE 9
43	RVAAP-43 ..... LOAD LINE 10
44	RVAAP-44 ..... LOAD LINE 11
45	RVAAP-45 ..... WET STORAGE AREA
46	RVAAP-46 ..... BUILDINGS F-15 AND F-16
48	RVAAP-48 ..... ANCHOR TEST AREA
50	RVAAP-50 ..... ATLAS SCRAP YARD
51	RVAAP-51 ... DUMP ALONG PARIS-WINDHAM ROAD
	RVAAP-66 ..... FACILITY-WIDE GROUNDWATER
	RVAAP-67 ..... FACILITY-WIDE SEWERS

COMPLIANCE RESTORATION SITES (13 SITES)

RVAAP-68	ELECTRIC SUBSTATIONS (E,W,NO.3)
RVAAP-69	BUILDING 1048 – FIRE STATION
RVAAP-70	EAST CLASSIFICATION YARD
RVAAP-72	FACILITY-WIDE USTs
RVAAP-73	FACILITY-WIDE COAL STORAGE
RVAAP-74	BUILDING 1034 MOTOR POOL HYDRAULIC LIFT
RVAAP-75	GEORGE ROAD SEWAGE TREATMENT PLANT
RVAAP-76	DEPOT AREA
RVAAP-77	BUILDING 1037 LAUNDRY WASTE WATER SUMP
RVAAP-78	QUARRY POND SURFACE DUMP
RVAAP-79	DLA ORE STORAGE SITES
RVAAP-80	GROUP 2 PROPELLANT CAN TOPS
RVAAP-83	FORMER BUILDINGS 1031 AND 1039

MMRP SITES (14 SITES)

RVAAP-001-R-01	RAMSDELL QUARRY LANDFILL MRS
RVAAP-002-R-01	ERIE BURNING GROUNDS MRS
RVAAP-004-R-01	OPEN DEMOLITION AREA #2 MRS
RVAAP-008-R-01	LOAD LINE 1 MRS
RVAAP-016-R-01	FUZE AND BOOSTER QUARRY MRS
RVAAP-019-R-01	LANDFILL NORTH OF WINKLEPECK MRS
RVAAP-032-R-01	40MM FIRING RANGE MRS
RVAAP-033-R-01	FIRESTONE TEST FACILITY MRS
RVAAP-034-R-01	SAND CREEK DUMP MRS
RVAAP-050-R-01	ATLAS SCRAP YARD MRS
RVAAP-060-R-01	BLOCK D IGLOO MRS
RVAAP-061-R-01	BLOCK D IGLOO – TD MRS
RVAAP-062-R-01	WATER WORKS #4 DUMP MRS
RVAAP-063-R-01	GROUP 8 MRS

OTHER REGULATORY - RCRA

4 RVAAP-04	OPEN DEMOLITION AREA #2

LEGEND:

- COMPLIANCE RESTORATION SITES – APPROVED
- DLA ORE STORAGE AREAS (7 SITES)
- COAL STORAGE AREAS (17 SITES)
- MMRP SITES
- RAILROAD TRACKS
- FENCELINE
- STREAM OR CREEK
- EMERGENCY EGRESS ROUTE

US Army Corps of Engineers Louisville District

leidos

CAMP RAVENNA
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	REV.1/03-21-14	13012/DWGS/P01_RQL-EGRESS

Figure 16-2. Camp Ravenna Site Map and Egress Route

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Figure 16-3. Route Map to Pre-notified Medical Facility

Robinson Memorial Hospital
6847 N. Chestnut Street
Ravenna, Ohio
(330) 297-0811/ (330) 297-2850

Directions: West on State Route 5. Stay straight onto OH-59 West. Turn Right onto OH-14/OH-44. Turn Left onto North Chestnut St.

WorkCare Facility Information

This facility will be used for Leidos employee non-emergency care. Remember to contact WorkCare at (888) 449-7787 per Leidos policy.

Robinson Health Center (Urgent Care) at Streetsboro
9318 State Route 14
Streetsboro, Ohio 44241
(330) 626-3455

APPENDIX E.1
REPORTING FORMS

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DAILY SAFETY INSPECTION

PROJECT:_____ Page 1 of 2

N	Y	NA	Item
			Daily safety briefing conducted
			Emergency numbers and route to hospital posted
			FWSHP and project-specific addenda on site, available to employees, and complete
			Required exposure monitoring conducted and documented
			First aid kit available and inspected weekly
			Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
			Personnel using buddy system (maintain visual or verbal contact and able to render aid)
			If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
			If temperature <40°F: cold stress training conducted, controls in SSHP implemented
			Personnel using appropriate biological hazard controls (See SSHP)
			Employees excluded from under lifted loads
			Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
			Radius of exclusion zone around drill rig at least equal to mast height
			Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
			Containers of flammable liquids closed and labeled properly
			Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
			Personnel exiting potentially contaminated areas washing hands before eating
			Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT:_____ Page 2 of 2

N	Y	NA	Item
			Portable electrical equipment plugged to a GFCI
			Electrical wiring covered by insulation or enclosure
			Three wire, UL approved, extension cords used
			Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
			Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
			Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
			Moving (rotating) machinery guarded to prevent employee contact
			Fall protection provided for work at elevations greater than 4 ft
			All containers of hazardous material labeled to indicate contents and hazards
			MSDSs for hazardous materials on-site
			All vehicles equipped with two-way radios and cellular phones
			15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
			Potable and non-potable water labeled
			Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
			Visitor access controlled
			Site hazards and controls consistent with SSHP
			Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

_____

Name Signature Date

DAILY HEALTH AND SAFETY SUMMARY PROJECT NAME: PROJECT NO:
NAME: DATE: M Tu W Th F Sa Su TIME:
TASKS PERFORMED:
OFF-NORMAL EVENTS:

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TAILGATE SAFETY MEETING LOG PROJECT NAME: PROJECT NO:		
DATE: M Tu W Th F Sa Su TIME:		
WEATHER:		
WORKING CONDITIONS:		
PPE:		
ITEMS DISCUSSED:		
THE FOLLOWING INDIVIDUALS ATTENDED THE DAILY TAILGATE SAFETY MEETING (SIGNATURES)		

_____

SITE SAFETY AND HEALTH OFFICER

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(For Safety Staff only)	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT (For Use of this Form See Help Menu and USACE Suppl to AR 385-40)	REQUIREMENT CONTROL SYMBOL: CEEC-S-S(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name (Last, First, MI)	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify)

3. GENERAL INFORMATION

a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time)	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME
	hrs		(1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (Specify)	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify)	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify)

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

a. CONSTRUCTION ACTIVITY	(CODE) #	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items a, f & g - see help menu)*

a. SEVERITY OF ILLNESS/INJURY	(CODE) #	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED	(CODE) #	g. TYPE AND SOURCE OF INJURY/ILLNESS	(CODE) #
PRIMARY		TYPE	
SECONDARY		SOURCE	
f. NATURE OF ILLNESS/INJURY			

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT	(CODE) #	b. PERSONAL FLOATATION DEVICE USED?
		☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER (Specify)	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER (Specify)	(1) FRONT SEAT			
		(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b. OWNERSHIP	c. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see help menu)*

a. TYPE OF VESSEL/FLOATING PLANT	(CODE) #	b. TYPE OF COLLISION/MISHAP	(CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

ENG FORM 3394, MAR 99 Version 2 EDITION OF SEP 89 IS OBSOLETE. Page 1 of 4 pages (Proponent CESO)

11.	CAUSAL FACTOR(S) *(Read Instruction Before Completing)*			
a. (Explain YES answers in item 13)		YES	NO	
DESIGN: Was design of facility, workplace or equipment a factor?		☐	☐	
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?		☐	☐	
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?		☐	☐	
OPERATING PROCEDURES: Were operating procedures a factor?		☐	☐	
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?		☐	☐	
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?		☐	☐	
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?		☐	☐	
a. *(CONTINUED)*		YES	NO	
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?		☐	☐	
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?		☐	☐	
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?		☐	☐	
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?		☐	☐	
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident		☐	☐	
b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? ☐ YES *(If yes, attach a copy.)* ☐ NO				

12. TRAINING		
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO	b. TYPE OF TRAINING. ☐ CLASSROOM ☐ ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING. (Month) (Day) (Year)

13. **FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES** *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*
a. DIRECT CAUSE
b. INDIRECT CAUSE(S)

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).
DESCRIBE FULLY:

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.			
a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st)*		
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS		
SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*		
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS		
SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW		
a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS		
SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL	
COMMENTS	
COMMANDER SIGNATURE	DATE

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10.	ACCIDENT DESCRIPTION *(Continuation)*

13a.	DIRECT CAUSE *(Continuation)*

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

APPENDIX E.2
ASBESTOS ABATEMENT PLAN

APPROVALS

Asbestos Abatement Plan
Remedial Design for Soil and Dry Sediment
at RVAAP-01 Ramsdell Quarry Landfill
Ravenna Army Ammunition Plant, Ravenna, Ohio

William Howser
Asbestos Hazard Project Designer PD60615

4/8/2014
Date

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ACRONYMS AND ABBREVIATIONS

AAP	Asbestos Abatement Plan
ACM	Asbestos-containing Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
AOC	Area of Concern
ARNG	Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COTR	Contracting Officer's Technical Representative
ft^2	square feet
HEPA	High-efficiency Particulate Absorption
MAP	Model Accreditation Plan
mm	millimeter
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material
PAT	Proficiency Analytical Testing
PCM	Phase Contrast Microscopy
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
QA	Quality Assurance
RACM	Regulated Asbestos-containing Material
RQL	Ramsdell Quarry Landfill
RVAAP	Ravenna Army Ammunition Plant
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

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1.0 INTRODUCTION

Leidos has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District, to provide environmental services to attain Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulatory closure at the Ramsdell Quarry Landfill (RQL) area of concern (AOC) within the former Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. The *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2014) has been developed to describe the implementation process for the selected modified remedy for soil and dry sediment at RQL as stated in the *Record of Decision Amendment for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013). Part of the implementation of the modified remedy is to cleanup surficial asbestos-containing material (ACM) from the quarry bottom at RQL. This Asbestos Abatement Plan (AAP) supplements the remedial design to outline all planning, administration, execution, and cleaning necessary to safely cleanup surficial asbestos-containing materials.

This work is being performed in accordance with U.S. General Services Administration Environmental Advisory Services Contract GS-10-F-0076J, Delivery Order W912QR-12-F-0020. In addition, planning and performance of all work is being conducted in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA) *Director's Final Findings and Orders* dated June 10, 2004 (Ohio EPA 2004).

1.1 PURPOSE

The purpose of this AAP is to provide a supplemental implementation plan for the cleanup of surficial ACM in the quarry bottom of RQL during the execution of Alternative 8: Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use in support of the *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013). This plan includes a hazard risk analysis; outlines staff organization, qualifications, responsibilities, and training requirements; identifies required personal protective equipment (PPE); and presents monitoring and standard operating procedures needed to implement the asbestos cleanup and disposal activities.

1.2 SCOPE

The scope of this AAP covers the Occupational Safety and Health Administration (OSHA) Class IV asbestos cleanup activities pertaining to the implementation of Alternative 8, as stated in the *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2013). Class IV asbestos work means employees contact but do not disturb ACM or presumed asbestos containing materials (PACM) during maintenance and custodial activities that involve cleaning up dust, waste, and debris resulting from Class I, II, and III activities. This plan will provide guidance for an Asbestos Abatement Contractor to remove the surficial ACM in the quarry bottom of RQL.

This AAP specifies the notifications and submittals required prior to and during asbestos cleanup activities and provides access and controls for the site during asbestos activities, site setup, asbestos cleanup details, air monitoring, protective equipment, decontamination, and site closeout specific to ACM cleanup activities. This plan is being provided as an appendix to the Site Safety and Health Plan, which should also be followed during implementation of this AAP, as it does not address the fence installation aspect of the overall selected remedy that is addressed in the *Remedial Design for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2014).

2.0 PROJECT ORGANIZATION AND COORDINATION

The subsections below describe roles and responsibilities of staff that were not included in Site Safety and Health Plan.

2.1 PROJECT OVERSIGHT

Leidos, as a contractor to USACE, Louisville District, administers the management and oversees the quality of this asbestos cleanup activity. The Leidos Project Manager provides oversight to ensure all contractual requirements are properly satisfied, and ensures all project goals and objectives are met in a high-quality, timely manner. The Leidos Project Manager provides the U.S. Army and USACE COTR with notifications of project implementation and information regarding any quality assurance (QA) and non-conformance issues for this cleanup activity.

2.2 ASBESTOS ABATEMENT SUBCONTRACTOR

The Asbestos Abatement Subcontractor is a firm that implements all components of this AAP, unless otherwise specified. The Subcontractor is responsible for properly performing specified ACM cleanup activities in accordance with this AAP, coordinating field personnel activities, and documenting field activities.

2.2.1 Superintendent/Competent Person

During this project, the Superintendent will serve as the OSHA competent person as per 29 Code of Federal Regulations (CFR) 1926.32(f). This individual will be specially trained in a training course which meets the criteria of the 40-hour Asbestos Hazard Emergency Response Act (AHERA) Model Accreditation Plan (MAP) course with an annual refresher and be licensed by the Ohio Department of Health as an Asbestos Hazard Abatement Specialist. Responsibilities of the Superintendent/Competent Person include, but are not limited to, setting up the regulated area, ensuring work integrity, instituting engineering controls, ensuring adherence to regulatory procedures, and personnel monitoring.

The Superintendent/Competent Person will verify and approve that specified procedures outlined in the AAP adequately protect on-site personnel during field activities and will ensure that health and safety procedures are modified to meet changing needs, if required. The Superintendent/Competent Person will also ensure all on-site personnel (including authorized visitors) strictly adhere to this AAP throughout field activities conducted for the duration of the project. The Superintendent/Competent Person reports to the Leidos Construction Manager.

2.2.2 Asbestos Hazard Abatement Worker

The individual performing Class IV work will be specially trained in a training course which meets the criteria of 40 CFR part 763. The Asbestos Hazard Abatement Worker must also have a minimum of an asbestos workers license in the state of Ohio, 32-hour AHERA MAP course with an annual refresher and be licensed by the Ohio Department of Health as an Asbestos Hazard Abatement Worker.

2.2.3 Asbestos Hazard Evaluation Specialist

The Asbestos Hazard Evaluation Specialist will be responsible for reviewing the site before and after ACM cleanup has taken place. The Asbestos Hazard Evaluation Specialist will identify ACM requiring removal. After the cleanup of all ACM at RQL, the Asbestos Hazard Evaluation Specialist will fill out a "Certification of Visual Inspection" to confirm that all surficial ACM has been removed from the area. The Asbestos Hazard Evaluation Specialist will be will be specially trained in a training course which meets the criteria of supervisor 40-hour AHERA MAP course with an annual refresher and be licensed by the Ohio Department of Health as an Asbestos Hazard Evaluation Specialist.

2.3 MEDICAL/RESPIRATORY PROTECTION REQUIREMENTS

Personnel involved in asbestos cleanup are required to participate in annual medical surveillance and possess a valid (within one year) Physician's Written Opinion, respirator fit test, and training certification per 29 CFR 1910.120(f)(7). Personnel will be part of a written respiratory program as defined in OSHA 1926.1101 and according to the specifications in this section. Respiratory equipment must meet 29 CFR 1926.1101(h)(2).

2.4 PERMITS AND LICENSES

Current licenses and applicable permits required by federal and applicable state or local jurisdictions for removing, transporting, or disposing of asbestos or other regulated activities relative to the abatement work of this contract will be on site during the execution of the asbestos cleanup activities. All Subcontractor permits and licenses will be included as an amendment to this AAP prior to mobilization to the field.

3.0 REPORTING

The following sections provide detail regarding the reporting requirements during the asbestos cleanup activities.

3.1 DAILY REPORTS

The Superintendent/Competent Person will provide daily reports during the asbestos cleanup activities. The daily reports will include, but are not limited to, a summary of the tailgate safety meeting, daily activities, production updates, a personnel log, incident reports, safety meeting minutes, materials received, and quality assurance/quality control oversight. Copies of the daily reports will be maintained at the project site.

3.2 UNUSUAL EVENTS REPORT

When an event of unusual and significant nature occurs at site (e.g., rupture of temporary enclosures or high airborne fiber reading), the Superintendent/Competent Person will prepare and submit a special report listing the chain of events, personnel impacted, evaluation of results or effects, and any other pertinent information.

3.3 ACCIDENT REPORTING

In the event of an accident, the Superintendent/Competent Person will notify the Leidos Construction Manager, who is responsible for notifying the Leidos Project Manager, Leidos Health and Safety Manager, Ohio Army National Guard (OHARNG)/Army National Guard (ARNG) Restoration Representative, and USACE Contracting Officer's Technical Representative (COTR). The USACE Accident Investigation Report form, included in Appendix E.1 of the SSHP, is to be filled out by the Leidos Construction Manager in the event of an accident.

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4.0 ASBESTOS CLEANUP ACTIVITIES

4.1 ASBESTOS DEMOLITION AND RENOVATION NOTIFICATION

An initial site walk was performed by a licensed asbestos hazard evaluation specialist to visually locate and flag surficial ACM on September 24, 2013. The quantity of regulated asbestos-containing material (RACM) was estimated to be less than 50 linear feet or 50 ft^2 of material. Therefore, the Prior Notification of Asbestos Hazard Abatement Project is not required to be submitted to the Ohio Department of Health in accordance with Ohio Administrative Code (OAC) 3745-20-03 and 40 CFR 61.145(b). In addition, the Notification of Asbestos Demolition and Renovation is not required for submission to the Ohio Environmental Protection Agency (Ohio EPA) Northeast District Office and Akron Regional Management District.

4.2 ESTABLISH SITE ACCESS AND CONTROLS

Control procedures will be implemented to prevent unauthorized access to the work area. Safety site controls will be utilized around the work area. The Superintendent/Competent Person will ensure that all personnel entering the site have the necessary training, medical approval documentation, and have reviewed this AAP. Personnel entering the site will be given a thorough briefing on the site hazards and safe work procedures prior to entering the work area.

All workers and authorized visitors, before entering the abatement work area, shall read and be familiar with all posted regulations, personal protection requirements, and emergency procedures and exit routes. Visitors will be expected to provide their own protective equipment. In the event that a visitor does not adhere to the provisions of the AAP, they will be requested to leave the work area.

All non-conformance incidents will be recorded in the daily reports. The Superintendent/Competent Person will maintain a daily job site personnel log listing names of individuals who entered the abatement work area, and the times when they entered and left the area.

Copies of notices will be posted at the job site, as required by Ohio EPA and OSHA regulations for asbestos abatement activities.

4.3 MARK REGULATED AREA

General work areas will be segregated as needed with caution tape to delineate the work zones and deter the intrusion of unauthorized personnel. Asbestos warning tape and signs will be used to demarcate the regulated areas.

Exterior work areas will be segregated with caution tape at an adequate distance from the regulated areas to deter unauthorized personnel from approaching the regulated areas. Asbestos warning tape

(i.e., Red Danger Asbestos tape) and appropriate signage will be used to demarcate the exterior regulated areas and prevent accidental intrusion into regulated areas by non-authorized personnel.

All persons entering a regulated area during the asbestos cleanup are required to wear respirators. The minimum respiratory protection for this scope of work is ½ mask air purifying respirator with High-efficiency particulate absorption (HEPA) filters, unless fiber concentrations require greater protection. The Subcontractor is responsible for appropriate respirator selection. Respiratory protection will be required until a negative exposure assessment is established showing that respiratory protection is no longer required.

No eating, drinking, smoking, or chewing gum is permitted within the abatement work area. These activities will be allowed in a designated "break area" outside of the abatement work area only after decontamination and proper hygiene practices have been employed.

4.4 ABATEMENT WORK AREA ENTRY AND EXIT PROCEDURES

Workers will don new disposable protective clothing coveralls with hood, boots, and gloves when entering the regulated area. Upon exiting the regulated area, workers shall step onto a decontamination area. The adjacent decontamination area will consist of a layer of 6-mil polyethylene sheeting drop cloth. Workers shall remove all disposable protective clothing coveralls, disposable protective foot coverings, and gloves on the decontamination drop cloth and place into two 6-mil polyethylene asbestos disposal bags to be disposed as asbestos-containing waste. Respiratory protection shall be worn during all decontamination activities and shall only be removed after leaving the decontamination area.

4.5 CLEANUP OF ASBESTOS-CONTAINING MATERIALS

The Asbestos Hazard Evaluation Specialist will be responsible for reviewing the area specified in Figure 1 before and after the ACM cleanup has taken place. The Asbestos Abatement Subcontractor will remove identified any surficial/exposed ACM. Identified surficial ACM will be removed using non-intrusive, no digging methods (e.g., removal by hand). The cleanup of this ACM is to provide adequate protection for future land use of general foot traffic by U.S. Department of the Army and OHARNG personnel performing activities such as surveying, sampling, essential security, safety, periodic maintenance, and natural resources management. The Subcontractor shall not generate visible dust emissions during cleanup activities. All work will be stopped if visible emissions are observed.

ACM is to be placed in two 6-mil polyethylene asbestos bags. ACM shall be wetted with hand pump sprayers to maintain an adequately wet condition and prevent airborne asbestos fibers.

4.6 EQUIPMENT DECONTAMINATION

After the asbestos cleanup activities have concluded, non-disposable equipment utilized during the cleanup will be thoroughly cleaned and visually inspected before being removed from the site. Cleaning waste and used filters will be disposed appropriately as asbestos-contaminated waste materials.

4.7 FIELD STAGING OF GENERATED WASTES

A Field Staging Area will be the existing equipment staging area for staging all bagged and sealed ACM and ACM waste generated during the project. The Field Staging Area will be managed according to the requirements of Section 8.3 of the FWSAP. Final inventories of remedial waste will be taken and provided to the OHARNG/ARNG Restoration Representative by the designated Leidos Construction Manager.

4.8 WASTE CONTAINERIZATION AND LABELING

The surficial ACM was previously considered friable ACM by Ohio EPA and will be effectively saturated with amenable liquid, collected, loaded into sealed two 6-mil polyethylene liners (12-mil total per Ohio EPA asbestos regulations). Bulk and containerized asbestos waste shall be packed, labeled, and transported according to U.S. Department of Transportation Regulations 49 CFR 173.216 and 49 CFR 173.240. All removed ACM, plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the abatement work area shall be packed into double bagged sealable 6-mil plastic bags. The bags shall be marked with labels required by OSHA 29 CFR 1910.1001 and/or 1910.1200 and 1926.1101.

All waste storage containers will be a suitable size, leak proof, and constructed of materials compatible with the materials to be contained. Waste storage containers will be properly labeled prior to placement of material.

The Asbestos Abatement Subcontractor will be responsible for waste characterization, container labeling, transportation and final disposal at a U.S. Environmental Protection Agency (USEPA)-licensed asbestos landfill. The OHARNG/ARNG Restoration Representative will approve all waste profiles and waste manifests for the disposal of project investigation-derived waste to approved disposal facility.

All waste containers will be labeled prior to placing ACM in them. All ACM containers will be labeled in accordance with Section 8.2 of the FWSAP. Each waste container will be labeled to ensure easy identification and proper management.

Prior to placing ACM into a container, a "Regulated Waste" label for ACM waste containing the following information will be affixed to the outside of the container:

- Project name;
- Contents;
- Date waste was first placed into the container;
- Source location(s); and
- Emergency contact name and telephone number.

In addition, a label will be applied to any ACM waste container stating:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
R.Q., ASBESTOS
CLASS 9
NA 2212, III

4.9 TRANSPORTATION, STORAGE, AND DISPOSAL

ACM removed from the quarry bottom will be placed into double-lined bags and will be transported by licensed waste haulers to OHARNG/ARNG- and Leidos-approved USEPA licensed off-site disposal facilities accepting friable ACM. The management, transportation, and disposal of all waste streams will be coordinated with the OHARNG/ARNG Restoration Representative. A draft of the transportation paperwork containing "base" information will be submitted to the OHARNG/ARNG Restoration Representative for review and approval a minimum of one week prior to shipment of any material. The OHARNG/ARNG Restoration Representative will sign all waste profiles and waste manifests for the disposal of project wastes at an approved disposal facility. The approved transportation paperwork will then be completed as appropriate by the Leidos Construction Manager in the field during remedial activities.

All transportation requirements, including proper labeling, placarding, and weight limits will be followed. All manifests, shipping documents, and disposal facility approval letters will be provided to Leidos and incorporated into the Remedial Action Report. The OHARNG/ARNG Restoration Representative will be responsible for custody of manifest copies and submittal to Ohio EPA and USEPA as part of the annual reporting for Camp Ravenna hazardous waste generation and management.

4.10 POST CLEANUP VISUAL INSPECTION

After cleanup activities have taken place in the designated work area, a clearance inspection will be conducted. A visual inspection, in accordance with 40 CFR, Part 763.90(i) will be completed by the Asbestos Hazard Evaluation Specialist. This inspection will be done by a site walkover to ensure all surficial ACM has been removed from the area specified in Figure 1. The purpose of the visual inspection is to verify that the regulated area is free of surficial ACM after the asbestos cleanup activities were completed. A "Certification of Visual Inspection" will be completed and signed by the Asbestos Hazard Evaluation Specialist and included in the Remedial Action Report.

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5.0 PERSONAL PROTECTIVE EQUIPMENT

PPE will be used by personnel for each of the site tasks and operations being performed. The specific type of protective equipment will vary in accordance with specific tasks. At a minimum, Level D PPE will be utilized continuously. Level D PPE includes:

- Boots/shoe, steel toe
- Safety glasses
- Canvas or leather gloves

During asbestos cleanup activities, Level C PPE will be utilized. In addition to the items accounted for in Level D PPE, Level C PPE includes:

- Half face air-purifying respirator equipped with HEPA filters (P100)
- Nitrile gloves
- Disposable suit (Tyvek or Tyvek equivalent)

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6.0 EXPOSURE MONITORING AND RESPIRATORY PROTECTION

Asbestos is considered a cancer-causing agent. Respiratory protection will be appropriate for the fiber level encountered in the abatement work area or as required for other toxic or oxygen-deficient situations encountered. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.

6.1 POTENTIAL EXPOSURES

Table 6-1 provides potential exposures during asbestos cleanup activities, in addition to the potential exposures presented in Table 3-2 of the Site Safety and Health Plan.

6.2 USE OF RESPIRATORS

Site workers and authorized personnel shall be fully protected with respirators and protective clothing during any work which may disturb ACM and result in fiber release. Respirators will be properly fitted on the face and worn from the start of any operation that may cause airborne asbestos fibers until the abatement work area is completely decontaminated. Individuals are to use only those respirators for which training and fit-testing have been provided. Each time an air-purifying respirator is put on, the respirator is be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or American National Standards Institute (ANSI) Z88.2.

The respirators will, at a minimum, meet the requirements of OSHA 29 CFR 1926.1101. Air-purifying respirators will be, at a minimum, HEPA type filters certified by National Institute for Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA) for protection against asbestos fibers. In addition, a chemical cartridge may be added, if required for protection against chemicals used on this job.

No personnel who have facial hair, which interferes with the respirator's sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use. Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

6.3 AIR MONITORING

Asbestos air sampling will be conducted in accordance with OSHA Class I and Class II asbestos removal requirements. Asbestos air samples will be collected on a 25 millimeter (mm) mixed cellulose ester filtered cassette and analyzed by Phase Contrast Microscopy (PCM). Samples will be analyzed in accordance with the NIOSH 7400 Method or equivalent. For samples analyzed by PCM,

the laboratory shall be accredited by the American Industrial Hygiene Association (AIHA) and found proficient by the successful participation in the AIHA proficiency analytical testing (pat) program.

6.3.1 Baseline Sampling

Baseline air sampling activities will be conducted before any cleanup activities are performed. This is done to establish the background/baseline concentrations for airborne fibers, both asbestos and non-asbestos, in the areas where asbestos cleanup is to be conducted.

6.3.2 Personnel Sampling

Personnel air monitoring will consist of sampling at least 25% of the work force and will be conducted daily. Different tasks, such as operating front end loader equipment and misting a soil pile with a hose by a ground level worker are sampled individually. Personnel sampling will be performed by using a portable, rechargeable pump unit worn on a belt with the cassette assembly draped over the shoulder of the worker to sample their respective breathing air. Personnel samples will be collected at a rate of 0.5 to 2.0 liters per minute. Samples will be collected and analyzed on an 8-hour time weighted average and a 30-minute excursion. Asbestos PEL are presented in Table 6-1. Additionally, personnel will be enrolled in a medical surveillance plan to assess exposure and monitor employee fitness to perform work tasks while wearing PPE that includes respiratory devices.

Table 6-1. Potential Exposures

Chemical	TLV/PEL/ STEL/IDLH[a]	Health Effects/ Potential Hazards[b]	Chemical and Physical Properties[b]	Exposure Route(s)[b]
Asbestos	TWA: 0.1 f/cc Exclusion Limit: 1.0 f/cc (30 min.) (ACGIH) 0.1 f/cc	Asbestosis, difficulty breathing, interstitial fibrosis, restricted pulmonary function, finger clubbing, eye irritant, potential cancer	White/greenish/blue/gray-green fibrous odorless solid	Inhalation Ingestion Skin/Eye Contact

[a]From 2012 Threshold Limit Values, American Conference of Governmental Industrial Hygienists.

[b]From NIOSH Guide to Chemical Hazards web site.

ACGIH = American Conference of Industrial Hygienists
f/cc = fibers per cubic centimeter
IDLH = Immediately Dangerous to Life and Health
PEL = Permissible Exposure Limit
STEL = Short-Term Exposure Limit
TLV = Threshold Limit Value
TWA = Time-Weighted Average

7.0 EMERGENCY RESPONSE PLAN

The emergency routes, procedures, alerting, and response procedures are located within Section 13.0 of the Site Safety and Health Plan. In addition, daily safety meetings will be held prior to work commencing each day. In the event of an emergency, which necessitates evacuation of the site, all personnel will be expected to leave the work zone and mobilize to a safe distance outside the fenced area. Evacuation routes will be addressed at the daily safety meeting. Personnel will remain at that area until the Superintendent/Competent Person provides further instructions.

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8.0 MATERIAL SPECIFICATIONS

This section presents specifications for materials expected to be used as part of the asbestos cleanup activities. All materials will be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. The materials will be stored off the ground to prevent damage and away from sources of damage or contamination.

8.1 IMPERMEABLE WASTE-DISPOSAL CONTAINERS

The waste disposal containers for ACM will be suitable to receive and retain any ACM until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be water-tight and air-tight.

8.2 PLASTIC SHEETING

Polyethylene plastic sheeting material (Product Standard 17-69 and OSHA Regulation 29 CFR 1926.1101) with 6-mil thickness will be used for covering floors and walls, providing air locks, and sealing doors and windows. This material must be flame-resistant and meet National Fire Protection 701test criteria. Reinforced sheeting is required for applications subject to wear and tear.

8.3 SURFACTANT (WETTING AGENT)

A wetting agent of 50% polyoxyethylene ester and 50% polyoxyethylene ether (or approved equivalent) shall be mixed with water to provide a concentration of 2 milliliters surfactant to 1 liters of water, or manufacturer's recommended concentration.

8.4 TAPE

Glass fiber or other tape used will be capable of sealing joints of adjacent plastic sheeting and for attaching plastic sheets to finished or unfinished surfaces of dissimilar materials under dry and wet conditions, including using amended water. The minimum tape width will be 55 mm.

8.5 WASTE WATER FILTERS

Any liquids discharged from the decontamination unit will pass through a primary filter of 20 microns or smaller. The secondary filter shall have output particles 5 microns or smaller.

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9.0 DEFINITIONS

Abatement	Procedures to control or eliminate fiber release from asbestos-containing building materials, to include encapsulation, enclosure and removal.
Abatement Work Area (regulated area)	An area established by the employer to demarcate areas where Class I, II, III, and IV asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work is conducted. Also includes any adjoining area where debris and waste from such asbestos work accumulated and a work area within which airborne concentrations of asbestos, exceed, or there is a reasonable possibility they may exceed the permissible exposure limit.
Air Monitoring	The process of measuring fiber content of a specific volume of air during a stated period of time.
Amended Water	Water to which a surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate asbestos containing materials (ACM).
Asbestos	Asbestiform varieties of chrysoile, amosite, crocidolite, tremolite, anthphylolite, and actinolite.
Asbestos-containing Material (ACM)	Any material containing more than 1% asbestos by volume of any type or mixture of types.
Friable asbestos material	Any material containing more than 1% asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10% as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM.
Regulated asbestos-containing material (RACM)	Friable asbestos material, Category I non-friable ACM that has become friable, Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
Category I non-friable ACM	Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1% asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, PLM.
Category II non-friable ACM	Any material, excluding Category I non-friable ACM, containing more than 1% asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, PLM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Authorized Personnel	Any person authorized by the Contractor, Contracting Officer's Technical Representative, or USACE and required by work duties to be present in a regulated area.
Class I Asbestos Work	Activities involving removal of thermal systems insulation (TSI) and surfacing ACM and presumed asbestos containing materials (PACM).
Class II Asbestos Work	Activities involving removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, removing asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
Class III Asbestos Work	Repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.
Class IV Asbestos Work	Maintenance and custodial activities of asbestos during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.
Competent Person	In addition to the definition in 29 CFR 1926.32(f), on who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f). In addition, the competent person shall have successfully completed training for Class I, Class II, Class III, and Class IV projects meeting the criteria set forth in the EPA Model Accreditation Plan (40 CFR 763) for project designer or supervisor, and operations and maintenance training.
Contracting Officer's Technical Representative (COTR)	An individual representing the USACE as the technical advisor to the USACE Contracting Officer. This individual may be an employee of USACE or consultant.
Disposal Bag	A properly labeled, leak-tight plastic bag (total 12-mil thickness) used for transporting asbestos waste from the abatement work areas to an EPA-approved disposal site for ACM waste.
Disturbance	Contact which releases fibers from ACM or PACM or debris containing ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris.
Excursion Limit	Airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc), as averaged over a sampling period of 30 minutes.
Fiber	A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.

HEPA Filter	A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of all mono-dispersed particles 0.3 micrometer in diameter or larger.
Impermeable Waste-Disposal Containers	Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be water-tight and air-tight.
Industrial Hygienist	An individual serving as the USACE's industrial hygienist. This individual may be an employee or consultant.
Negative Exposure Assessment (NEA)	A demonstration by the contractor, which complies with the criteria in OSHA 29 CFR 1926.1101(f)(2)(iii), that employee exposures during an operation are expected to be consistently below the permissible exposure limits (PELs). Such assessment is to be used to justify level of respiratory protection to be used on the job.
PACM	Presumed ACM, meaning thermal system insulation and surfacing material found in buildings
Permissible Exposure Limit (PEL).	An occupational limit of exposure to a chemical substance or physical agent.
Personal Monitoring	Sampling of asbestos fiber concentrations within the breathing zone of an employee. Breathing zone is defined as a radius of 150 to 250 mm around the employee's head.
Personal Protective Equipment (PPE)	Equipment which may consist of coveralls, shoes, gloves, helmet, goggles, and respirator used for protection against asbestos exposure.
Plastic Sheeting	Fire retardant polyethylene sheet material of specified thickness used as a critical barrier in the abatement work area.
Respirator	A device designed to protect the wearer from inhaling harmful atmospheres and approved by NIOSH or MSHA for a specific category use.
Surfactant	A chemical wetting agent added to water to decrease surface tension and improve material penetration.
Tape	Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials under both dray and wet conditions, including use of amended water. Minimum tape width shall be 51 mm.
Warning Labels and Signs	As required by OSHA regulations 29 CFR 1910.1001 and 1926.58.

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10.0 REGULATIONS

This section details the specific operational tasks required for this project. The following is a listing of major regulations and/or standards that will be adhered to during the execution of the work plan.

Part 1910 – Occupational Safety and Health Standards

- 29 CFR 1910 Subpart I - Personal Protective Equipment
- 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Procedures
- 29 CFR 1910.134 – OSHA Respiratory Protection
- 29 CFR 1910.145 – Specifications for Accident Prevention Signs and Tags
- 29 CFR 1910.1001 - Asbestos
- 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records
- 29 CFR 1910.1200 - Hazard Communication

Part 1926 – Safety and Health Regulations for Construction

- 29 CFR 1926 Subpart C – General Safety and Health Provisions
- 29 CFR 1926 Subpart E - Personal Protective Equipment
- 29 CFR 1926.1101 - OSHA Asbestos Construction Standard
- 29 CFR 1926.32(f) – Definition of a Competent Person
- 29 CFR 1926.33 – Access to Employee Exposure Records
- 29 CFR 1926.59 - Hazard Communication
- 29 CFR 1926.200 - Accident Prevention Signs and Tags

Title 40 – Protection of Environment

- 40 CFR Part 61 - National Emissions Standards for Hazardous Air Pollutants (NESHAP)
- 40 CFR Part 763 Subpart E - Asbestos Hazard Emergency Response Act (AHERA)
- 40 CFR Part 763 Subpart E, Appendix C - Model Accreditation Plan
- 40 CFR Part 763 Subpart G - Asbestos Abatement Projects, Worker Protection Rule

Title 49 - Transportation

- 49 CFR Parts 171–180 - Hazardous Material Regulations, General Awareness, and Training Requirements for Handlers, Loaders, and Drivers

Ohio Administrative Code (OAC)

- OAC 3701-34 - Asbestos Hazard Abatement
- OAC 3745-20 - Asbestos Emission Control

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11.0 ASBESTOS HAZARD PROJECT DESIGNER CERTIFICATION

TSI Training Services International

Asbestos Project Designer Refresher

Certificate

This is to certify

William Howser

XXX-XX-5493

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Project Designer Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3701-34 Ohio Administrative Code.

3/13/15	3/13/14	3/13/14	Cleveland, OH
Expiration Date	Date(s) of Course	Examination Date	Course Location

Training Manager

TSI
33150 Lakeland Blvd.
Cleveland, OH 44095
1-866-666-8438

14 TSI 52970 pdr

TSI Training Services International

Asbestos Management Planner Refresher

Certificate

This is to certify

William Howser

XXX-XX-5493

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3701-34 Ohio Administrative Code.

Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location
	7/10/14	7/10/13	7/10/13	Cleveland, OH

TSI
33150 Lakeland Blvd.
Cleveland, OH 44095
1-866-666-8438

13 TSI 49380 mpr

TSI Training Services International

Asbestos Building Inspector Refresher

Certificate

This is to certify

William Howser

XXX-XX-5493

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3701-34 Ohio Administrative Code.

Robert Wetter	7/10/14	7/10/13	7/10/13	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

TSI
33150 Lakeland Blvd.
Cleveland, OH 44095
1-866-666-8438

13 TSI 49359 ir

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12.0 FIGURES

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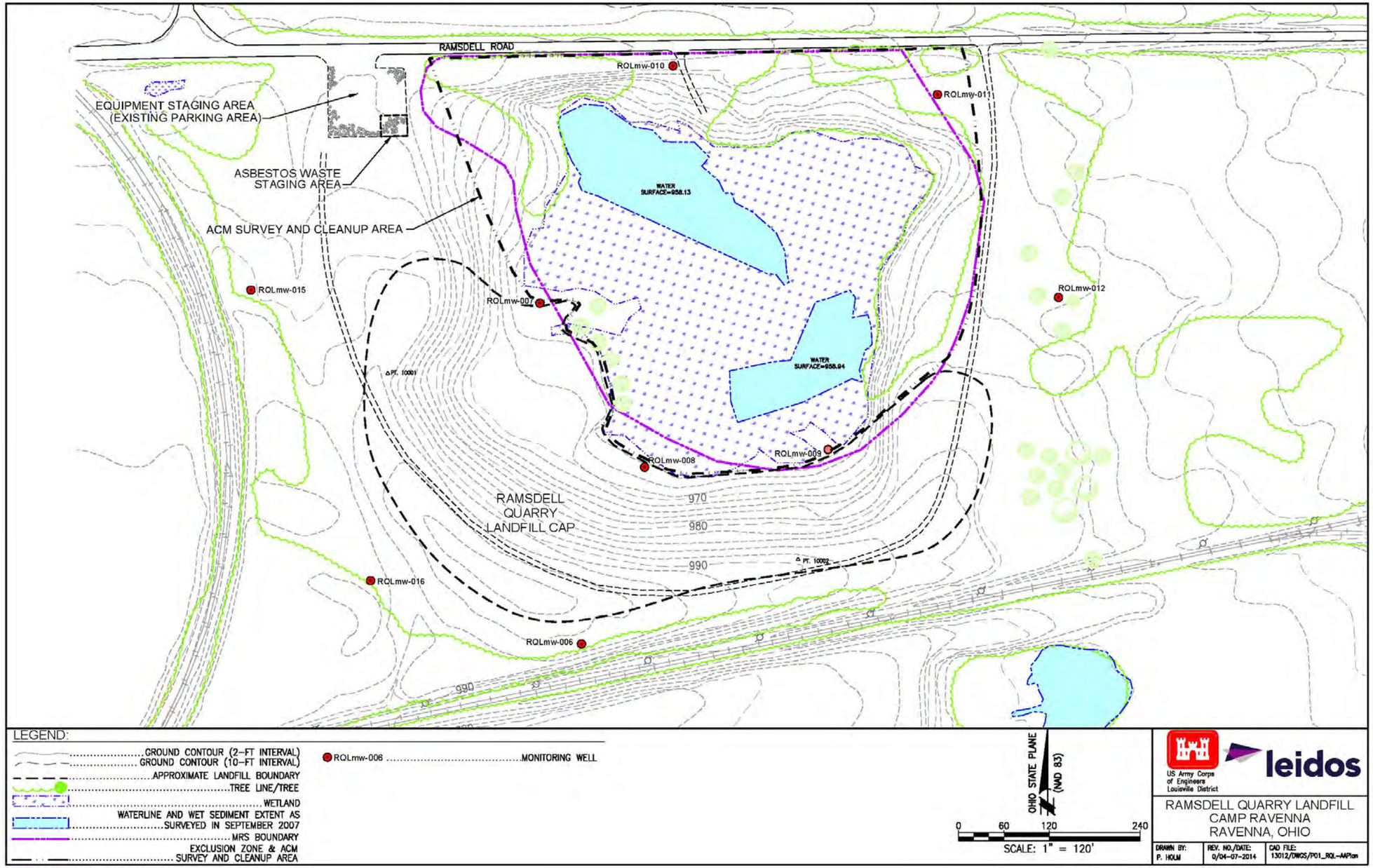

Figure 1. Ramsdell Quarry Landfill Site Features

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ATTACHMENT F
COMMENT RESPONSE CORRESPONDENCE

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Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266

March 25, 2014

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Mr. Andrew Kocher, Project Manager
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program
Portage/Trumbull Counties, RVAAP-01 Ramsdell Quarry Landfill
Responses to Ohio EPA Comments on the Draft Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill
(Work Activity No. 267-000859-130)

Dear Mr. Kocher,

On March 11, 2014, the U.S. Army received Ohio Environmental Protection Agency comments on the *Draft Remedial Design for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill*. This letter presents responses to those comments. Please contact the undersigned at (703) 601-7785 or brett.a.merkel.civ@mail.mil, if there are issues or concerns associated with the responses to comments. I look forward to receiving your response by April 2, 2014 so that the Final Remedial Design can be submitted by April 10, 2014, which is 30 days after receipt of comments.

Sincerely,

Brett Merkel

Brett A. Merkel
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Nancy Zikmanis, Ohio EPA, DERR-NEDO
Rod Beals, Ohio EPA, DERR-NEDO
Justin Burke, Ohio EPA, CO
Kevin Sedlak, ARNG, Camp Ravenna
Katie Tait, OHARNG Camp Ravenna
Glen Beckham, USACE Louisville
Nat Peters, USACE Louisville
Kevin Jago, Leidos
Jed Thomas, Leidos
Gail Harris, Vista Sciences

Subject: Responses to Ohio EPA comments of the Draft Remedial Design for Soil and Dry Sediment at Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant Restoration Program, Portage/Trumbull Counties, RVAAP-01 Ramsdell Quarry Landfill

Ohio EPA Comments and Army Responses

1) Page 1-2, Line 26-28 – Please add a sentence that states that this Remedial Design does not address Munition Constituents (MC), Munitions and Explosives of Concern (MEC), Materials Presenting a Potential Explosive Hazard (MPPEH), etc. Also, add to acronym list, as appropriate.

Army Response: Agree. The text has been revised as follows:

> "This RD does not address other potentially contaminated media (e.g., surface water, groundwater, wet sediment), which will be evaluated under a separate investigation. While a BMP will be employed during the implementation to avoid potential munitions or unexploded ordnance (UXO), this remedy does not provide remedy for munitions constituents (MC), munitions and explosives of concern (MEC), or materials presenting a potential explosive hazard (MPPEH), under the Military Munitions Response Program (MMRP)."

2) Page 3-3, Line 18 - Please add a section titles "Licensed Asbestos Professional" and text summarizing their responsibilities.

Army Response: Clarification and agree. A subsection titled "Asbestos Abatement Contractor" has been added to Section 3.0 Project Organization and Coordination. This subsection identifies the Superintendent/Competent Person, Asbestos Hazard Abatement Worker, and Asbestos Hazard Evaluation Specialist that will perform the asbestos cleanup. These activities are presented in the Asbestos Abatement Plan attachment to the Site Safety and Health Plan being reviewed by the Army. The subsection has been added as follows:

> 3.1.8 Asbestos Abatement Subcontractor
>
> The Asbestos Abatement Subcontractor will implement the asbestos cleanup activities specified in the Asbestos Abatement Plan. The Asbestos Abatement Subcontractor will provide a Superintendent/Competent Person to oversee the asbestos cleanup activities, an Asbestos Hazard Abatement Worker to assist in the asbestos cleanup, and an Asbestos Hazard Evaluation Specialist to identify ACM and confirm all surficial ACM has been removed.

3) Pages 6-1, Lines 26-29 - Please add the height of the fence and the maximum gap between the fence and the ground.

Army Response: Agree. The following text has been added:

> The 6-ft high chain-link fence will have a maximum gap of 4 inches between the fence and the ground.

4) Page 7-1, Lines 2-16 – Please add a sentence noting that the licensed asbestos abatement contractor will also need proper health and safety training to recognize MEC/MC/MMPEH and proper reporting/safety procedures.

Army Response: Clarification and agree. Section 7.0 has been revised to refer to the Asbestos Abatement Plan for implementation requirements for the removal of ACM in the quarry bottom. However, Section 7.0 will specify that the Asbestos Abatement Subcontractor will receive training provided to all remedial action workers as specified in the SSHP, in the recognition and avoidance of MEC/MC/MMPEH from a UXO technician. UXO technician support is required for MEC avoidance for all activities conducted within the MRS, including ACM removal.