

**Final
No Further Action Proposed Plan
for
RVAAP-001-R-02 Ramsdell Quarry Landfill Munitions Response Site Area 1 (North)**

**Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio**

**Contract No. W912DR-15-D-0016
Delivery Order No. 0001**

Prepared for:



**US Army Corps
of Engineers®**

**U.S. Army Corps of Engineers
Baltimore District
10 S. Howard Street, Room 7000
Baltimore, Maryland 21201**

Prepared by:

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August 1, 2017

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REPORT DOCUMENTATION PAGE

*Form Approved
OMB No. 0704-0188*

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1. REPORT DATE (DD-MM-YYYY) 8/1/17		2. REPORT TYPE Proposed Plan		3. DATES COVERED (From - To) July 2017	
4. TITLE AND SUBTITLE Final No Further Action Proposed Plan for Ramsdell Quarry Landfill MRS Area 1 (North), RVAAP 001-R-02, Version 1.0				5a. CONTRACT NUMBER W912DR-15-D-0016, Delivery Order 0001	
				5b. GRANT NUMBER NA	
				5c. PROGRAM ELEMENT NUMBER NA	
6. AUTHOR(S) Kimberly Vaughn, PG, HydroGeoLogic, Inc. (HGL) David Crispo, CB&I Katherine Kaye, HGL Caitlyn Martin, HGL				5d. PROJECT NUMBER NA	
				5e. TASK NUMBER NA	
				5f. WORK UNIT NUMBER NA	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) HGL 11107 Sunset Hills Rd, Suite 400 Reston, VA 20190				8. PERFORMING ORGANIZATION REPORT NUMBER NA	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Corps of Engineers, North Atlantic Division, Baltimore District 10 South Howard Street Baltimore, MD 21201				10. SPONSOR/MONITOR'S ACRONYM(S) USACE	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) NA	
12. DISTRIBUTION/AVAILABILITY STATEMENT Refer to Document Distribution Page					
13. SUPPLEMENTARY NOTES None					
14. ABSTRACT The U.S. Department of the Army (U.S. Army) is presenting this No Further Action (NFA) Proposed Plan to involve the public in the remedy selection process for the former Ravenna Army Ammunition Plant (RVAAP) Ramsdell Quarry Landfill MRS Area 1 (North), RVAAP 001-R-02, in Portage and Trumbull Counties, Ohio. This NFA Proposed Plan presents the U.S. Army's preliminary recommendations for addressing the MRS. Investigations have not found material potentially presenting an explosive hazard (MPPEH) or munitions and explosives of concern (MEC) at the MRS. Therefore, no explosive hazards and no risk to receptors exist from historical activities associated with manufacturing, storing, transporting, testing, training, and/or disposal that occurred at the facility.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 34	19a. NAME OF RESPONSIBLE PERSON Kimberly Vaughn
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include area code) 512 828 6684

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John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

August 24, 2017

Mr. Mark Leeper, P.G., MBA
Chief (Acting), Cleanup and
Restoration Branch ARNG
Directorate Environmental Programs
Division
111 South George Mason Drive
Arlington, VA 22204

Re: **US Army Ravenna Ammunition Pit RVAAP
Remediation Response
Plans
Remedial Response
Portage County
267000859204**

Re: **“Final No Further Action Proposed Plan, RVAAP-001-R-02 Ramsdell Quarry Area 1
Munitions Response Site (North)” Former Ravenna Army Ammunition Plant,
Portage and Trumbull Counties, Ohio: Dated August 1, 2017**

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the “Final No Further Action Proposed Plan (Final PP), RVAAP-001-R-02 Ramsdell Quarry Area 1 Munitions Response Site (MRS),” dated August 1, 2017. This document was received by Ohio EPA, NEDO on August 2, 2017. It was prepared by HydroGeoLogic, Inc. as a result of the investigation completed under the military munitions response program (MMRP).

Based on the information contained in the Final PP, other investigation documents/reports and Ohio EPA’s oversight participation during the investigation, Ohio EPA approves the Final PP for the Ramsdell Quarry Area 1 MRS. As stated in the Final PP, there will be a public comment period between November 3 and December 8, 2017, and the Army will hold an open house/public meeting on November 8, 2017.

If you have any questions or concerns, please do not hesitate to contact Nicholas Roope at (330) 963-1235.

Sincerely,

Michael Proffitt, Chief
Division of Environmental Response and Revitalization

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29 AUG 2017

MP:NCR/nvr

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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

HydroGeoLogic, Inc., has completed the *Draft No Further Action Proposed Plan for RVAAP-001-R-02 Ramsdell Quarry Landfill MRS Area 1 (North) Munitions Response Site*, at the former Ravenna Army Ammunition Plant in Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy, principles, and procedures, utilizing justified and valid assumptions, was verified. This 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 customer's needs consistent with law and existing United States Army Corps of Engineers policy.

Prepared/Approved by:



Date: August 1, 2017

David Crispo, P.E.
Project Manager
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Date: August 1, 2017

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ARNG—Army National Guard

COR—Contracting Officer's Representative

IED—Installation and Environment Division

OHARNG—Ohio Army National Guard

RVAAP—Former Ravenna Army Ammunition Plant

USACE—United States Army Corps of Engineers

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SF-298 FORM

OHIO EPA CONCURRENCE LETTER

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
Camp Ravenna	Camp Ravenna Joint Military Training Center
CB&I	CB&I Federal Services LLC
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DFFO	Director's Final Findings and Orders
e ² M	Engineering-Environmental Management, Inc.
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosive hazard
MRS	Munitions Response Site
NFA	No Further Action
Ohio EPA	Ohio Environmental Protection Agency
RI	Remedial Investigation
RVAAP	former Ravenna Army Ammunition Plant
SI	Site Inspection
U.S. Army	U.S. Department of the Army

1.0 INTRODUCTION

The United States Department of the Army (U.S. Army) is presenting this No Further Action (NFA) **Proposed Plan*** to involve the public in the **remedy selection process** for the RVAAP-001-R-02 Ramsdell Quarry Landfill **Munitions Response Site (MRS) Area 1 (North)** at the former Ravenna Army Ammunition Plant (RVAAP). The former RVAAP is located in Portage and Trumbull Counties, Ohio, as shown on **Figure 1**. The location of the MRS relative to the former RVAAP is shown on **Figure 2**.

The U.S. Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), is the lead agency for investigating, reporting, making **remedial decisions**, and taking **remedial actions** at the former RVAAP. This NFA Proposed Plan presents the U.S. Army's preliminary recommendations for a preferred remedy to address the Ramsdell Quarry Landfill MRS Area 1 (North). Investigations indicate that **material potentially presenting an explosive hazard (MPPEH), munitions and explosives of concern (MEC), or concentrated areas of munitions debris (MD)** are not present at the MRS. As no MPPEH, MEC, or MD is present, there cannot be a source for **munitions constituents (MC)**. Therefore, no **explosive hazards** or MC risks to **human or environmental receptors** exist.

The U.S. Army is issuing this NFA Proposed Plan to address its public participation responsibilities under Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)**, as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan** (40 Code of Federal Regulations 300). Implementation of the selected remedy at the MRS will comply with the requirements of the *Director's Final*

Findings and Orders (DFFO) for RVAAP (Ohio EPA, 2004).

This NFA Proposed Plan summarizes information that can be found in the *Final Remedial Investigation Report for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site, Version 1.0* (Final **Remedial Investigation [RI]** Report; CB&I Federal Services LLC [CB&I], 2015). The U.S. Army encourages the public to review this document to better understand the history of the MRS, activities that have been conducted there, and determinations that have been made for the MRS under the **Military Munitions Response Program**.

The U.S. Army, in consultation with the Ohio EPA, will review and consider all comments on this NFA Proposed Plan received during the 30-day public comment period. The public is encouraged to review and comment on all recommendations presented in this NFA Proposed Plan.

2.0 FACILITY AND MRS BACKGROUNDS

This section summarizes the history of the former RVAAP and of the Ramsdell Quarry Landfill MRS Area 1 (North).

2.1 Facility History

The former RVAAP (Federal Facility ID No. OH213820736), now known as the Camp Ravenna Joint Military Training Center (Camp Ravenna), is located in northeastern Ohio within Portage and Trumbull Counties and is approximately 3 miles east-northeast of the city of Ravenna. The federally owned facility, approximately 11 miles long and 3.5 miles wide, is bounded by a Norfolk Southern railroad line to the north; State Route 5, the Michael J. Kirwan Reservoir, and a CSX railroad line to the south; State Route 534 to the east; and Garret, McCormick, and Berry Roads to the west. The

* Terminology used in this Proposed Plan is defined in the Glossary found at the back of this document.

Public Comment Period:

November 3 to December 8, 2017

Public Meeting:

The U.S. Army will hold an open house/public meeting to explain the NFA Proposed Plan. Oral and written comments on the document will be accepted at the meeting. The open house/public meeting is scheduled for 6:00 p.m. on November 8, 2017, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266.

Information Repositories:

Information used in selecting the preferred remedy is available online at www.rvaap.org and at the following locations:

Reed Memorial Library

167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827

Hours of Operation:

9 a.m.–9 p.m., Monday–Thursday
9 a.m.–6 p.m., Friday
9 a.m.–5 p.m., Saturday
1 p.m.–5 p.m., Sunday

Newton Falls Public Library

204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282

Hours of Operation:

10 a.m.–8 p.m., Monday–Thursday
9 a.m.–5 p.m., Friday and Saturday

The **Administrative Record** File, which includes the information used to select the preferred remedy, is available for review at the following location:

Camp Ravenna Joint Military Training Center (Camp Ravenna)

Environmental Office
1438 State Route 534
Newton Falls, Ohio 44444
(330) 872-8003

Note: Access to Camp Ravenna is restricted, but an appointment to review the Administrative Record File can be scheduled.

facility is surrounded by the communities of Windham, Garrettsville, Newton Falls, Charlestown, and Wayland.

Administrative control of the 21,683-acre facility has been transferred to the U.S. Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard for use as a training site, Camp Ravenna. The restoration program for the facility involves the remediation of areas affected by past activities of the former RVAAP.

The former RVAAP was constructed in 1940 and 1941 for assembly/loading and **depot storage** of ammunition. While serving as an ammunition plant, the former RVAAP was a U.S. Government-owned and contractor-operated industrial facility. The ammunition plant consisted of 12 munitions assembly facilities, referred to as “load lines.” Load Lines 1 through 4 were used to melt and load 2,4,6-Trinitrotoluene and Composition B (a mixture of 2,4,6-Trinitrotoluene and Research Department Explosive) into **large-caliber shells** and bombs. Operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Periodically, the floors and walls were cleaned with water and steam. After cleaning, the “pink water” wastewater, which contained 2,4,6-Trinitrotoluene and Composition B, was collected in concrete holding tanks, filtered, and pumped into unlined ditches for transport to **earthen settling ponds**. Load Lines 5 through 11 manufactured **fuzes, primers, and boosters**. From 1946 to 1949, Load Line 12 produced ammonium nitrate for explosives and fertilizers; subsequently it was used as a **weapons demilitarization facility**.

In 1950, the facility was placed in standby status, and operations were limited to **renovation, demilitarization**, and normal maintenance of equipment, along with storage of munitions. **Production** activities were resumed from July 1954 to October 1957 and again from May 1968 to August 1972. Demilitarization and production activities were conducted at Load Lines 1, 2, 3, and 12. Demilitarization activities included disassembling munitions and melting out and recovering explosives using hot water and steam

processes. These activities continued through 1992.

In addition to production and demilitarization activities at the load lines, other facilities at the former RVAAP included areas used for the burning, demolition, and testing of munitions. These burning and demolition grounds consisted of large, open areas and abandoned quarries. Other **Areas of Concern (AOCs)** at the former RVAAP include landfills, an aircraft fuel tank testing area, and various industrial support and maintenance facilities (CB&I, 2015).

2.2 MRS Background and History

Prior to the completion of the RI, the MRS was called the Ramsdell Quarry Landfill MRS (RVAAP-001-R-01). The total area of the MRS was 13.43 acres and consisted of two sections: Area 1 and Area 2. Area 1 is 6.5 acres in the northern section of the MRS and is the location of an old quarry bottom where **open burning/open demolition** operations historically took place. Area 2 is 6.93 acres located south of Area 1 and contains a small, inactive soil **borrow pit** and wooded area where installation personnel found MD prior to the RI field work (Engineering-Environmental Management, Inc. [e²M], 2008). The Ramsdell Quarry Landfill MRS that was investigated during the RI is presented in **Figure 3**.

Following the RI, Area 1 and Area 2 at the Ramsdell Quarry Landfill MRS were separated into two MRSS: Ramsdell Quarry Landfill MRS Area 1 (North) (RVAAP-001-R-02) and Ramsdell Quarry Landfill MRS Area 2 (South) (RVAAP-001-R-01). The Ramsdell Quarry Landfill MRS Area 2 (South), where MD was found, will proceed to a **Feasibility Study** as recommended in the Final RI Report (CB&I, 2015) and is not discussed further in this NFA Proposed Plan. The Ramsdell Quarry Landfill MRS Area 1 (North) and features associated with the MRS is presented in **Figure 4**.

The Ramsdell Quarry Landfill MRS Area 1 (North), the subject of this NFA Proposed Plan, is located on the south side of Ramsdell Road

and north of Load Line 1. The MRS is co-located with the Ramsdell Quarry Landfill AOC (RVAAP-01) that is managed under the **Installation Restoration Program**. The MRS is located within a former quarry that was initially mined to recover material for use as construction ballast. Quarry operations ceased in 1941, and from 1946 to 1950 the quarry was used to thermally treat waste explosives from Load Line 1. In addition, approximately 18,000 500-pound **incendiary** or **napalm bombs** were burned on the surface of the former quarry bottom. Beginning in 1976, the areas of the quarry to the east, west, and south of the MRS were used as a **nonhazardous solid waste landfill**. From 1978 until its closure in 1990, the area operated under a **sanitary landfill permit** issued by the State of Ohio (e²M, 2007). The landfill is not part of the MRS; however, small areas of the landfill slightly overlap the southwest and southeast boundaries of the MRS. Approximately 4 acres of **moderate quality wetland** are present at the MRS. The water levels in the wetlands can fluctuate seasonally, ranging from dry conditions at the higher areas at the east and south sections of the MRS to a maximum depth of 8 feet at the northwest section of the MRS (Leidos Engineering of Ohio, Inc., 2014; CB&I, 2015).

The landfill AOC under the Installation Restoration Program is managed as **Restricted Access** due to residual contamination that was left in-place following previous remedial actions. The perimeter boundary of the AOC is surrounded by a fence to prevent unauthorized access. The fence along Ramsdell Road is chain-link. The remainder of the fence surrounding the AOC consists of five-tension wires. The Ramsdell Quarry Landfill MRS Area 1 (North) is located north of the landfill within the fenced area. The MRS can be accessed through two gates located on Ramsdell Road; however access is only granted after a briefing is provided and a sign in tracking sheet is filled out prior to entry. There is a gravel access road at the northwest corner of the fenced area. No other buildings or structures are present at the MRS.

2.3 MRS Historical Investigations

The following investigations and reports have been completed for the Ramsdell Quarry Landfill MRS Area 1 (North) under the Military Munitions Response Program:

- *Final Military Munitions Response Program Historical Records Review, Ravenna Army Ammunitions Plant, Ohio* (e²M, 2007)
- *Final Site Inspection Report, Ravenna Army Ammunitions Plant, Ohio* (Final Site Inspection [SI] Report; e²M, 2008)
- Final RI Report (CB&I, 2015)

2.3.1 2007 SI Summary

An SI was completed at the MRS in 2007. **Subsurface anomalies** were identified at several locations surrounding the wetland area; however, the nature of the anomalies was not determined because an intrusive investigation was not performed at that time. No MPPEH was found on the ground surface during the SI fieldwork.

Prior to the SI, sampling was performed at the MRS under the Installation Response Program. The results of this sampling indicated that widespread MC contamination potentially existed across the entire former open burning/open detonation area. No additional samples were collected at the MRS during the SI fieldwork.

Based on the results of the SI field activities, which identified potential burial areas, “Further Characterization” for MEC at the MRS was recommended. The Final SI Report did not recommend further characterization for MC at the MRS because chemicals of concern were already being addressed at the co-located AOC under the Installation Response Program (e²M, 2008).

2.3.2 2011/2013 RI Summary

An RI was conducted at the MRS in two field work mobilizations, one from May through August 2011, and the other in August 2013. The

RI fieldwork included a **digital geophysical mapping** survey and an investigation of buried anomalies at the dry areas (i.e., outside wetland areas) at the MRS. An **underwater investigation** of the deeper areas in the wetland was conducted by former U.S. Navy Explosive Ordnance and Disposal divers. No MPPEH was identified on the ground surface or in the underwater areas in the wetland.

Sampling for MC at the MRS was not proposed as part of the RI fieldwork unless evidence of MPPEH was found (Shaw Environmental & Infrastructure, Inc., 2011). No MPPEH was identified at the MRS during RI fieldwork, and sampling for MC was not warranted.

To date, no MPPEH has been found at the Ramsdell Quarry Landfill MRS Area 1 (North). The RI fieldwork confirmed the results of previous investigations at the MRS; therefore, an **explosive hazard** is not expected to be present at the MRS. The chemicals of concern identified in surface soil and dry sediment during previous investigations will continue to be addressed under the Installation Response Program (CB&I, 2015).

3.0 SCOPE AND ROLE OF RESPONSE ACTION

The results of the RI fieldwork conducted at the Ramsdell Quarry Landfill MRS Area 1 (North) support the determination that NFA is the preferred remedy. The preferred remedy must be protective of the receptors associated with the future land use. The MRS is federal property licensed to the Ohio Army National Guard. Due to the residual contamination left in-place under the Installation Response Program, the future land use is Restricted Access. The likely human receptors for the future land use are the Security Guard/Maintenance Worker. Environmental receptors (biota) identified for the MRS include terrestrial invertebrates (earthworms), voles, shrews, robins, foxes, barn owls, hawks, muskrats, mink, mallards, great blue herons, benthic invertebrates, and aquatic biota (CB&I, 2015).

No explosive hazards were found at the Ramsdell Quarry Landfill MRS Area 1 (North) during investigations conducted at the MRS or co-located AOC. Further, because no MPPEH has been identified, no potential source of MC exists. Therefore, there are no source materials or impacted environmental media resulting from potential explosive hazards at the MRS.

The MRS is within the boundary of the fence that surrounds the Ramsdell Quarry Landfill AOC. The fence is a designated land use control for the AOC and is inspected and maintained under the Installation Restoration Program and in accordance with CERCLA. Although not anticipated, if any additional hazards are identified at the MRS, they would be addressed under the Military Munitions Response Program as a separate response action.

4.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

Under the Military Munitions Response Program, a recommendation of NFA must be protective of the human and environmental receptors at the MRS. The likely receptor identified for future land use at the Ramsdell Quarry Landfill MRS Area 1 (North) is the Security Guard/Maintenance Worker. Environmental receptors (biota) identified for the MRS include terrestrial invertebrates (earthworms), voles, shrews, robins, foxes, barn owls, hawks, muskrats, mink, mallards, great blue herons, benthic invertebrates, and aquatic biota (CB&I, 2015).

No MPPEH/MEC is present on the Ramsdell Quarry Landfill MRS Area 1 (North). Therefore, no explosive safety hazards or risks associated with MC exist for the receptors that may be present on the MRS.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the RI fieldwork for the Ramsdell Quarry Landfill MRS Area 1 (North) support the determination that no hazards associated with exposure to MPPEH/MEC and no potential for

MC risk to human or environmental receptors exist at the MRS. The U.S. Army, in consultation with the Ohio EPA, is recommending NFA as the preferred remedy under the Military Munitions Response Program for the MRS.

As no risks have been identified at the MRS, the overall recommendation of NFA under the Military Munitions Response Program is protective of receptors that may be present at the MRS. This recommendation is not a final decision. The U.S. Army, in consultation with the Ohio EPA, will select the remedy for the MRS after reviewing and considering all comments submitted during the 30-day public comment period.

6.0 COMMUNITY PARTICIPATION

Public participation is an important component of the remedy selection. The U.S. Army, in coordination with the Ohio EPA, is soliciting input from the community on the preferred alternative. The comment period extends from November 3 to December 8, 2017. This period includes a public meeting at which the U.S. Army will present this NFA Proposed Plan. The U.S. Army will accept oral and written comments on the Proposed Plan at this meeting.

6.1 Public Comment Period

The 30-day comment period extends from November 3 to December 8, 2017, and provides an opportunity for public involvement in the decision-making process for the proposed action. The public is encouraged to review and comment on this NFA Proposed Plan. All public comments will be considered by the U.S. Army and Ohio EPA before selecting a remedy. During the comment period, the public is also encouraged to review documents pertinent to the Ramsdell Quarry Landfill MRS Area 1 (North). This information is available at the Information Repositories and online at www.rvaap.org. To obtain further information, contact the Camp Ravenna Environmental Office.

6.2 Public Meeting

The U.S. Army will hold an open house and public meeting on this NFA Proposed Plan on November 8, 2017, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

6.3 Written Comments

If the public would like to provide comments, questions, or suggestions on this NFA Proposed Plan or other relevant issues in writing, they should be delivered to the U.S. Army at the public meeting or mailed (postmarked no later than December 8, 2017). The public can also submit comments, questions, or suggestions via email before the end of the comment period to the Camp Ravenna Environmental Office at kathryn.s.tait.nfg@mail.mil.

**POINT OF CONTACT FOR
WRITTEN COMMENTS**

Camp Ravenna Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444

6.4 U.S. Army Review of Public Comments

The U.S. Army will review the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken. A **Responsiveness Summary**, a document that summarizes the U.S. Army's responses to comments received during the public comment period, will be included in the **Record of Decision**. The U.S. Army's final choice of action will be documented in the Record of Decision. The Record of Decision will be added to the RVAAP Administrative Record and Information Repositories.

GLOSSARY OF TERMS

Administrative Control: Direction or exercise of authority over subordinate or other organizations in respect to administration and support, including organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual and unit training, readiness, mobilization, demobilization, discipline, and other matters not included in the operational missions of the subordinate or other organizations.

Administrative Record: A collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record is used to select the preferred remedy. It is available for public review at the Camp Ravenna Environmental Office; call (330) 872-8003 for an appointment.

Area of Concern (AOC): A term used by regulatory bodies to refer to environmentally sensitive or damaged areas.

Booster: A sensitive explosive charge that acts as a bridge between a (relatively weak) conventional detonator and a low-sensitivity (but typically high-energy) explosive such as 2,4,6-Trinitrotoluene. By itself, the initiating detonator would not deliver sufficient energy to set off the low-sensitivity charge. However, it detonates the primary charge (the booster), which then delivers an explosive shockwave sufficient to detonate the secondary, main, high-energy charge.

Borrow Pit: An area where material (usually soil, gravel or sand) has been dug for use at another location.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): This federal law was passed in 1980 and is commonly referred to as the Superfund Program. It provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste release sites that endanger public health or the environment.

Digital Geophysical Mapping: The process by which geological features are observed, analyzed, and recorded in the field and

displayed in real-time on a computer or personal digital assistant.

Demilitarization: The reduction of one or more types of weapons or weapons systems.

Depot Storage: A designated location for the storage of military supplies.

Discarded Military Munitions: Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include **unexploded ordnance**, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

Earthen Settling Pond: An earthen structure that uses sedimentation to remove matter that will settle and turbidity from wastewater.

Environmental Receptor: Any living organisms other than humans, the habitat that supports such organisms, or natural resources that could be adversely affected by environmental contaminations resulting from a release at or migration from a site.

Explosive Hazard: Any hazard containing an explosive component. Explosive hazards include unexploded explosive ordnance (including land mines), booby traps, improvised explosive devices, and bulk explosives.

Feasibility Study: A CERCLA document that reviews and evaluates multiple remedial technologies under consideration at a site. It also identifies the preferred remedial action alternative.

Fuze: A device that detonates a munition's explosive material under specified conditions. In addition, a fuze has safety and arming mechanisms that protect users from premature or accidental detonation.

Human Receptor: Any human individual or population that is presently or will potentially be exposed to, and adversely affected by, the release or migration of contaminants.

Incendiary Bomb: A weapon designed to start fires or destroy sensitive equipment using fire

GLOSSARY OF TERMS

(and sometimes used as anti-personnel weaponry), that uses materials such as napalm.

Information Repository: A collection of documents relating to a facility with investigations and response actions under CERCLA and/or a site's permitting activity or corrective action. It includes documents and information about site activities as well as general information about environmental regulations and CERCLA. The purpose of an Information Repository is to (1) ensure open and convenient public access to site-related documents and (2) better inform the public of the restoration process.

Installation Restoration Program: A comprehensive program to identify, investigate, and clean up contamination at active/operating U.S. Army installations. Eligible sites include those contaminated by past defense activities that require response under CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and certain corrective actions required by the Resource Conservation and Recovery Act. The objective of the Installation Restoration Program is to clean up contaminated environmental impacts from past U.S. Army activities with the following goals: (1) reduce risk to acceptable levels to protect the health and safety of installation personnel and the public, and (2) restore the quality of the environment. The Installation Restoration Program also complies with state, regional, and local requirements applicable to the cleanup of hazardous materials contamination, as well as related site safety. Community involvement activities are an integral part of the U.S. Army's Installation Restoration Program. Installation commanders seek community involvement early and throughout the cleanup process.

Large-Caliber Shell: A projectile or shell is a missile fired from the muzzle of a gun; it is always the projectile, whether issuing from the muzzle of a breech-loading rifle, using separate ammunition, or from the muzzle of a rapid-fire gun, using fixed, cartridge-case ammunition. Projectiles for guns of and above 7 inches in caliber are considered large-caliber.

Material Potentially Presenting an Explosive Hazard (MPPEH): Material that, prior to determination of its explosives safety status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or potentially contains a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization, or disposal operations).

Military Munitions Response Program: A U.S. Department of Defense program consisting of actions necessary to ensure protection of human health, welfare, and the environment from the hazards associated with MEC and MC at locations impacted by historical military activities.

Moderate Quality Wetland: A Category 2 wetland as identified by Ohio Rapid Assessment Method 5.0 that supports moderate wildlife habitat and hydrological functions.

Munitions Constituents (MC): Any material originating from unexploded ordnance, **discarded military munitions**, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris (MD): Remnants of military munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions and Explosives of Concern (MEC): A munition or explosive that may pose an explosive safety risk because it either did not function as designed, was discharged and/or abandoned, or is an explosive constituent. MEC includes unexploded ordnance, discarded military munitions, and explosive constituents of munitions present in high enough concentrations to pose an explosive hazard.

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Munitions Response Site (MRS): Any area on a defense site that is known or suspected to contain MEC or MC.

Napalm Bomb: A bomb made from a thick and highly incendiary liquid, usually consisting of petrol gelled with aluminum soaps.

National Oil and Hazardous Substances Pollution Contingency Plan: The National Oil and Hazardous Substances Pollution Contingency Plan is a collection of CERCLA regulations that provide the U.S. Government the authority to respond to the problems of abandoned or uncontrolled hazardous waste disposal sites as well as to certain incidents involving hazardous wastes (e.g., spills).

Nonhazardous Solid Waste Landfill: Also known as a municipal solid waste landfill, this is a discrete area of land or excavation that receives (or received) household waste. Other types of wastes routinely disposed of in a nonhazardous solid waste landfill can include commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial nonhazardous solid waste.

Open Burning/Open Demolition: A disposal method of unserviceable and obsolete munitions through controlled burn and detonation.

Primer: A primer, also known as a blasting cap, is a small, sensitive, primary explosive device generally used to detonate a larger, more powerful and less-sensitive secondary explosive such as 2,4,6-Trinitrotoluene, dynamite, or plastic explosive. Primers come in a variety of types, including nonelectric caps, electric caps, and fuse caps.

Production: The action of making or manufacturing from components or raw materials.

Proposed Plan: A CERCLA document that provides the public with information necessary to participate in the selection of a remedy. It is designed to solicit public comment on a preferred remedy before a Record of Decision is established.

Receptor: See human or ecological receptor.

Record of Decision: A legal record signed by the U.S. Army following coordination and concurrence with the Ohio EPA as per a June 10, 2004, agreement between the two parties. It describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

Remedial Action: The actual construction or implementation phase of a CERCLA site cleanup that follows Remedial Design.

Remedial Decision: A formal, written communication from the regulating authority that approves a site investigation, identifies the preferred remedy, and approves the remedial action, if any, at a site.

Remedial Investigation (RI): A CERCLA investigation that is performed to collect data to characterize site conditions and assess risk/hazard to human health and the environment.

Remedy Selection Process: A part of the CERCLA process, typically from the Proposed Plan through the Record of Decision, that involves public participation in identifying the preferred remedy. The final selection of the preferred remedy is made in the Record of Decision after taking into consideration the recommendations in the Proposed Plan and any comments received from the public during the 30-day comment period.

Renovation: The process of improving a broken, damaged, or outdated structure or piece of equipment.

Responsiveness Summary: A section of the Record of Decision where the U.S. Army documents and responds to written and oral comments received from the public about the Proposed Plan.

Restricted Access: An area with limited availability to certain groups.

Sanitary Landfill Permit: A permit issued for nonhazardous solid waste landfills (also known as municipal solid waste landfills) in the State of Ohio under Ohio Administrative Code Chapter 3745-27, Rules 01 to 20, and

GLOSSARY OF TERMS

regulated pursuant to Subtitle D of RCRA under Section 40, Part 258 of the Code of Federal Regulations.

Subsurface Anomaly: An item seen as a subsurface irregularity (i.e., deviates from expected subsurface items such as pipes, utility lines, etc.) after geophysical investigation.

Underwater Investigation: A method for investigating submerged portions of a site that can include the use of underwater instruments and/or tactile (i.e., feel by hand) techniques to identify and reacquire underwater anomalies.

Unexploded Ordnance: Military munitions that have been primed, fuzed, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded either by malfunction, design, or any other cause.

Weapons Demilitarization Facility: A facility or installation involved in the reduction of a nation's army, weapons, weapons systems, or military vehicles to an agreed upon minimum.

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FIGURES

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
Legend
 Camp Ravenna/Former RVAAP




Figure 1
Location Map
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties Ohio



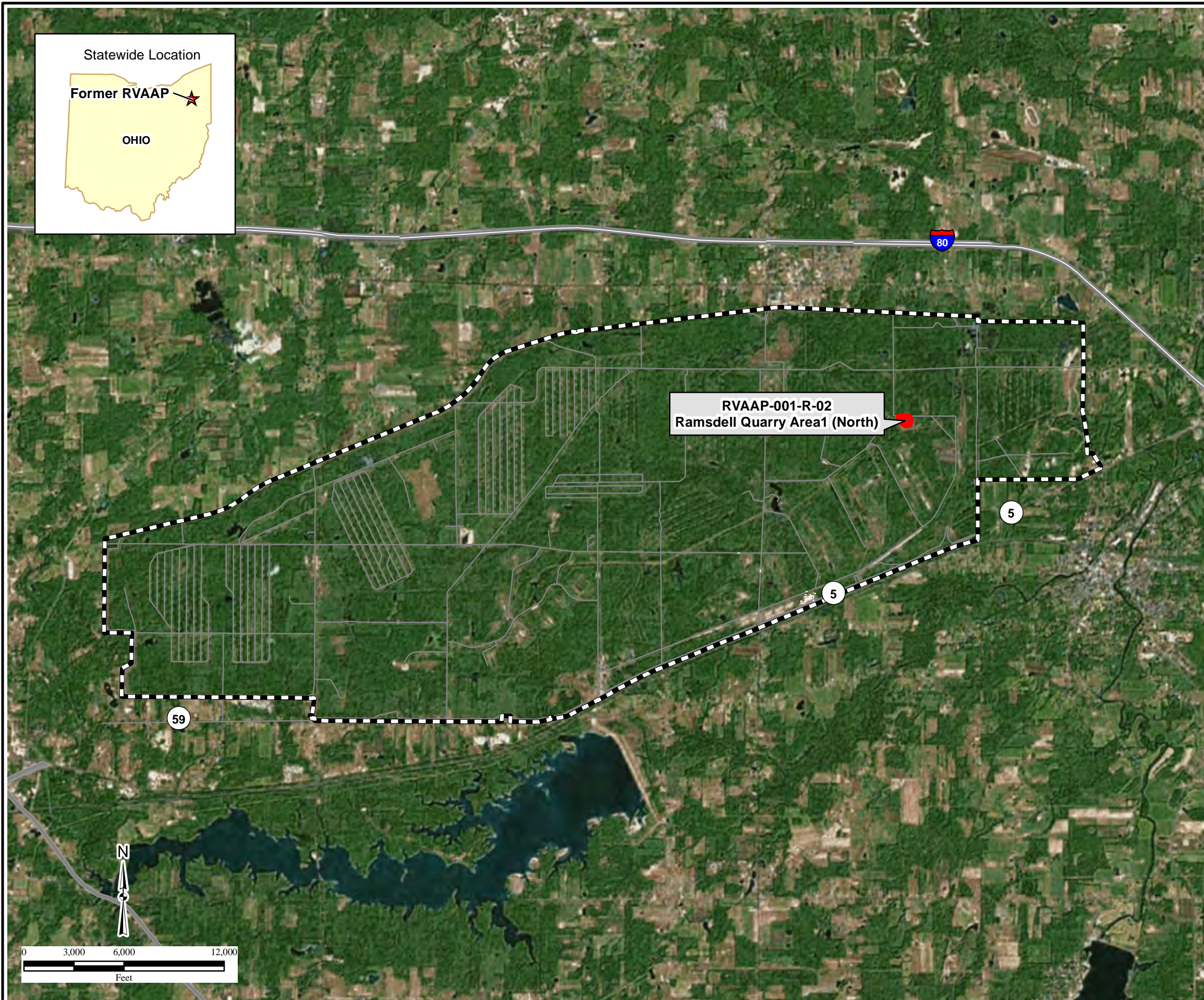
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Figure 2
MRS Location Map
Ramsdell Quarry Area 1 (North) MRS
Camp Ravenna
Portage/Trumbull Counties, Ohio

Legend

-  RVAAP-001-R-02 Ramsdell Quarry Area 1 (North) Munitions Response Site
-  Facility Boundary
-  Road

Notes:
MRS denotes Munitions Response Site
RVAAP denotes Former Ravenna Army Ammunition Plant



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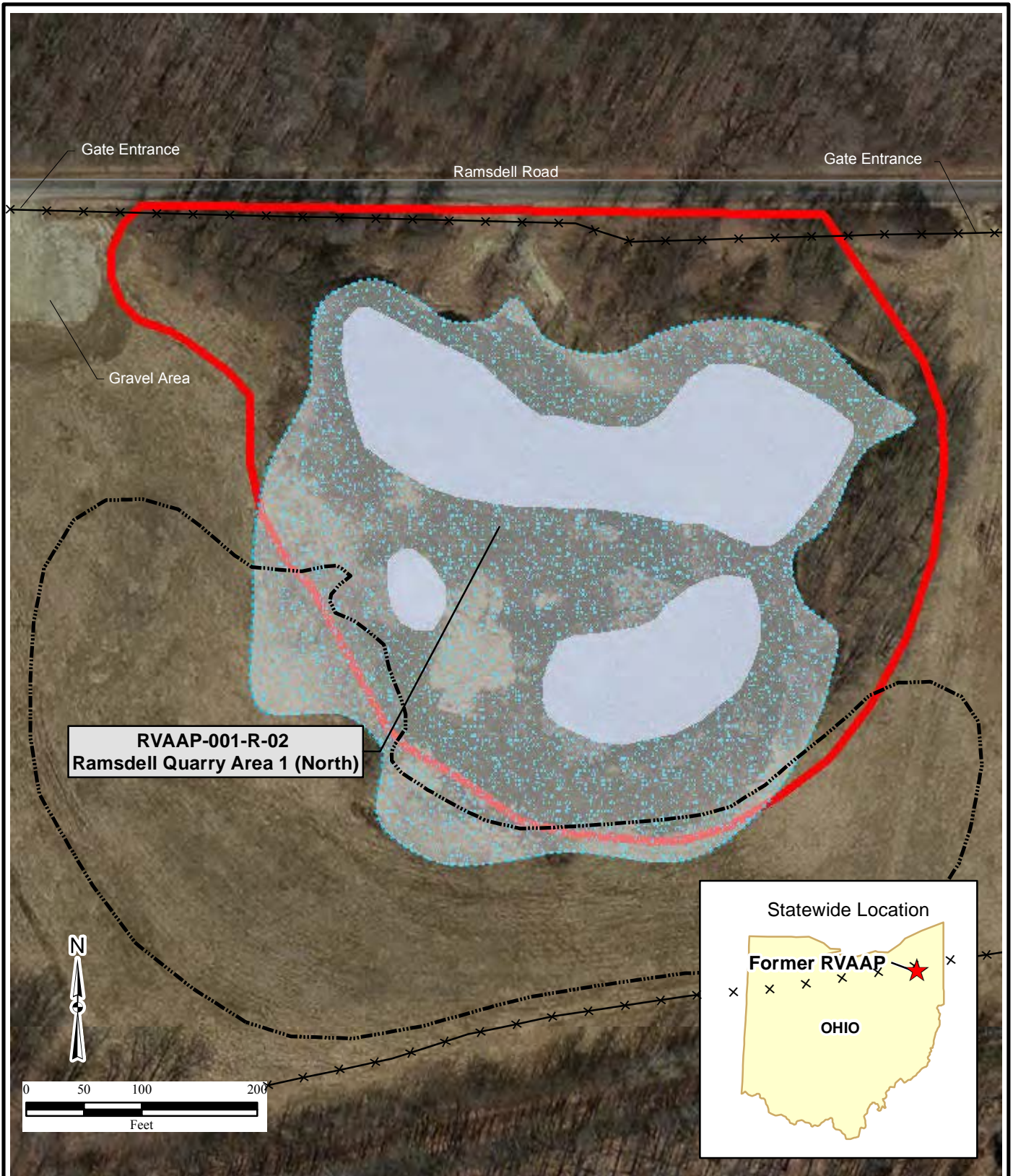
Legend

- RI MRS Boundary
- Surface Water
- Wetland
- Approximate Landfill Boundary
- Former Soil Borrow Pit
- Railroad
- Fence Line

Figure 3
Remedial Investigation MRS Boundary Map
Ramsdell Quarry Area 1 (North) MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio



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Legend






-  MRS Boundary
-  Surface Water
-  Approximately Landfill Boundary
-  Wetland
-  Fence Line

Figure 4
Site Features Map
Ramsdell Quarry Area 1 (North) MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

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