

**Final  
No Further Action Record of Decision for  
RVAAP-001-R-01 Ramsdell Quarry Area 2 (South)  
Munitions Response Site  
Version 1.0**

**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  
2 Hopkins Plaza  
Baltimore, Maryland 21201**

**Prepared by:  
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**August 19, 2019**

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**REPORT DOCUMENTATION PAGE**

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<b>13. SUPPLEMENTARY NOTES</b> None					
<b>14. ABSTRACT</b> The U.S. Department of the Army (U.S. Army) is presenting this No Further Action (NFA) Record of Decision to document the No Further Action determination for the former Ravenna Army Ammunition Plant, RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) Munitions Response Site (MRS), in Portage and Trumbull Counties, Ohio. This NFA Record of Decision presents the U.S. Army's No Further Action determination, Ohio EPA concurrence with the NFA decision, and the response from the public during the 30-day public comment period for the MRS. Investigations have found no munitions and explosives of concern or concentrated areas of munitions debris, and no potential source of munitions constituents exists at the MRS. Therefore, there is no source material or impacted environmental media resulting from historical U.S. munitions-related activities at the MRS.					
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<b>a. REPORT</b> U	<b>b. ABSTRACT</b> U	<b>c. THIS PAGE</b> U			<b>19b. TELEPHONE NUMBER (Include area code)</b> 512-658-6828

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Mike DeWine, Governor  
Jon Husted, Lt. Governor  
Laurie A. Stevenson, Director

September 17, 2019

Mr. David Connolly  
Army National Guard Directorate  
Environmental Programs Division  
ARNG-ILE-CR  
111 South George Mason Drive  
Arlington, VA 22204

RE: US Army Ravenna Ammunition Plt RVAAP  
Remediation Response  
Project Records  
Remedial Response  
Portage County  
ID # 267000859253

**Subject: Final ROD for RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) MRS**

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the "Final Record of Decision for RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) Munitions Response Site [MRS]" dated August 19, 2019. It was prepared by HydroGeoLogic, Inc.

Ohio EPA has no comments on the Final Record of Decision (Final ROD). Based on the information contained in the Final ROD document, other investigation documents and reports, and Ohio EPA's oversight participation during the investigation, Ohio EPA concurs with the Final ROD document for the RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) MRS recommending no further action.

If you have any questions concerning this letter, please contact Nicholas Roope at (330) 963-1235.

Sincerely,

A handwritten signature in blue ink, appearing to read "Melisa Witherspoon", with a long horizontal line extending to the right.

Melisa Witherspoon  
Chief  
Division of Environmental Response and Revitalization

NCR/MW/sc

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William Damschroder, Ohio EPA, Legal

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## CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

HydroGeoLogic, Inc. has completed the *Final No Further Action Record of Decision for RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) Munitions Response Site*, Version 1.0, at the former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This 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.

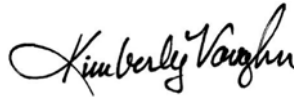
Prepared/Approved by:



\_\_\_\_\_  
Timothy Leahy, PG, PMP  
Project Manager  
APTIM Federal Services LLC

Date: August 19, 2019

Reviewed/Approved by:



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Kimberly Vaughn  
Project Manager

Date: August 19, 2019

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**August 19, 2019**

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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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Appendix A	Public Notice of the Proposed Plan
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## ACRONYMS AND ABBREVIATIONS

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amsl	above mean sea level
Army	U.S. Department of the Army
ARNG	Army National Guard
bgs	below ground surface
Camp Ravenna	Camp Ravenna Joint Military Training Center
CB&I	CB&I Federal Services, LLC
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CJAG	Camp James A. Garfield Joint Military Training Center
CSM	Conceptual Site Model
DFFO	<i>Director's Final Findings and Orders</i>
DMM	Discarded Military Munition
DoD	Department of Defense
e <sup>2</sup> M	engineering-environmental Management, Inc.
ERA	ecological risk assessment
FS	Feasibility Study
GP	general purpose
HA	hazard assessment
HGL	HydroGeoLogic, Inc.
HHRA	human health risk assessment
HRR	<i>Final Military Munitions Response Historical Records Review</i>
lb	pound
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mm	millimeter
MMRP	Military Munitions Response Program
MRS	munitions response site
MRSPP	Munitions Response Site Prioritization Protocol
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NFA Proposed Plan	<i>Final No Further Action Proposed Plan for RVAAP 001-R-01 Ramsdell Quarry Landfill MRS Area 2 (South)</i>
OHARNG	Ohio Army National Guard
Ohio EPA	Environmental Protection Agency
RDX	Research Department Explosives
RI	Remedial Investigation
ROD	Record of Decision

## ACRONYMS AND ABBREVIATIONS (continued)

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RVAAP	Ravenna Army Ammunition Plan
SI	Site Inspection
SI Report	<i>Final Site Inspection Report</i>
TNT	2,4,6-Trinitrotoluene
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USP&FO	U.S. Property and Fiscal Officer
UXO	unexploded ordnance



## **PART I: DECLARATION**

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### **A. SITE NAME AND LOCATION**

The Army National Guard (ARNG) developed this No Further Action (NFA) Record of Decision (ROD) for the RVAAP-001-R-01 Ramsdell Quarry Area 2 (South) Munitions Response Site (MRS) located at the former Ravenna Army Ammunition Plant (RVAAP) in Portage and Trumbull Counties, Ohio (**Figure 1**). The former RVAAP is now known as Camp James A. Garfield Joint Military Training Center (CJAG). The Ramsdell Quarry Area 2 (South) MRS is located in the northeastern portion of CJAG (**Figure 2**). CJAG was previously known as Camp Ravenna Joint Military Training Center (Camp Ravenna) and that name was used in some historical reports.

CJAG is 21,683 acres and is federally owned. The facility is located in Portage and Trumbull Counties, Ohio, approximately 3 miles east-northeast of the City of Ravenna (**Figure 1**). Administrative accountability for CJAG was transferred to the U.S. Property and Fiscal Officer (USP&FO) for Ohio in multiple transfers, the last occurring in September 2013. The facility is licensed to the Ohio Army National Guard (OHARNG) for use as a military training facility (Federal Facility ID No. OH213820736).

To maintain a distinction between historical operations and current activities, the term “RVAAP” will be used for historical discussions and “CJAG” will be used when referring to the current facility activities.

### **B. STATEMENT OF BASIS AND PURPOSE**

The ARNG is the lead federal agency for environmental restoration program activities at CJAG. This ROD was prepared under the Military Munitions Response Program (MMRP) and presents the selected remedy for the Ramsdell Quarry Area 2 (South) MRS at CJAG. The NFA determination meets the requirements of the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) of 1980, as amended by the *Superfund Amendments and Reauthorization Act* of 1986 and the *National Oil and Hazardous Substances Pollution Contingency Plan* (NCP). The ARNG’s decision is based on information obtained from previous investigations and contained in the Administrative Record file for the Ramsdell Quarry Area 2 (South) MRS.

The Ohio EPA, the supporting state regulatory agency, reviewed and concurred with the *Final No Further Action Proposed Plan for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South)* (NFA Proposed Plan; HydroGeoLogic, Inc. [HGL], 2019). The Proposed Plan presented the ARNG’s preferred remedy for addressing the Ramsdell Quarry Area 2 (South) MRS and invited public involvement during the comment period (March 1, 2019 through April 3, 2019) and public meeting (March 6, 2019). NFA is the final decision, as no U.S. Department of Defense (DoD) military munitions (i.e., unexploded ordnance [UXO], discarded military munitions [DMM], or munitions constituents [MC]-related contamination) originating from historical activities have been found at the MRS. The NFA decision under CERCLA satisfies the requirements of the *Director’s Final Findings and Orders* (DFFO) (Ohio EPA, 2004), specifically by documenting the Ohio EPA’s concurrence with the closeout of the Military Munitions Response Program (MMRP) investigation conducted for this MRS under Section XII, paragraph 26.

### **C. DESCRIPTION OF THE SELECTED REMEDY**

No DoD military munitions confirmed to be munitions and explosives of concern (MEC) - which is defined as UXO, DMM, or sufficient MC to be an explosive hazard - were encountered at the MRS during the Remedial Investigation (RI). Only munitions debris (MD) – inert munitions fragments - were found. In addition, the RI did not identify MC-related contamination at the MRS. Therefore, NFA is the selected


remedy for the Ramsdell Quarry Area 2 (South) MRS under the MMRP, pursuant to CERCLA requirements.

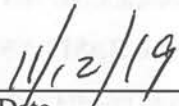
**D. STATUTORY DETERMINATION**

The results of the RI fieldwork for the Ramsdell Quarry Area 2 (South) MRS support the determination that no risks associated with exposure to DoD military munitions and MC-related contamination exist at the MRS. Because no risks have been identified, the ARNG has determined that NFA is the appropriate decision for DoD military munitions and MC-related contamination at the Ramsdell Quarry Area 2 (South) MRS. NFA is protective of human health and the environment and meets the statutory requirements for cleanup standards established in Section 121 of CERCLA. Because there are no risks to human health or the environment associated with DoD military munitions and MC-related contamination at the MRS, five-year reviews are not required. No other remedial action is necessary to ensure protection of human health and the environment.

**E. AUTHORIZING SIGNATURE**

Approved:

  
\_\_\_\_\_  
HALLET BRAZELTON, JR.  
Acting Chief,  
I&E, Army National Guard

  
\_\_\_\_\_  
Date

## **PART II: DECISION SUMMARY**

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### **A. SITE NAME, LOCATION, AND DESCRIPTION**

The former RVAAP, now known as the CJAG, located in northeastern Ohio within Portage and Trumbull counties, is approximately three (3) miles east/northeast of the City of Ravenna and one (1) mile north/northwest of the City of Newton Falls. The facility is approximately 11 miles long and 3.5 miles wide. The facility is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garret, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east. In addition, the facility is surrounded by the communities of Windham, Garrettsville, Charlestown, and Wayland (Figure 1). The facility is federal property which has had multiple accountability transfers amongst multiple Army agencies making the property ownership and transfer history complex. The most recent administrative accountability transfer occurred in September 2013 when the remaining acreage (not previously transferred) was transferred to the USP&FO for Ohio and subsequently licensed to the OHARNG for use as a military training site (Camp James A. Garfield).

Administrative accountability of the 21,683-acre facility has been transferred to the USP&FO for Ohio, which subsequently licensed CJAG to the OHARNG for use as a military training site. The restoration program for the facility involves the investigation and remediation of areas affected by industrial activities when the RVAAP was in operation.

The Ramsdell Quarry Area 2 (South) MRS is a 6.93-acre parcel located in the northeast portion of CJAG within Portage County (Figure 2). The MRS is located south of the Ramsdell Quarry Area 1 (North) MRS and is north of Load Line 1 (CB&I Federal Services LLC [CB&I], 2015). Figure 3 presents the current boundaries of the MRS.

The Ramsdell Quarry Area 2 (South) MRS was investigated under the MMRP, which was established under the Defense Environmental Restoration Program to address DoD military munitions located on current and former defense sites. Sites that are eligible under the MMRP are non-operational ranges where military munitions are known or suspected to be present. The Ramsdell Quarry Area 2 (South) MRS was determined to be eligible under the MMRP.

### **B. SITE HISTORY AND ENFORCEMENT ACTIVITIES**

The RVAAP was constructed in 1940 and 1941 for the assembly/loading and depot storage of ammunition. While serving as an ammunition plant, the 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 (TNT) and Composition B (a mixture of TNT and Research Department Explosive [RDX]) 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 TNT 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 on standby status, and operations were limited to renovation, demilitarization, normal maintenance of equipment, and munitions storage. Production activities 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 activities conducted at the RVAAP included the burning, demolition, and testing of munitions. The locations used as burning and demolition grounds consisted of large, open areas and abandoned quarries. Other areas of concern associated with the RVAAP include a landfill, an aircraft fuel tank testing area, and various industrial support and maintenance facilities (CB&I, 2015).

The Ramsdell Quarry Area 2 (South) MRS is heavily wooded with a thick understory. A small, inactive soil/rock quarry is at the east side of the MRS. Approximately 0.5 acres of wetland have developed in the quarry and along the eastern boundary of the MRS.

During preparation of the *Final Military Munitions Response Historical Records Review* (HRR; engineering-environmental Management, Inc. [e<sup>2</sup>M], 2007), interviews with installation personnel indicated they had seen items thought to be DoD military munitions at the MRS in the past. However, none of the munitions reportedly observed had been evaluated, at the time the HRR was prepared, to determine if they were MEC. There is no available information regarding munitions-related activities that occurred at the MRS or how the munitions came to be located there. It was suspected that the MRS was used as a disposal area for munitions that were treated at the Ramsdell Quarry Area 1 (North) MRS located adjacent to the north of the MRS (CB&I, 2015). Therefore, the HRR recommended additional investigation.

There have been no CERCLA enforcement actions related to the Ramsdell Quarry Area 2 (South) MRS.

### C. COMMUNITY PARTICIPATION

Using the RVAAP community relations program, ARNG and the Ohio EPA have interacted with the public through news releases, public meetings, reading materials, and a website. Specific items of the community relations program include the following:

- **Restoration Advisory Board:** A Restoration Advisory Board was established in 1996 to promote community involvement in DoD environmental cleanup activities and allow the public to review and discuss the progress with decision makers. Board meetings are generally held two to three times per year and are open to the public.
- **RVAAP Restoration Program Community Relations Plan:** The *Final Community Relations Plan for the Ravenna Army Ammunition Plant Restoration Program in Portage and Trumbull Counties, Ohio* (U.S. Army Corps of Engineers [USACE], 2017) was prepared to establish processes to keep the public informed of activities being conducted as part of the RVAAP restoration program.
- **RVAAP Restoration Program Website:** A website was established in 2004 for the RVAAP Restoration Program. The website provides information on the history of the RVAAP, areas of potential contamination, the cleanup program being implemented, current activities, and a schedule of upcoming events. This website is accessible to the public at [www.rvaap.org](http://www.rvaap.org).

In accordance with Section 117(a) of CERCLA, Section 300.430(f)(2) of the *National Oil and Hazardous Substances Pollution Contingency Plan*, and the *Final U.S. Army Military Munitions Response Program Munitions Response, Remedial Investigation/Feasibility Study Guidance* (Army, 2009) the ARNG released the Proposed Plan for NFA at the Ramsdell Quarry Area 2 (South) MRS (HGL, 2019) in January 2019. The Proposed Plan and other project-related documents were made available to the public as part of the Administrative Record maintained at CJAG and in the two Information Repositories at Reed Memorial Library in Ravenna, Ohio and Newton Falls Public Library in Newton Falls, Ohio. The public notice for the Proposed Plan was sent to the Tribune Chronicle and Record Courier, as specified in the Community Relations Plan (USACE, 2017). The public notice initiated the 30-day public comment period which began on March 1, 2019 and ended on April 3, 2019.

The ARNG/OHARNG held a public meeting on March 6, 2019, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266, to present the Proposed Plan to the public. At this meeting, representatives of the ARNG/OHARNG provided information specific to the Ramsdell Quarry Area 2 (South) MRS history, investigations, current site conditions, and proposed NFA decision. The representatives of the ARNG/OHARNG were also available to answer questions about the results of the MMRP-related investigations at the Ramsdell Quarry Area 2 (South) MRS. Responses to the comments received at this meeting and during the public comment period are included in the Responsiveness Summary, which is Part III of this ROD.

The ARNG/OHARNG considered the community input received on the Proposed Plan when determining that NFA for DoD military munitions and MC-related contamination is appropriate for the Ramsdell Quarry Area 2 (South) MRS.

#### **D. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION**

The overall goal of the MMRP at RVAAP is to address risks to human health and the environment posed by DoD military munitions (i.e., UXO, DMM and MC-related contamination). Investigations conducted by the ARNG have determined that no unacceptable risk is posed by DoD military munitions at the Ramsdell Quarry Area 2 (South) MRS. The ARNG has also determined there is no potential source for MC-related contamination. For these reasons, the ARNG has determined that there is no source material or affected environmental media resulting from historical munitions-related activities at the MRS. The NFA determination is protective of the receptors associated with future land use at the Ramsdell Quarry Area 2 (South) MRS.

#### **E. SITE CHARACTERISTICS**

This section provides a brief overview of the Ramsdell Quarry Area 2 (South) MRS that includes the physical characteristics, previous investigations completed under the MMRP, the nature and extent of contamination, and the most current conceptual site model (CSM).

##### **E.1 Physical Characteristics**

The physical characteristics such as topography, geology, hydrogeology, and ecological characteristics that contributed to identifying potential transport pathways, receptors and exposure scenarios used to evaluate health and ecological risks are presented in the following subsections.

###### ***E.1.1 Topography/Physiography***

CJAG is located within the Southern New York section of the Appalachian Plateaus physiographic province characterized by rolling hills, incised streams, and dendritic drainage patterns. Past glacial activity created bogs, lakes, and other wetland areas. The topography at the Ramsdell Quarry Area 2 (South) MRS is relatively flat with ground surface elevation gradually ranging upgradient to the west from approximately 975 to 990 feet above mean sea level (amsl). A topographical low of 970 feet amsl is present in the former soil borrow pit at the eastern portion of the MRS. Natural drainage at the MRS appears to follow the local topography (CB&I, 2015).

###### ***E.1.2 Soils and Geology***

CJAG is located atop Mississippian- and Pennsylvanian-age bedrock strata that are overlain by unconsolidated glacial deposits of varying thickness. The average depth to bedrock at Ramsdell Quarry Area 2 (South) MRS is approximately 5 feet below ground surface (bgs) with areas of exposed bedrock at the former soil borrow pit. The native soils at the MRS are the Mitiwanga silt loam with 0 to 2 percent slopes (CB&I, 2015).

### ***E.1.3 Surface Water***

CJAG is located within the Ohio River Basin with a major surface stream running adjacent to the western portion of the facility flowing to the Mahoning River before joining the Michael J. Kirwan Reservoir. After leaving the reservoir, the west branch joins the Mahoning River east of the facility.

Natural surface water drainage at the Ramsdell Quarry Area 2 (South) MRS is in an easterly direction toward the former soil borrow pit at the eastern portion of the MRS. Approximately 0.5 acres of wetland were identified in the former soil borrow pit and along the MRS eastern boundary. No bogs, kettle lakes, or kames have been identified as being present within the MRS (CB&I, 2015).

### ***E.1.4 Hydrogeology***

Although groundwater recharge and discharge areas have not been delineated at CJAG, it is assumed that the extensive upland areas, primarily on the western portion of the facility, are regional recharge zones. Sand Creek, Hinkley Creek, and Eagle Creek are presumed to be major groundwater discharge areas. The Ramsdell Quarry Area 2 (South) MRS is not situated in the upland areas that are considered to be regional recharge zones.

Depth to groundwater at the Ramsdell Quarry Area 2 (South) MRS is approximately 30 feet bgs. The depth-to-groundwater measurements were taken from potentiometric data presented under the facility-wide groundwater monitoring program for the RVAAP Restoration Program (CB&I, 2015).

### ***E.1.5 Ecology***

CJAG is home to a range of vegetation and habitat resources. The vegetation community present at the Ramsdell Quarry Area 2 (South) MRS is characterized as Mixed Swamp Forest. Portions of the Red Maple Woods and Submergent Marsh plant communities are found along the eastern edge of the MRS (CB&I, 2015).

The Camp Ravenna Integrated Natural Resources Management Plan and U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species List indicate that one federally listed threatened species, the Northern Long-eared Bat, is known to reside within CJAG (OHARNG, 2014) (USFWS, 2018). In addition, the Ohio Department of Natural Resources has identified several state-listed threatened and endangered plant and animal species. Twelve state listed endangered species (1 mammal, 1 fish, 1 insect, 8 bird, and 1 plant species) and ten state listed threatened species (5 bird, 1 insect, 4 plants species) are included on the CJAG Rare Species List. No confirmed sightings of these species within the Ramsdell Quarry Area 2 (South) MRS have been reported and no critical habitats are present within the MRS (CB&I, 2015).

## **E.2 Site Investigations**

This section summarizes the CERCLA investigations that were completed at the Ramsdell Quarry Area 2 (South) MRS under the MMRP.

### ***E.2.1 Historical Records Review***

In 2007, an HRR (e<sup>2</sup>M, 2007) was prepared under the MMRP for the RVAAP Restoration Program that included the Ramsdell Quarry Area 2 (South) MRS. At that time, the MRS was combined with the current Ramsdell Quarry Area 1 (North) MRS, and together the two areas were considered one MRS. As part of the HRR, interviews were conducted with installation personnel, and installation personnel stated that items thought to be munitions at the MRS had been observed in the past. None of these reported munitions had been evaluated to determine if they were MEC, at the time the HRR was prepared. There is no available information regarding the historical munitions-related activities that occurred at the MRS or how the munitions came to be located there. It was suspected that the MRS may have been used as a disposal area

for munitions that were treated at the Ramsdell Quarry Area 1 (North) MRS located adjacent to the north of the MRS (CB&I, 2015). Therefore, the HRR recommended additional investigation.

### ***E.2.2 Site Inspection***

In 2007, an MMRP Site Inspection (SI) was completed at the former RVAAP that included the Ramsdell Quarry Area 2 (South) MRS. No DoD military munitions confirmed to be MEC were encountered during the SI field work; however, two MD items were found on the ground surface. The MD consisted of an inert 105-millimeter (mm) projectile and an inert 155mm projectile.

Four soil samples were collected at the MRS and were analyzed for MC-related constituents. Low (estimated) concentrations of 1,3,5-Trinitrobenzene were detected at two of the sample areas. Lead and manganese were detected in one sample at levels that exceeded the facility background values and U.S. Environmental Protection Agency preliminary screening criteria. These metal concentrations were considered to be MC-related constituents.

No explosive hazards were found at the MRS during the SI and further characterization for MEC was not recommended in the *Final Site Inspection Report* (SI Report; e<sup>2</sup>M, 2008). Based on the SI sampling results, further characterization for MC-related constituents was recommended in the SI Report (e<sup>2</sup>M, 2008). The field activities conducted for the SI are presented in **Figure 4**.

### ***E.2.3 Remedial Investigation***

During planning for the RI field work, it was determined that the presence of MD encountered during the SI indicated the potential for MEC and that further characterization should be conducted. The ARNG completed the RI at the Ramsdell Quarry Area 2 (South) MRS in August 2011.

The RI fieldwork included a digital geophysical mapping survey and an investigation of buried anomalies at the dry areas (i.e., outside the wetland) at the MRS. No munitions that were confirmed to be MEC were encountered during the RI; however, various MD items were found on the ground surface and in subsurface soils. The MD consisted of fragments and parts associated with the 20-pound (lb) AN-M41 series bomb, the 155mm MK-1 series projectile, the 250-lb AN-M57 series general purpose (GP) bomb, and the 500-lb AN-M64 series GP bomb.

Based on the recommendations of the SI, two soil samples were collected during the RI for analysis for MC where the MD was found – areas considered to have the highest potential for MC. Both samples were collected using Incremental Sampling Methodology - where several aliquots (30 individual “grab” samples) of soil are collected from a grid and homogenized to increase the likelihood of detecting the MC in each sample. The analytical results from the samples were used to perform human health and ecological risk assessments. These assessments concluded that potential site related chemicals were not present in surface soil at concentrations great enough to pose risks to human or ecological receptors. The RI confirmed that no known or suspected risks associated with MC-related contamination exist at the MRS, including evaluation for the Unrestricted (Residential) Receptor.

To date, no DoD military munitions confirmed to be MEC have been encountered at the Ramsdell Quarry Area 2 (South) MRS and only MD has been found. The RI fieldwork confirmed the results of previous investigations at the MRS and that no explosive hazards are present at the MRS. The RI confirmed that no known or suspected risk associated with MC-related contamination exists at the MRS (CB&I, 2015). The results of the RI field activities are presented in **Figure 5**.

### ***E.2.4 Feasibility Study***

Following the RI, a Feasibility Study (FS) was conducted to develop, evaluate, and perform a detailed analysis of potential remedial alternatives for the Ramsdell Quarry Area 2 (South) MRS. The FS was also

conducted to outline Remedial Action Objectives that would allow the DoD to select and propose an appropriate remedy. Based on further evaluation of the RI results, the project team concluded the Ramsdell Quarry Area 2 (South) MRS be recommended for NFA. No explosive hazards were found during the RI; therefore, no MEC hazard assessment was required (HGL, 2018). During the RI, the MRS was assigned a Munitions Response Site Prioritization Protocol (MRSPP) priority of 7 (CB&I, 2015). The DoD uses the MRSPP to assign a relative risk priority to each defense MRS in the MMRP Inventory for response activities. Sites are ranked from 1 to 8, with 1 being the highest priority and 8 being the lowest priority. Ramsdell Quarry Area 2 (South) was assigned a 7 based on the present of MD. The MRSPP tables were updated during the FS in accordance with the MRSPP Primer and the revised MRSPP priority is “No Longer Required”, based on the absence of MEC at the site and that no further action is required at the site.

The ARNG also determined that, because the RI recommended an FS, the FS should be conducted to provide the necessary rationale to support and document the NFA determination (HGL, 2018). The detailed analysis presented in the FS consisted of evaluating the NFA alternative using the nine criteria listed in the NCP. The NCP states that the first two criteria, protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs), are “threshold criteria” that must be met by the selected remedial action unless a waiver is granted under Section 121(d)(4) of CERCLA. The next five criteria are “primary balancing criteria,” and the trade-offs within this group must be balanced. The final two criteria, state and community acceptance, are “modifying criteria” that are evaluated following the comment periods on the FS report and the Proposed Plan (HGL, 2019). A summary of the detailed analysis performed in the FS using the nine NCP criteria is presented below.

**Table 1  
Evaluation of the No Further Action Alternative**

NCP Criteria		No Further Action Alternative
Threshold Criteria	Overall Protection of Human Health and the Environment	No explosive hazard or unacceptable risk due to MC-related contamination is present at the MRS. Therefore, the NFA alternative is protective of human health and the environment and meets this criterion.
	Compliance with ARARs	There are no chemical-specific, location-specific, or action-specific ARARs identified for this alternative. Therefore, the NFA alternative meets this criterion.
	Long-Term Effectiveness and Permanence	No explosive hazard or unacceptable risk due to MC-related contamination is present; therefore, the NFA alternative will be effective in the long term and no residual hazards or risks will remain at the MRS.
Balancing Criteria	Reduction of Toxicity, Mobility, or Volume Through Treatment	The NFA alternative includes no treatment because there is no explosive hazard or unacceptable risk associated with MC-related contamination is present at the MRS.
	Short-Term Effectiveness	Because no active remediation activities are conducted, no additional hazards are posed to current receptors or the future industrial receptor as a result of implementing the NFA alternative. The NFA alternative will not result in any adverse short-term effects on the environment.
	Implementability	Since no remedial action will be performed, technical feasibility is not a consideration. The NFA alternative is administratively feasible to OHARNG/CJAG because no explosive hazard or unacceptable risk due to MC-related contamination is present on the MRS.
	Cost	The NFA alternative has no capital or long-term management costs associated with its implementation.



**Table 1 (continued)**  
**Evaluation of the No Further Action Alternative**

NCP Criteria		No Further Action Alternative
Modifying Criteria	State Acceptance	The Ohio EPA concurs with the NFA determination presented in the Final Proposed Plan and this ROD.
	Community Acceptance	Public comments and questions on the NFA alternative were received during the public comment period from March 1 to April 3, 2019. A public meeting was held on March 6, 2019 to present a brief history of the MRS and the NFA alternative. Community feedback is presented in Part III of this ROD.

***E.2.5 Proposed Plan***

The ARNG prepared the Proposed Plan for Ramsdell Quarry Area 2 (South) MRS in 2019. The Proposed Plan recommended NFA, as no risks were identified at the MRS. The overall recommendation of NFA under the MMRP was considered protective of receptors that may be present at the MRS (HGL, 2019).

**E.3 Nature and Extent of Contamination**

Data gathered by the ARNG during the SI and subsequent RI for the Ramsdell Quarry Area 2 (South) MRS effectively characterized the nature and extent of DoD military munitions and MC-related contamination at the MRS. Based on the information presented in Part II, Sections A through E, it can be concluded that no further investigation or cleanup is necessary at the MRS. As outlined in the RI Report, no evidence of intact DoD military munitions was identified at the MRS. There are no explosive hazards and no current sources for a release of MC-related contamination. There is no known or suspected explosive hazard or unacceptable risk due to MC-related contamination at the Ramsdell Quarry Area 2 (South) MRS (CB&I, 2015).

**E.4 Conceptual Site Model**

The CSM discussion includes sources of contamination, release mechanisms, migration pathways, and potential receptors identified for the Ramsdell Quarry Area 2 (South) MRS in support of the human health risk assessment (HHRA), and ecological risk assessment (ERA).

***E.4.1 Primary and Secondary Contaminant Sources and Release Mechanisms***

The HRR (e<sup>2</sup>M, 2007) completed for Camp Ravenna included the Ramsdell Quarry Area 2 (South) MRS and reported that facility personnel had observed that items thought to be DoD military munitions may potentially be present. None of the potential munition items reportedly observed had been evaluated to determine if they were MEC at the time of the HRR, and it was unknown how munitions could have come to be located at the MRS. Therefore, the HRR recommended additional investigation. The potential for DoD military munitions consisting of MEC was considered the primary source of potential explosive hazards at the Ramsdell Quarry Area 2 (South) MRS prior to conducting the RI. The associated secondary source of contamination was the potential release of MC-related contamination from any MEC on or just below the ground surface or in sediment at the wetland area. The RI did not identify any munitions confirmed to be MEC, and only MD was found. The Final RI Report (CB&I, 2015) concluded that MC-related contamination was not detected at the MRS. The exposure pathways considered during the RI included the potential for human contact with MEC on and just below the ground surface and in sediment at the surface water area of the MRS. Freeze/thaw cycling throughout the MRS and erosion at the steeper areas were evaluated since these physical processes have the potential to expose subsurface MEC (HGL, 2018).

#### ***E.4.2 Contaminant Migration Pathways***

No U.S. DoD military munitions confirmed to be MEC were found during the SI and RI field activities, and only MD were found. Therefore, there are no explosive hazards or current sources of MC-related contamination at the Ramsdell Quarry Area 2 (South) MRS and it is concluded that the exposure pathways for surface and subsurface soils and surface water and sediment at the MRS are incomplete (CB&I, 2015).

#### ***E.4.3 Potential Human Receptors and Ecological Receptors***

The likely human receptors identified for the Ramsdell Quarry Area 2 (South) MRS include the Industrial Receptor as described in the FS. The NFA determination is protective of other potential future human receptors (such as residential receptors); however, there are no current plans for the MRS to change from an industrial land use to a residential land use. There are no unacceptable risks to a potential future residential receptor from explosive hazards (HGL, 2018).

### **F. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES**

Current activities at the Ramsdell Quarry Area 2 (South) MRS include maintenance, natural resource management, and environmental sampling activities (CB&I, 2015). The future land use at the MRS will include maintenance, natural resource management, and environmental sampling activities in addition to military training (HGL, 2019).

### **G. SUMMARY OF SITE RISKS**

The basis for NFA at the Ramsdell Quarry Area 2 (South) MRS, including brief summaries of the of the MEC hazard assessment (HA), HHRA, and ERA, are provided in the following subsections.

#### **G.1 MEC Hazard Assessment**

The MEC HA addresses human health and safety concerns associated with potential exposure to MEC at an MRS. The ARNG found no intact DoD military munitions or MEC at the Ramsdell Quarry Area 2 (South) MRS during the MMRP SI or RI field activities indicating that no source of explosive safety hazards is present. Therefore, the ARNG determined that the calculation of a MEC HA score was not warranted for the MRS (CB&I, 2015).

#### **G.2 Human Health and Ecological Risk Assessment**

The purpose of the HHRA is to document whether chemical contaminants (MC) may pose a risk to current or future human receptors and to identify which, if any, MRS conditions need to be addressed further in the CERCLA process. An ERA evaluates the potential for adverse effects posed to ecological receptors from the release of MC-related contamination at a MRS.

Two soil samples were collected during the RI for analysis for MC-related contamination where the MD was found. The analytical results indicated that no known or suspected risks associated with MC-related contamination exist at the MRS, including evaluation for the Unrestricted (Residential) Receptor (CB&I, 2015).

### **H. DOCUMENTATION OF NO SIGNIFICANT CHANGE**

The Proposed Plan (HGL, 2019) for the Ramsdell Quarry Area 2 (South) MRS was released for public comment on March 1, 2019. The Proposed Plan (HGL, 2019) recommended NFA under the MMRP and pursuant to CERCLA requirements for the Ramsdell Quarry Area 2 (South) MRS. After the public comment period, no significant changes regarding the selected remedy, as originally identified in the Proposed Plan (HGL, 2019), were necessary or appropriate.

## **PART III: RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE PROPOSED PLAN FOR RVAAP-001-R-01 RAMSDELL QUARRY AREA 2 (SOUTH) MRS**

### **A. Overview**

In March 2019, the ARNG released the Proposed Plan. On March 6, 2019, ARNG held a public meeting for the Ramsdell Quarry Area 2 (South) MRS (which included two other MRSs: Block D Igloo MRS and Erie Burning Grounds) at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266. ARNG, Ohio EPA, and USACE were present for the meeting, and approximately 20 members of the community attended the meeting. The 30-day public comment period was held from March 1, 2019 to April 8, 2019.

### **B. Summary of Stakeholder Issues and Lead Agency Responses**

There were three comments received verbally during the public meeting. The transcript from the meeting (including the discussions summarized in B.1, below) was incorporated into the Administrative Record.

#### **B.1 Oral Comments from Public Meeting**

General oral comments and/or questions were received from members of the public at the March 2019 public meeting, as summarized below (the transcript from this meeting is part of the Administrative Record):

1. One member of the public expressed concern about TNT in groundwater at all the sites on the facility, including those discussed at the Public Meeting (Ramsdell Quarry Area 2 (South) MRS, Erie Burning Grounds, and Block D Igloo). The project team provided information on the Remedial Investigation sampling and risk assessments, and details on where to find this information online at rvaap.org. The individual wanted to know what laboratory had performed the chemical analysis for the data. The project team responded that there are many sites at the facility, with many reports and multiple years of data, and therefore many laboratories have been used during the installation history. The individual asked if there was a cleanup being conducted at the facility, and the team replied yes, all the sites discussed at the March 2019 public meeting are part of the facility's cleanup program. Block D Igloo is the only site of those discussed at the Public Meeting that will require any further removal activities. The other two sites (Ramsdell Quarry Area 2 (South) MRS and Erie Burning Grounds) are recommended for No Further Action. This individual also asked if there were drinking water wells at the facility and if those wells were regularly sampled for TNT. The project team replied that there are groundwater monitoring wells and potable wells (used for drinking water purposes) on CJAG and both types of wells are regularly sampled.
2. Another member of the public asked where the soil removed from Block D Igloo would be disposed of. The project team replied that only metallic items (potential munitions) will be removed from the site, after being separated from the surface and subsurface soil. No soil will be removed from the MRS.
3. A member of the public expressed concern about CJAG being considered for a potential location for the Missile Defense Agency and there being a negative impact to CJAG's consideration due to the environmental cleanup needed for sites such as the MRSs discussed at this public meeting. The project team replied that while there are environmental sites within the potential footprint of the Missile Defense Agency location that most of the sites have achieved Remedy in Place or No Further Action status. None of the sites discussed at the March 2019 public meeting were within that potential footprint.

## **B.2 Written Comments from Public Meetings**

No written comments or questions were received from members of the public during the public comment period.

## **B.3 Telephone Comments from Public**

No telephone comments or questions were received from members of the public during the public comment period.

## **C. Technical and Legal Issues**

There were no technical or legal issues raised during the public comment period.

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## **FIGURES**


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**Legend**  
 Camp James A Garfield/  
 Former RVAAP

**Figure 1**  
**Location Map**  
**Camp James A Garfield/  
 Former RVAAP**  
**Portage/Trumbull Counties**  
**Ohio**

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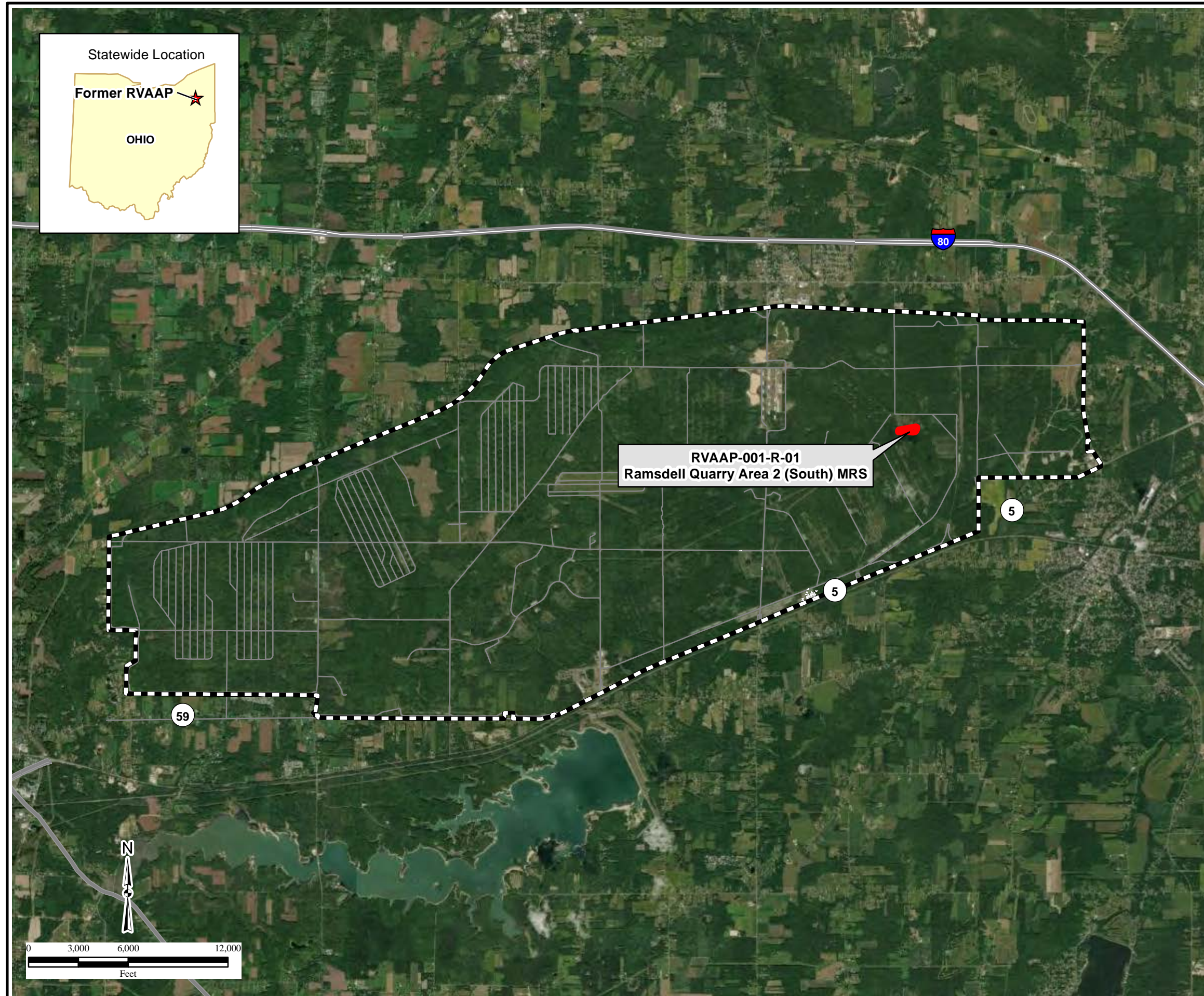
**Figure 2**  
**MRS Location Map**  
**Ramsdell Quarry Area 2 (South) MRS**  
**Camp James A Garfield/  
Former RVAAP**  
**Portage/Trumbull Counties, Ohio**

Legend

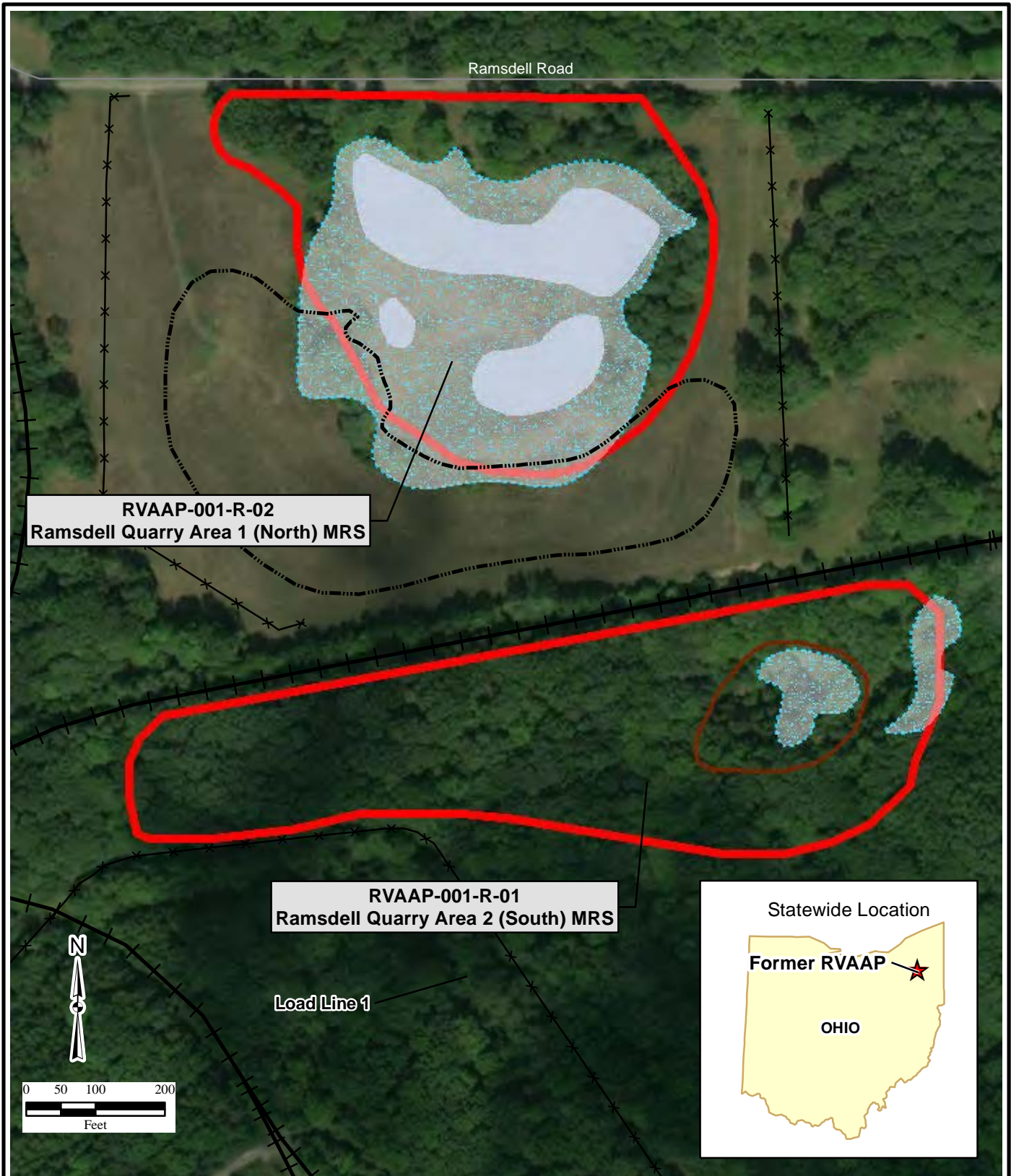
-  RVAAP-001-01 Ramsdell Quarry Area 2 (South) MRS
-  Facility Boundary
-  Road

Notes:  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

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
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**Legend**







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

**Figure 3**  
**MRS Map**  
**Ramsdell Quarry Area 2**  
**(South) MRS**  
**Camp James A Garfield/**  
**Former RVAAP**  
**Portage/Trumbull Counties, Ohio**

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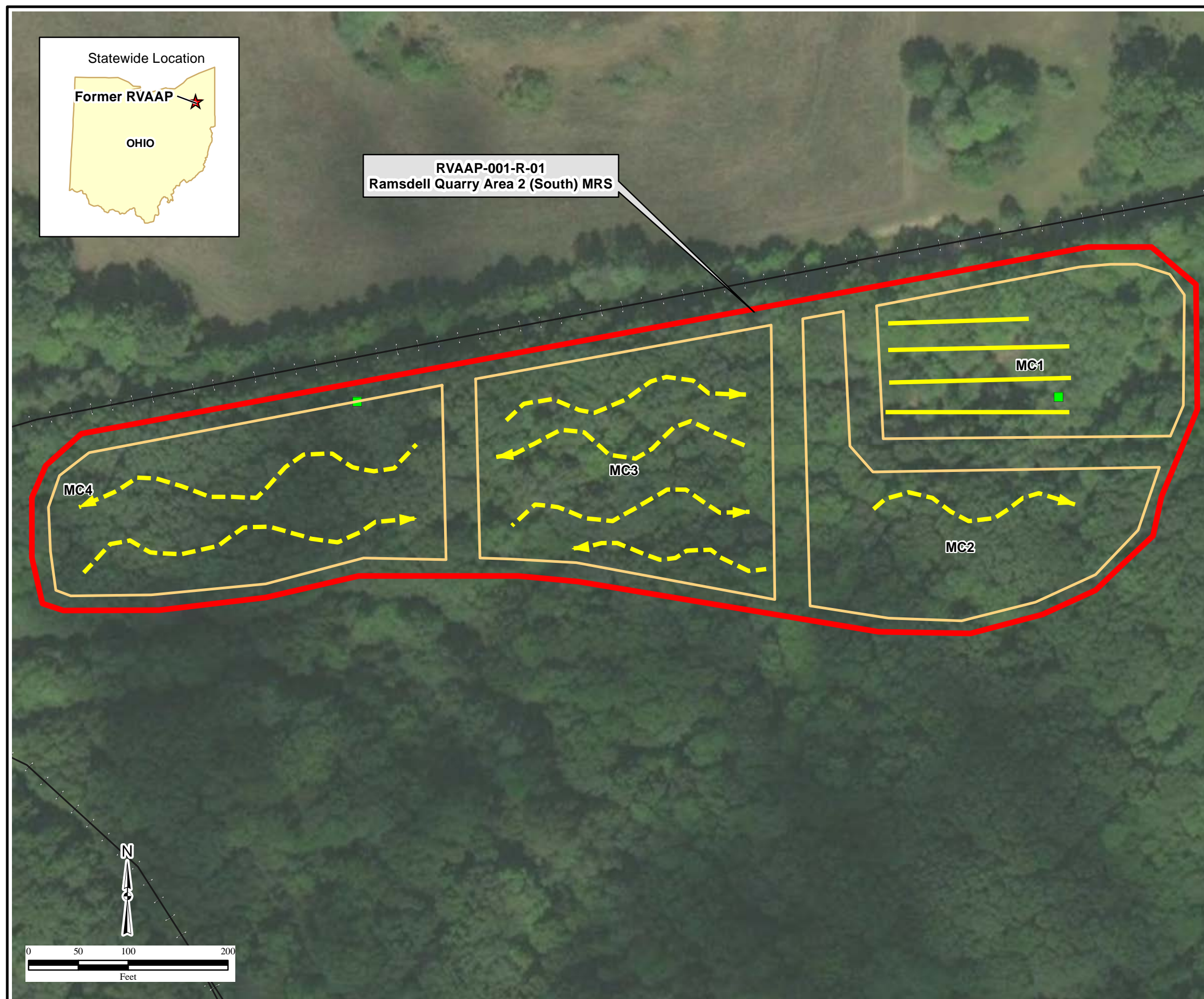
**Figure 4**  
**2007 Site Inspection Results**  
**Ramsdell Quarry Area 2 (South) MRS**  
**Camp James A Garfield/Former RVAAP**  
**Portage/Trumbull Counties, Ohio**

**Legend**

-  MRS Boundary
-  MC1 Sample Designation and Area for MC-Related Contamination
-  Line Abreast Survey
-  Meanering Path Survey Transects
-  Munition Debris Location
-  Former Railroad



RVAAP-001-R-01  
Ramsdell Quarry Area 2 (South) MRS



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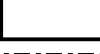

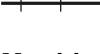









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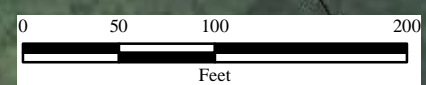
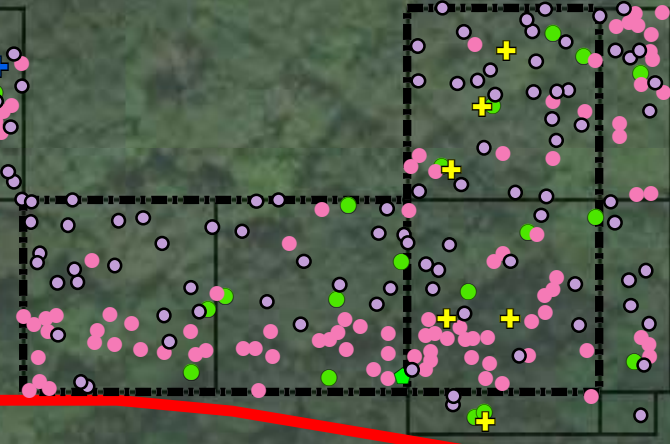
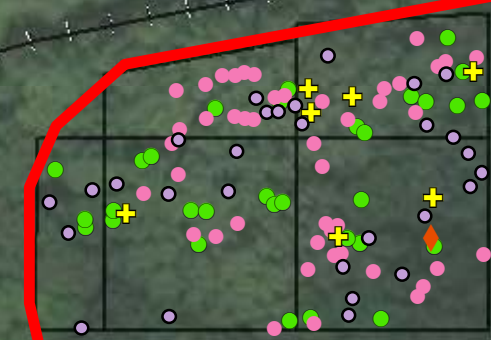
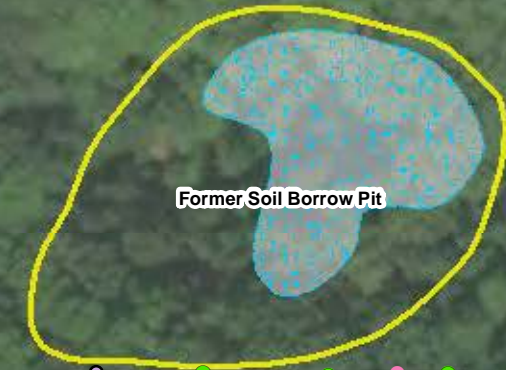
**Figure 5**  
**2011 Remedial Investigation Results**  
**Ramsdell Quarry Area 2 (South) MRS**  
**Camp James A Garfield/Former RVAAP**  
**Portage/Trumbull Counties, Ohio**

**Legend**

-  MRS Boundary
-  Wetland
-  Former Soil Borrow Pit
-  DGM Grid Boundaries
-  Sample Areas for MC-Related Contamination
-  Former Railroad
- Munition Debris (MD) and Other Debris**
  -  Bomb, 250 lb, General Purpose, AN-M57
  -  Bomb, 500 lb, General Purpose, AN-M64
  -  Bomb, fragment, 20 lb, AN-M41
  -  Projectile, 155mm, Shrapnel, MK 1
  -  MD fragment, unknown
  -  Other Debris
  -  Anomaly Type Unknown



RVAAP-001-R-01  
Ramsdell Quarry Area 2 (South) MRS



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**APPENDIX A**

**Public Notice of the Proposed Plan**

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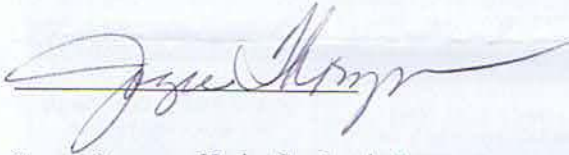
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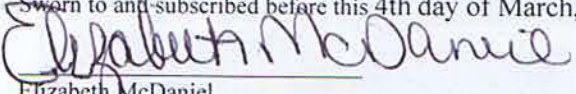
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Elizabeth McDaniel  
Notary Public  
Commission Expires June 19, 2021





## PUBLIC NOTICE

Camp James A. Garfield Joint Military Training Center  
Environmental Office  
1438 State Route 534 SW – Newton Falls, OH 44444  
614-336-6136

**Public meeting to be held Wednesday, March 6, 2019  
for Army National Guard Release of Proposed Plans  
for three Munitions Response Sites  
at the Former Ravenna Army Ammunition Plant:  
Ramsdell Quarry Landfill Area 2 (South)  
Erie Burning Grounds  
Block D Igloo**

**Ravenna** – The Army National Guard, in consultation with the Ohio Environmental Protection Agency, submits for public review and comment three Proposed Plans for three Munitions Response Sites at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield (CJAG), in Portage and Trumbull counties, Ohio.

The Ramsdell Quarry Landfill Area 2, Erie Burning Grounds, and Block D Igloo Munitions Response Sites (MRSs) within the former RVAAP in Portage and Trumbull Counties, Ohio. These MRSs are being addressed under the Military Munitions Response Program (MMRP) in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The Proposed Plans present the current status and information regarding the MRSs. The Proposed Plans detail the recommendation for No Further Action or other appropriate recommendation at the MRSs and provides the rationale for each recommendation.

On Wednesday, March 6, 2019, a public meeting will be held at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266 beginning at 6:00 p.m., with an informal open house when technical staff will be available to answer questions. At 6:30 p.m., the Army National Guard will briefly describe the assessment of the MRSs, present the No Further Action or other appropriate recommendation, and then request verbal comments from the public. Written comments regarding this recommendation may be submitted to the Army National Guard during the 30-day comment period from March 1 to April 3, 2019. All written comments should be addressed to CJAG Environmental Office; 1438 State Route 534 SW, Newton Falls, OH 44444 or sent via email to [Kathryn.s.tait.nfg@mail.mil](mailto:Kathryn.s.tait.nfg@mail.mil).

In accordance with CERCLA, the No Further Action or other appropriate recommendation presented in the Proposed Plans was summarized along with site details presented in earlier remedial investigation and feasibility study reports. All reports are now available for public review at the RVAAP Restoration Program Information Repositories at the Reed Memorial Library (167 East Main Street, Ravenna) and the Newton Falls Public Library (204 South Canal Street, Newton Falls). The reports are also available online at [www.rvaap.org](http://www.rvaap.org).

The final remedy for the MRSs will be selected based, in part, on public comments. In coordination with Ohio Environmental Protection Agency, the Army National Guard will select a final remedy after reviewing and considering all public comments submitted during the 30-day public comment period from March 1, 2019 to April 3, 2019. The Army National Guard encourages the public to review and comment on the recommendation presented in this document.

For more information or to participate in the review, please visit the RVAAP Restoration Program website ([www.rvaap.org](http://www.rvaap.org)) or call Kathryn Tait at 614-336-6136.



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#054-2T Feb. 23 & March 2, 2019 #WOH0050361

PROOF OF PUBLICATION

STATE OF OHIO  
TRUMBULL COUNTY

SS: CONNIE PACEK

BEING DULY SWORN, UPON OATH STATES THAT SHE IS AN AUTHORIZED REPRESENTATIVE OF THE TRIBUNE CHRONICLE, (A DIVISION OF EASTERN OHIO NEWSPAPERS INC). A DAILY NEWSPAPER PRINTED IN THE CITY OF WARREN, COUNTY OF TRUMBULL, STATE OF OHIO AND OF GENERAL CIRCULATION IN THE CITY OF WARREN, TRUMBULL COUNTY, OHIO AND IS INDEPENDENT IN POLITICS.

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FOR ONE CONSECUTIVE WEEKS AND  
THAT THE FIRST INSERTION WAS ON SATURDAY  
THE 23RD DAY OF FEBRUARY 2019

Connie Pacek

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS

1ST DAY OF MARCH 2019

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NOTARY PUBLIC

LAWRENCE J. KOVACH, Notary Public  
STATE OF OHIO  
MY COMMISSION EXPIRES SEPTEMBER 23, 2022

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NOTARY PUBLIC

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STATE OF OHIO

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