

**Final  
No Further Action Record of Decision for  
RVAAP-002-R-01 Erie Burning Grounds  
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:  
HydroGeoLogic, Inc. (HGL)  
11107 Sunset Hills Road  
Suite 400  
Reston, Virginia 20190**

**July 16, 2019**

*This page was intentionally left blank.*

<b>REPORT DOCUMENTATION PAGE</b>					Form Approved OMB No. 0704-0188							
<p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Service Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p><b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.</b></p>												
<b>1. REPORT DATE (DD-MM-YYYY)</b> 16-7-2019		<b>2. REPORT TYPE</b> Record of Decision			<b>3. DATES COVERED (From - To)</b> November 2018 to June 2019							
<b>4. TITLE AND SUBTITLE</b> Final No Further Action Record of Decision for RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site				<b>5a. CONTRACT NUMBER</b> W912DR-15-D-0016, Delivery Order 0001								
				<b>5b. GRANT NUMBER</b> NA								
				<b>5c. PROGRAM ELEMENT NUMBER</b> NA								
<b>6. AUTHOR(S)</b> Kimberly Vaughn, PG, HydroGeoLogic, Inc. (HGL)				<b>5d. PROJECT NUMBER</b> NA								
				<b>5e. TASK NUMBER</b> NA								
				<b>5f. WORK UNIT NUMBER</b> NA								
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> HGL 11107 Sunset Hills Rd, Suite 400 Reston, VA 20190					<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> NA							
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> U.S. Army Corps of Engineers, North Atlantic Division, Baltimore District 2 Hopkins Plaza Baltimore, MD 21201					<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b> USACE							
					<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b> NA							
<b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b> Reference distribution page												
<b>13. SUPPLEMENTARY NOTES</b> None												
<b>14. ABSTRACT</b> The U.S. Department of the Army (U.S. Army) is presenting this Final No Further Action (NFA) Record of Decision to document the No Further Action determination for the former Ravenna Army Ammunition Plant, RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site (MRS) in Portage and Trumbull Counties, Ohio. This NFA Record of Decision presents the U.S. Army's NFA 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.												
<b>15. SUBJECT TERMS</b>												
<b>16. SECURITY CLASSIFICATION OF:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 2px;"><b>a. REPORT</b></td> <td style="width: 33%; padding: 2px;"><b>b. ABSTRACT</b></td> <td style="width: 33%; padding: 2px;"><b>c. THIS PAGE</b></td> </tr> <tr> <td style="text-align: center; padding: 2px;">U</td> <td style="text-align: center; padding: 2px;">U</td> <td style="text-align: center; padding: 2px;">U</td> </tr> </table>			<b>a. REPORT</b>	<b>b. ABSTRACT</b>	<b>c. THIS PAGE</b>	U	U	U	<b>17. LIMITATION OF ABSTRACT</b> SAR		<b>18. NUMBER OF PAGES</b> 54	
<b>a. REPORT</b>	<b>b. ABSTRACT</b>	<b>c. THIS PAGE</b>										
U	U	U										
			<b>19a. NAME OF RESPONSIBLE PERSON</b> Kimberly Vaughn									
			<b>19b. TELEPHONE NUMBER (Include area code)</b> 512-658-6828									

Reset

*This page was intentionally left blank.*



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

August 7, 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  
267000859256**

**Subject: Final Record of Decision for RVAAP-002-R-01 Erie Burning Grounds**

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-002-R-01 Erie Burning Grounds Munitions Response Site, Version 1.0, Munitions Response Services at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio," dated July 16, 2019. The document was prepared for the U.S. Army Corps of Engineers (USACE) 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, reports, and Ohio EPA's oversight during the investigation, Ohio EPA concurs with the Final ROD document for Erie Burning Grounds recommending No Further Action.

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

Sincerely,

Melisa Witherspoon, Chief  
Division of Environmental Response and Revitalization

MW:cla

ec: Katie Tait/Kevin Sedlak, OHARNG RTLS  
Craig Coombs, USACE  
Rebecca Shreffler, Chenega  
David Connolly, ARNG  
Nat Peters, USACE  
Mark S. Johnson, Jr., Ohio EPA, NEDO, DERR  
Bob Princic, Ohio EPA, NEDO, DERR  
Tom Schneider, Ohio EPA, SWDO, DERR  
William Damschroder, Ohio EPA, Legal

RECEIVED  
AUG 08 2019

*This page was intentionally left blank.*

## CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

HydroGeoLogic, Inc. has completed the *Final No Further Action Record of Decision for RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site, Version 1.0*, at the 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.

Reviewed/Approved by:	<div>Janardan J Patel</div> <div><small>Digitally signed by Janardan J Patel DN: cn=Janardan J Patel, o=HGL, ou=ECG, email=jpatel@hgl.com, c=US Date: 2019.07.09 13:27:30 -0400</small></div> <div>Janardan Patel, PMP Program Manager</div>	Date: <u>7-9-2019</u>
Prepared/Approved by:	<div></div> <div>Kimberly Vaughn Project Manager</div>	Date: <u>7-9-2019</u>

*This page was intentionally left blank.*



**Final  
No Further Action Record of Decision for  
RVAAP-002-R-01 Erie Burning Grounds  
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:  
HydroGeoLogic, Inc. (HGL)  
11107 Sunset Hills Road  
Suite 400  
Reston, Virginia 20190**

**July 16, 2019**

*This page was intentionally left blank.*

## DOCUMENT DISTRIBUTION

**Final No Further Action Record of Decision  
for RVAAP-002-R-01 Erie Burning Grounds  
Munitions Response Site  
Version 1.0**

<b>Name/Organization</b>	<b>Number of Printed Copies</b>	<b>Number of Electronic Copies</b>
David Connolly, ARNG Restoration Program Manager	0	1
Kevin Sedlak, ARNG Restoration Project Manager, ARNG-IED	0	1
Katie Tait, Environmental Specialist, OHARNG	1	0
Craig Coombs, USACE Louisville District Project Manager	0	1
Nicholas Roope, Site Coordinator, Ohio Environmental Protection Agency	1	1
Mark Johnson, Project Manager, Ohio Environmental Protection Agency	0	Email/Transmittal Letter
Tom Schneider, Ohio Environmental Protection Agency, Federal Facilities	0	Email/Transmittal Letter
Travis McCoun, USACE Baltimore District COR	0	1
Gail Harris, RVAAP Administrative Record Manager	2	2

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

*This page was intentionally left blank.*

## TABLE OF CONTENTS

### DOCUMENT SUBMISSION FORM

### DOCUMENTATION OF OHIO EPA CONCURRENCE WITH FINAL DOCUMENT

### CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

### DOCUMENT DISTRIBUTION

<b>TABLE OF CONTENTS .....</b>	<b>i</b>
<b>ACRONYMS AND ABBREVIATIONS.....</b>	<b>iii</b>
<b>PART I: DECLARATION.....</b>	<b>1</b>
A. SITE NAME AND LOCATION .....	1
B. STATEMENT OF BASIS AND PURPOSE .....	1
C. DESCRIPTION OF THE SELECTED REMEDY .....	2
D. STATUTORY DETERMINATION.....	2
E. AUTHORIZING SIGNATURE.....	2
<b>PART II: DECISION SUMMARY .....</b>	<b>3</b>
A. SITE NAME, LOCATION, AND DESCRIPTION .....	3
B. SITE HISTORY AND ENFORCEMENT ACTIVITIES.....	3
C. COMMUNITY PARTICIPATION.....	4
D. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION .....	5
E. SITE CHARACTERISTICS .....	5
E.1 Physical Characteristics .....	5
E.1.1 Topography/Physiography .....	5
E.1.2 Soils and Geology.....	6
E.1.3 Surface Water .....	6
E.1.4 Hydrogeology .....	6
E.1.5 Ecology.....	6
E.2 Site Investigations.....	7
E.2.1 Site Inspection (SI) .....	7
E.2.2 Remedial Investigation (RI) .....	7
E.2.3 Feasibility Study (FS).....	8
E.2.4 Proposed Plan (PP).....	9
E.3 Nature and Extent of Contamination .....	9
E.4 Conceptual Site Model (CSM).....	9
E.4.1 Primary and Secondary Contaminant Sources and Release Mechanisms.....	9
E.4.2 Contaminant Migration Pathways .....	10
E.4.3 Potential Human Receptors and Ecological Receptors .....	10
F. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES.....	10
G. SUMMARY OF SITE RISKS .....	10
G.1 Munitions and Explosives of Concern (MEC) Hazard Assessment (HA) .....	10
G.2 Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA).....	10
H. DOCUMENTATION OF NO SIGNIFICANT CHANGE.....	11
<b>PART III: RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE     PROPOSED PLAN FOR RVAAP-002-R-01 ERIE BURNING GROUNDS.....</b>	<b>13</b>
A. Overview .....	13

**TABLE OF CONTENTS (continued)**

---

B. Summary of Stakeholder Issues and Lead Agency Responses ..... 13

    B.1 Oral Comments from Public Meeting..... 13

    B.2 Written Comments from Public Meetings ..... 14

    B.3 Telephone Comments from Public ..... 14

C. Technical and Legal Issues ..... 14

**REFERENCES..... 15**

## LIST OF FIGURES

---

Figure 1	Location Map .....	19
Figure 2	MRS Location Erie Burning Grounds .....	21
Figure 3	Site Features Erie Burning Grounds MRS .....	23
Figure 4	Erie Burning Grounds MRS 2008 Site Inspection Results .....	25
Figure 5a	2014 Remedial Intrusive Investigation Results North Section .....	27
Figure 5b	2014 Remedial Intrusive Investigation Results South Section .....	29

## LIST OF TABLES

---

Table 1	Evaluation of the No Further Action Alternative .....	8
---------	---	---

## LIST OF APPENDICES

---

Appendix A	Public Notice of the Proposed Plan
------------	------------------------------------

## ACRONYMS AND ABBREVIATIONS

---

amsl	above mean sea level
ARAR	applicable or relevant and appropriate requirements
Army	U.S. Department of the Army
ARNG	Army National Guard
Camp Ravenna	Camp Ravenna Joint Military Training Center
CB&I	CB&I Federal Services, LLC
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CJAG	CJAG Joint Military Training Center
COC	chemical of concern
COR	Contracting Officer's Representative
CSM	Conceptual Site Model
DFFO	Director's Final Findings and Orders
DoD	Department of Defense
e <sup>2</sup> m	Engineering-Environmental Management, Inc.
ERA	Ecological Risk Assessment
FS	Feasibility Study
HA	Hazard Assessment
HGL	HydroGeoLogic, Inc.
HHRA	Human Health Risk Assessment
IED	Installation and Environment Division
IRP	Installation Restoration Program
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mm	millimeter
MMRP	Military Munitions Response Program
MRS	munitions response site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PP	Proposed Plan
RI	Remedial Investigation
ROD	Record of Decision
RVAAP	Ravenna Army Ammunition Plan



## ACRONYMS AND ABBREVIATIONS (continued)

---

SI	Site Inspection
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

*This page was intentionally left blank.*

## **PART I: DECLARATION**

---

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

The Army National Guard (ARNG) developed this No Further Action (NFA) Record of Decision (ROD) at RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site (MRS). The Erie Burning Grounds MRS is located at the northeastern central portion of Camp James A. Garfield Joint Military Training Center (CJAG) (**Figures 1 and 2**). The former Ravenna Army Ammunition Plant (RVAAP) is now known as Camp James A. Garfield Joint Military Training Center. CJAG was previously known as Camp Ravenna Joint Military Training Center (Camp Ravenna) and that name was used in some historical reports.

CJAG is a 21,683-acre federally owned installation 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 completed 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 the former RVAAP. The ARNG, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), determined that NFA is the selected remedy for the Erie Burning Grounds MRS at the former RVAAP. 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 from prior investigations and contained in the Administrative Record file for the Erie Burning Grounds MRS.

The Ohio EPA, the supporting state regulatory agency, reviewed and concurred with the *Final No Further Action Proposed Plan for RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site* (NFA Proposed Plan [PP]; HGL, 2018b). The NFA PP presented the ARNG’s preferred remedy for addressing the Erie Burning Grounds MRS and invited public involvement during the comment period (March 1, 2019 through April 3, 2019) and public meeting (March 6, 2019). No Department of Defense (DoD) military munitions (i.e., unexploded ordnance, discarded military munitions or munitions constituents [MC]) originating from historical activities associated with the Erie Burning Ground MRS were encountered during the investigations conducted to date, and none are suspected. The NFA determination under the CERCLA process at the Erie Burning Grounds MRS satisfies the requirements of the Ohio EPA *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

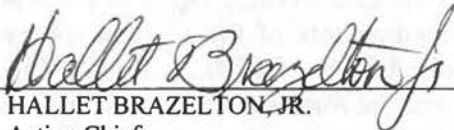
No DoD military munitions confirmed to be munitions and explosives of concern (MEC) were encountered at the Erie Burning Grounds MRS during the Remedial Investigation (RI), and only munitions debris (MD) were found. Additionally, the results of the RI concluded no MC-related contamination was present at the MRS during the RI. Therefore, NFA is the selected remedy for the Erie Burning Grounds MRS under the DoD's MMRP pursuant to CERCLA requirements.

### D. STATUTORY DETERMINATION

The results of the RI fieldwork for the Erie Burning Grounds MRS support the determination that no unacceptable risk due to explosive hazards or potential sources of MEC have been found at the MRS, and no source of MC is known to exist. The human health and ecological risk assessments concluded that no risks due to MC-related contamination are present. The ARNG has determined that NFA is acceptable for the Erie Burning Grounds MRS because there is no risk associated with the presence of DoD military munitions or MC-related contamination. The 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, or 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**

---

### **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 the activities of the former RVAAP.

The Erie Burning Grounds MRS is a 33.93-acre parcel in the northeastern portion of the CJAG within Portage County, as shown in **Figure 2**. The Erie Burning Ground MRS was being investigated under the MMRP, a program similar to the Installation Restoration Program (IRP). Investigation of the IRP Area of Concern RVAAP-02 has addressed any potential contamination related to past industrial activities and sources of non-munitions related contamination. Any groundwater related items will be addressed under the Facility-Wide Groundwater Monitoring Plan. Solid waste identified at the site will be managed under the Solid Waste Management Plan for CJAG.

The MMRP was established under the DoD's 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 Erie Burning Grounds MRS was determined to be eligible under the MMRP.

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

The former RVAAP was constructed in 1940 and 1941 for the assembly/loading and depot storage of ammunition. While serving as an ammunition plant, 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) 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, melt 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 former 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 former RVAAP include a landfill, an aircraft fuel tank testing area, and various industrial support and maintenance facilities (CB&I, 2014).

The Erie Burning Grounds MRS is a 33.93-acre area located in the northeastern portion of CJAG as shown in **Figure 2**. The MRS was originally used as a burning ground that operated between 1941 and 1951. The Erie Burning Grounds received bulk, obsolete, and off-specification propellants; conventional explosives; rags, and large, explosive-contaminated items (railcars) to be thermally treated (by open burning). Open burn activities occurred in four areas: Burn Area A, Burn Area B, Burn Area C, and Burn Area D. After use of the burning ground ended, the MRS was inundated with water, the MRS became clogged due to sedimentation, and vegetation. As a result of the flooding, the MRS is now considered a high quality wetland with surface water depth ranging from 3 feet to 5 feet, depending on the season and amount of precipitation (HGL, 2018b).

Current activities will continue at the Erie Burning Grounds MRS including maintenance, natural resource management activities (beaver dam removal) and environmental sampling. The future land use for the MRS is not anticipated to change.

### C. COMMUNITY PARTICIPATION

Using the RVAAP restoration program community relations program, the ARNG and the Ohio EPA have involved 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:** The *Final Community Relations Plan for the Ravenna Army Ammunition Plant Restoration Program in Portage and Trumbull Counties, Ohio* (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 dedicated to the former RVAAP restoration program. The website provides information on the history of the former 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 NFA PP for the Erie Burning Grounds MRS (HGL, 2018b) in March 2019. The NFA PP 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 NFA PP was sent to the Tribune Chronicle and the 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 held a public meeting on March 6, 2019, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266, to present the NFA PP to the public. At this meeting, representatives of the ARNG/OHARNG provided information specific to the Erie Burning Grounds MRS history, investigations, current site conditions, and proposed NFA. ARNG/OHARNG representatives were also available to answer questions about the results of the munitions response investigations conducted under the MMRP at the Erie Burning Grounds MRS. A memorandum summarizing the public meeting and a transcript of the public meeting are available to the public and have been included in the Administrative Record. 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 considered the community input received on the NFA PP when determining that NFA for both DoD military munitions, and MC-related contamination is appropriate for the Erie Burning Grounds MRS.

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

The overall goal of the munitions response conducted at the former RVAAP was to address risks to human health and the environment posed by DoD military munitions. The investigations conducted by the ARNG determined that no unacceptable risk is posed by DoD military munitions and there is no significant evidence of the presence of MEC within the Erie Burning Grounds MRS. Therefore, there is no potential source for MC-related contamination. For this reason, the ARNG determined 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 MRS.

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

This section described the physical characteristics, previous investigations, nature and extent of contamination, and conceptual site model (CSM) for the Erie Burning Grounds MRS.

##### **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 of the Erie Burning Grounds MRS is described as relatively flat and inundated with water. The elevation of the Erie Burning Grounds MRS ranges from approximately 938 to 947 feet above mean sea level (amsl) (CB&I, 2014).

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

The facility is located atop Mississippian- and Pennsylvanian-age bedrock strata overlain by unconsolidated glacial deposits of varying thickness. The Erie Burning Grounds MRS is located over the Sharon Sandstone Member with a bedrock elevation of 900 feet amsl with an estimated depth to bedrock of approximately 40 feet below ground surface (CB&I, 2014).

The naturally occurring soil types at the MRS consist of Sebring variants, Sebring silt loam, Damascus loam, Lakin loamy sand, and Mahoning silt loam. Native soils were disturbed significantly during burning ground operations and sand fill, ballast, and slag have been observed within the MRS during previous investigations. Permeability of the various soil types present on the MRS range from  $9.1 \times 10^{-5}$  to  $4.2 \times 10^{-3}$  centimeters/second resulting in saturated conditions in the winter and spring (CB&I, 2014).

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

The facility is located within the Ohio River Basin with a major surface stream running adjacent to the western portion of the facility, which flows into 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. As described, the MRS is a high quality wetland with surface water depths ranging from 3 feet to 5 feet depending on the season and amount of precipitation (HGL, 2018b). The Erie Burning Grounds MRS has been inundated with water since the early 1990s due to beaver activity that obstructed the drainage channel downstream. Surveys identified wetlands over 31.5 acres of the 33.93-acre MRS (CB&I, 2014).

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

Vertical recharge from precipitation occurs via infiltration into the groundwater zones present at the facility. Although groundwater recharge and discharge areas have not been delineated at CJAG, it is assumed that the extensive upland areas at the facility, primarily located 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 Erie Burning Grounds MRS is located at the northeast, more level portion of the facility and is not presumed to be in a groundwater recharge area. Groundwater at the Erie Burning Grounds MRS generally flows in a southerly direction. The depth to groundwater at the MRS ranges from approximately 2 to 3 feet below ground surface with a groundwater elevation between 937 and 939 feet amsl. The depth-to-groundwater measurements were taken from existing monitoring wells installed at the collocated area of concern under the IRP (CB&I, 2015).

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

The facility is home to a range of habitats, vegetation types, and animal species. The Erie Burning Grounds MRS encompasses cold-deciduous successional forests, semi-permanently, and permanently flooded herbaceous areas. Vegetation at the MRS consist of hydrophytic plants along pond edges and mixed swamp forest and shrub communities (CB&I, 2014).



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 that are potentially present. Twelve state listed endangered species (1 mammal, 1 fish, 2 insect, 2 bird, and 6 plant species) and eight state listed threatened species (2 bird, 1 insect, 1 mammal, 4 plant species) are included on the Rare Species List (OHARNG, 2014). However, no confirmed sightings of these species within the Erie Burning Grounds MRS have been reported and no critical habitats are present within the MRS (CB&I, 2014).

## **E.2 Site Investigations**

### ***E.2.1 Site Inspection (SI)***

In 2007, the ARNG completed a Site Inspection (SI) at the facility that included the Erie Burning Grounds MRS. Instrument-assisted visual surveys were conducted for DoD military munitions along meandering paths throughout the MRS and in the south-central portion of the MRS where DoD military munitions had been reported to be present. Several subsurface anomalies were detected in the northwest, central, and southwest portions of the MRS. No MEC items were observed during the SI field effort. Results of the SI field activities are depicted on **Figure 4**. The *Final Site Inspection Report* recommended further characterization of the terrestrial and inundated portions of the MRS under the MMRP with respect to DoD military munitions (e<sup>2</sup>m, 2008).

### ***E.2.2 Remedial Investigation (RI)***

The ARNG conducted an RI at the Erie Burning Grounds MRS to identify and bound areas where DoD military munitions were potentially present, and characterize the nature and extent of MC-related contamination potentially present within the MRS. The RI fieldwork incorporated the findings of the Final Historical Records Review and the results of the SI. Field activities included the following (**Figure 5a** and **Figure 5b**):

- Digital geophysical mapping was performed over 6.8 acres located throughout the project area.
- A total of 350 single point anomalies at 14 exploratory trenches were identified for intrusive investigation.
- Thirty-three items classified as MD were recovered from trench locations and 29 items classified as MD were recovered from single point anomaly locations. MD items from trench locations were associated with an AN-M64A1-series 500-pound general purpose bomb. MD items recovered from single point anomaly locations were associated with M48-series 75 millimeter (mm) high explosive projectiles and M309-series 75mm projectiles.
- No MEC was identified during the RI field activities.
- Six wet sediment samples were collected using Incremental Sampling Methodology. Human health and ecological risk assessments concluded that site related chemicals detected were not present in concentrations great enough to pose a risk to human or ecological receptors at the MRS.

Based on the results of the RI fieldwork, the use or presence of munitions at the Erie Burning Grounds MRS (**Figure 5a** and **Figure 5b**) was confirmed. A Feasibility Study (FS) was recommended as the next course of action for the MRS. The FS was used to assess the appropriateness of a response action or alternative.

### ***E.2.3 Feasibility Study (FS)***

Based on further evaluation of the RI results, the ARNG concluded that the Erie Burning Grounds MRS should be recommended for NFA. However, 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, 2018a).

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 PP (HGL, 2018a). 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**

<b>NCP Criteria</b>		<b>No Further Action Alternative</b>
<b>Threshold Criteria</b>	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.
<b>Balancing Criteria</b>	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 PP 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.2.4 Proposed Plan (PP)***

The PP was completed by the ARNG in 2019. The PP recommended NFA as no risks have been 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, 2018b).

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

Data gathered by the ARNG during the SI and subsequent RI of the Erie Burning Grounds MRS effectively characterized the nature and extent of DoD military munitions and MC-related contamination at the MRS. Additionally, evaluation of the NFA alternative in the FS supports the determination that discontinuing MMRP investigations at the Erie Burning Grounds MRS is protective of human health and the environment. Based on the information presented in Part II, Sections A through E, it can be concluded that no further investigation is necessary at the Erie Burning Grounds MRS. As outlined in the RI Report, there was no evidence that explosive hazards from DoD military munitions were present at the Erie Burning Grounds MRS. The RI data supports there are no unacceptable risks due to explosive hazards and no sources for a release of MC-related contamination. Therefore, neither DoD military munitions nor MC-related contamination posed a risk at the Erie Burning Grounds MRS (HGL, 2018a).

### **E.4 Conceptual Site Model (CSM)**

The CSM discussion includes areas where DoD military munitions may be present, sources of contamination, release mechanisms, migration pathways, and potential receptors identified for the Erie Burning Grounds 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 Erie Burning Grounds MRS was used as a burning ground that operated from 1941 until 1951. The Erie Burning Grounds received bulk, obsolete, and off-specification propellants; conventional explosives, rags and large explosive-contaminated items. The RI intrusively investigated 350 single point anomalies and 14 trenches. Only MD was identified. No DoD military munitions confirmed to be MEC were encountered during the RI. Since no DoD military munitions confirmed to be MEC or concentrated areas of MD are not present at the Erie Burning Grounds MRS, no source of MC-related contamination exists at the MRS (CB&I, 2014) (HGL, 2018a).

The release mechanisms evaluated during the RI and reevaluated in the FS included the potential for burning or disposal of military munitions in the MRS that could result in munitions exposed on the surface, mixed with other debris on the surface, buried in the subsurface soil, or within the

surface water in both the accessible and inaccessible areas of the MRS (CB&I, 2014) (HGL, 2018a).

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

Further evaluation of the RI findings in the FS determined that no unacceptable risks due to explosive hazards exist within the surface and subsurface soils of the Erie Burning Grounds MRS. Since no unacceptable risks due to explosive hazards exist at the MRS, considerations for the mobility of DoD military munitions through environmental media was not warranted. No DoD military munitions or significant amounts of MD were identified within the MRS; therefore, no source for MC-related contamination exists at the MRS. The re-evaluation of the MEC CSM in the FS concluded that exposure pathways for surface and subsurface soils and surface water were incomplete (HGL, 2018a).

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

The likely human receptor identified for the Erie Burning Grounds MRS is the Industrial Receptor. 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, 2018b).

Environmental receptors at the MRS include terrestrial invertebrates (earthworms), voles, shrews, common bird species (owls, hawks, robins, and waterfowl), common large mammals (white-tailed deer, raccoon, woodchuck), small mammals (muskrat, mink) and aquatic biota (CB&I, 2014).

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

Current activities will continue at the Erie Burning Grounds MRS including maintenance, natural resource management activities (beaver dam removal) and environmental sampling. Changes in future land use at the MRS are not anticipated (HGL, 2018b). Though there are no current plans for the MRS to change from an industrial land use to a residential land use a theoretical future residential receptor was also evaluated. The HHRA included an evaluation of a theoretical future residential receptor from explosive hazards.

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

During the RI, risks to potential human and ecological receptors were evaluated through the MEC Hazard Assessment (HA), HHRA, and ERA based on site characteristics, results of previous investigations, and evaluation of the CSM. Risk assessments performed during the RI are summarized below.

#### **G.1 Munitions and Explosives of Concern (MEC) Hazard Assessment (HA)**

As part of the RI, the ARNG evaluated for explosive safety hazards at the Erie Burning Grounds MRS using the MEC HA. The ARNG found that no DoD military munitions confirmed to be MEC were encountered at the Erie Burning Grounds MRS during either the 2007 SI or the subsequent 2014 RI. No source of explosive hazards are present at the MRS. As a result, evaluation of explosive hazards in a MEC HA was not warranted (CB&I, 2014).

#### **G.2 Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA)**

The purpose of the HHRA is to document whether MRS conditions 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.

Section E.2.2 discusses the sampling effort during the RI field activities. Iron was identified as a chemical of concern (COC) for residential receptors in wet sediment; however, evidence suggests that one elevated iron concentration is most likely associated with background conditions and does not pose a hazard. Two COCs were identified in surface water and 10 COCs were identified in wet sediment for ecological receptors. However, no MEC, munitions potentially presenting an explosive hazard, or low concentrations of explosives or propellants were identified in the sediment-samples or anywhere else in the MRS. Therefore, the COCs are not considered MC-related or attributable to any munitions or munitions-related activities in the MRS. The HHRA and ERA concluded that no MC hazards exist at the Erie Burning Grounds MRS (CB&I, 2014).

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

The NFA PP for the Erie Burning Grounds MRS (HGL, 2018b) was released for public comment on March 1, 2019. The PP recommended NFA under the MMRP and pursuant to CERCLA requirements for the Erie Burning Grounds MRS. After the public comment period, no significant changes regarding the selected remedy, as originally identified in the NFA PP, were necessary or appropriate.

*This page was intentionally left blank.*

### **PART III: RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE PROPOSED PLAN FOR RVAAP-002-R-01 ERIE BURNING GROUNDS**

---

#### **A. Overview**

In March 2019, the ARNG released the PP. On March 6, 2019, ARNG held a public meeting for the Erie Burning Grounds MRS (which included two other MRSs: Ramsdell Quarry Area 2 (South) and Block D Igloo) at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266. ARNG, Ohio EPA, and U.S. Army Corps of Engineers (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), 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](http://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 Landfill MRS Area 2 (South) 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.



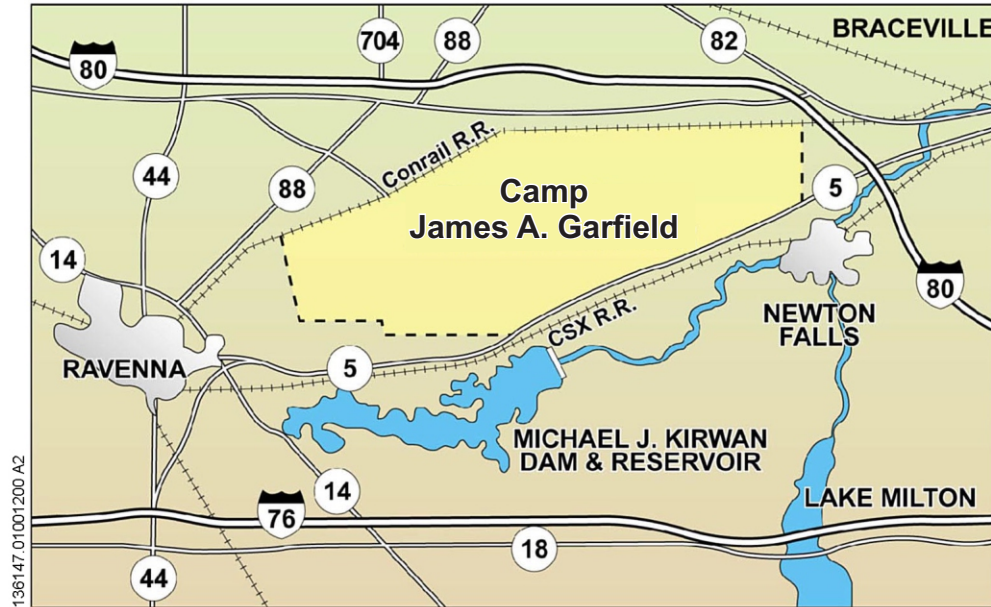
## REFERENCES

- CB&I Federal Services, LLC (CB&I), 2014. *Final Remedial Investigation Report for RVAAP-002-R-01 Erie Burning Grounds MRS, Version 2. Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. August.
- HydroGeoLogic, Inc. (HGL), 2018a. *Final Feasibility Study for RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site Former Ravenna Army Ammunitions Plant, Portage and Trumbull Counties, Ohio*. April.
- HGL, 2018b. *Final No Further Action Proposed Plan for RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site Former Ravenna Army Ammunitions Plant, Portage and Trumbull Counties, Ohio*. December.
- Engineering-Environmental Management, Inc. (e<sup>2</sup>M), 2008. *Final Site Inspection Report, Ravenna Army Ammunition Plant, Ohio, Military Munitions Response Sites*, May.
- Ohio Army National Guard (OHARNG), 2014. Integrated Natural Resources Management Plan (INRMP) at the CJAG Joint Military Training Center, Portage and Trumbull Counties, Ohio. December.
- Ohio Environmental Protection Agency (Ohio EPA), 2004. *Director's Final Findings and Orders (DFFO)* for RVAAP, Division of Emergency and Remedial Response, June 10.
- U.S. Department of the Army (Army), 2009. *Final United States Army Military Munitions Response Program Munitions Response Remedial Investigation/Feasibility Study Guidance*. November.
- U.S. Army Corps of Engineers (USACE), 2017. *Final Community Relations Plan for the Ravenna Army Ammunition Plant Restoration Program in Portage and Trumbull Counties, Ohio*. March.
- U.S. Fish and Wildlife Service (USFWS), 2018. Environmental Conservation Online System: Species Profile for Northern Long-Eared Bat (*Myotis septentrionalis*). <https://ecos.fws.gov/ecp0/profile/speciesProfile.jsessionid=6DA47AE967841D502600201F99E9370B?spcode=A0JE>. Accessed January 2, 2018.

*This page was intentionally left blank.*

## FIGURES

*This page was intentionally left blank.*



\\Gst-srv-01\HGLGIS\Ravenna\_AAP\ErieBG\RoD\  
(01)Location\_Map.cdr  
3/26/2019 TH  
Source: CB&I



#### Legend

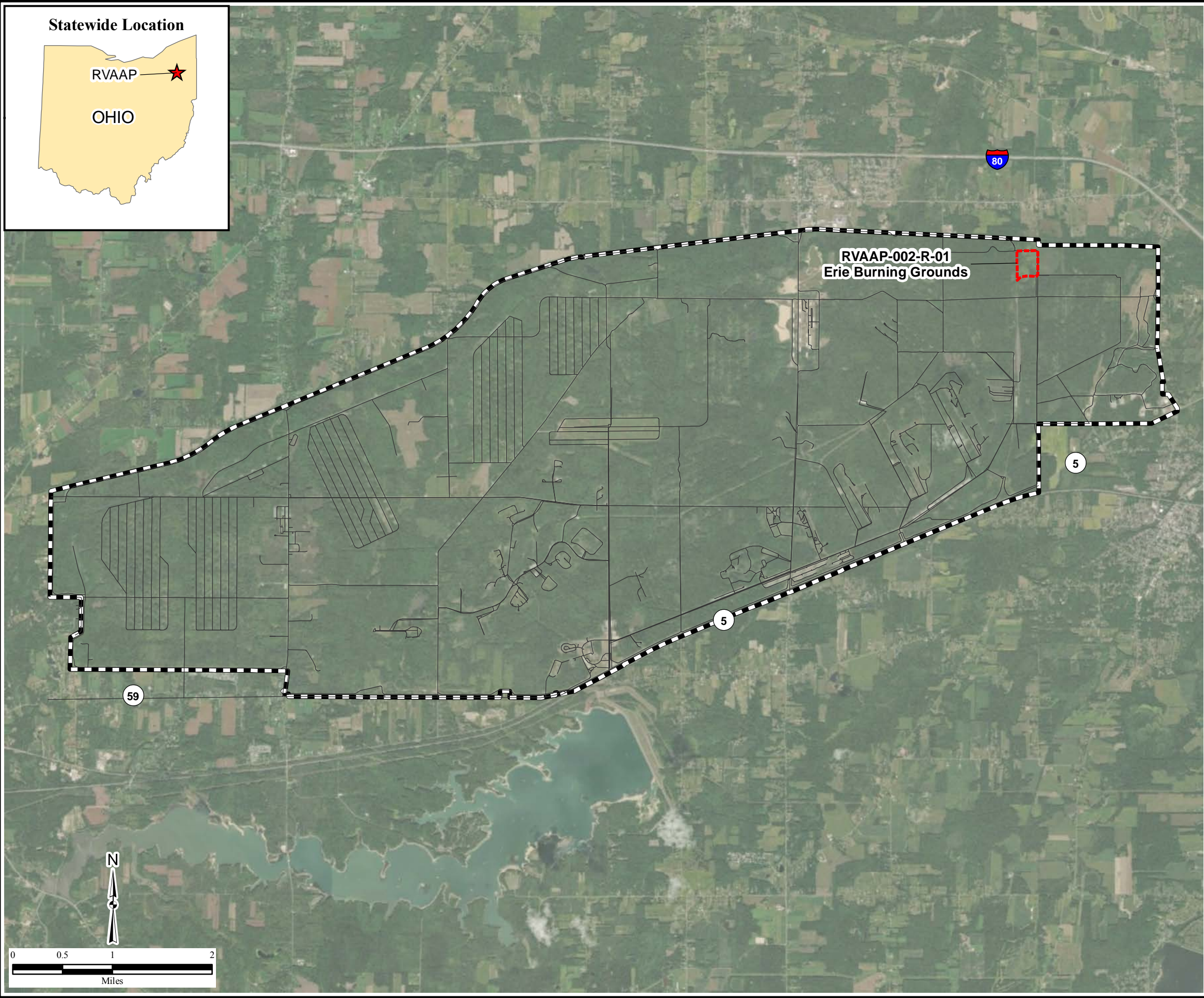
 Camp James A. Garfield

Note:  
RVAAP=Ravenna Army Ammunition Plant

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

*This page was intentionally left blank.*





HGL—No Further Action Record of Decision  
Former RVAAP, Ohio

**Figure 2**  
**MRS Location**  
**Erie Burning Grounds**  
**Former RVAAP**  
**Portage and Trumbull Counties, Ohio**

Legend

- Road
- MRS
- Installation Boundary

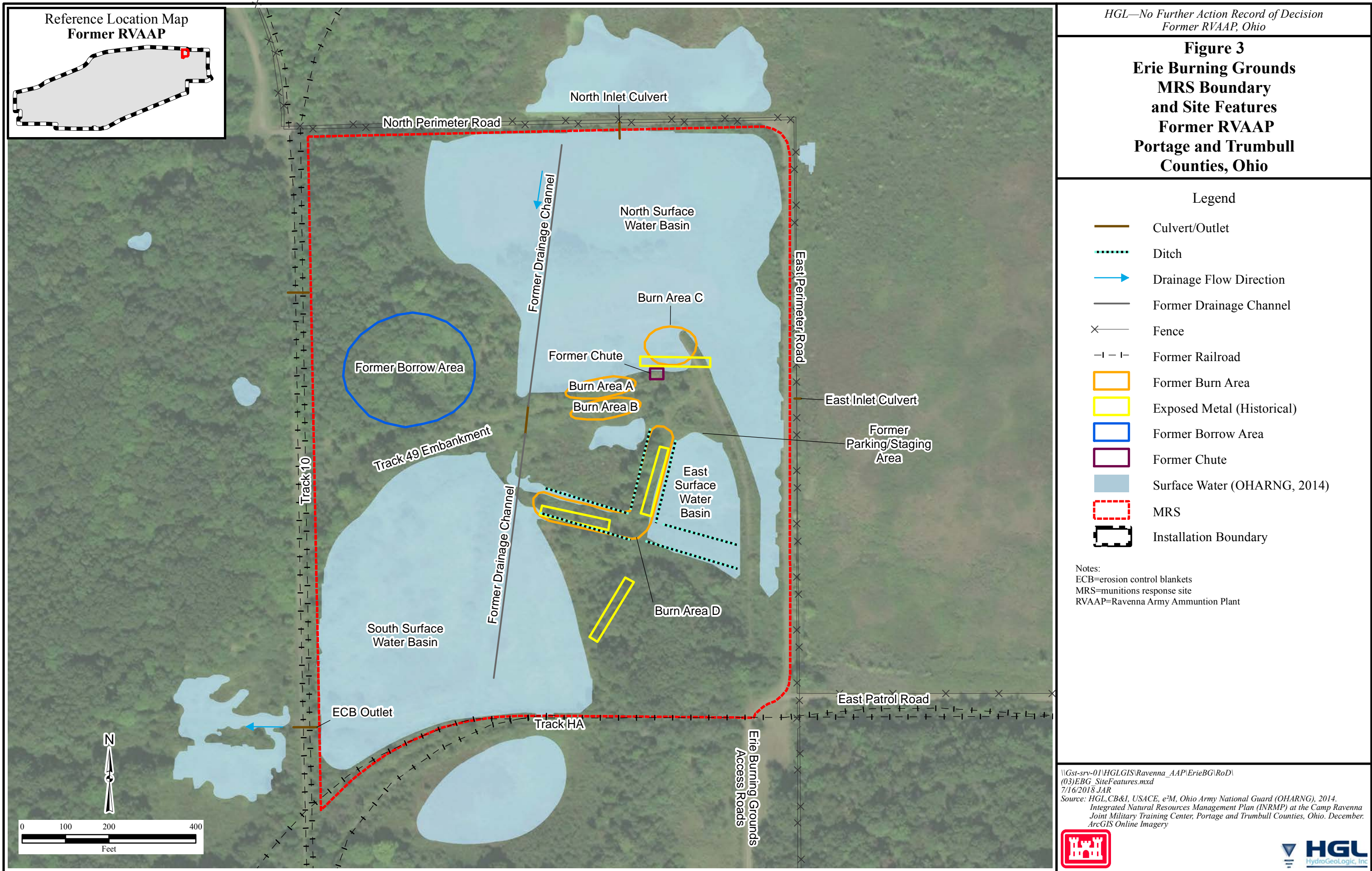
Notes:  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

\\Gst-srv-01\HGLGIS\Ravenna\_AAP\ErieBG\RoD\  
(02)EBG\_MRSLoc.mxd  
7/16/2018 CNL  
Source: HGL,CB&I, USACE, e2M  
ArcGIS Online Imagery



*This page was intentionally left blank.*





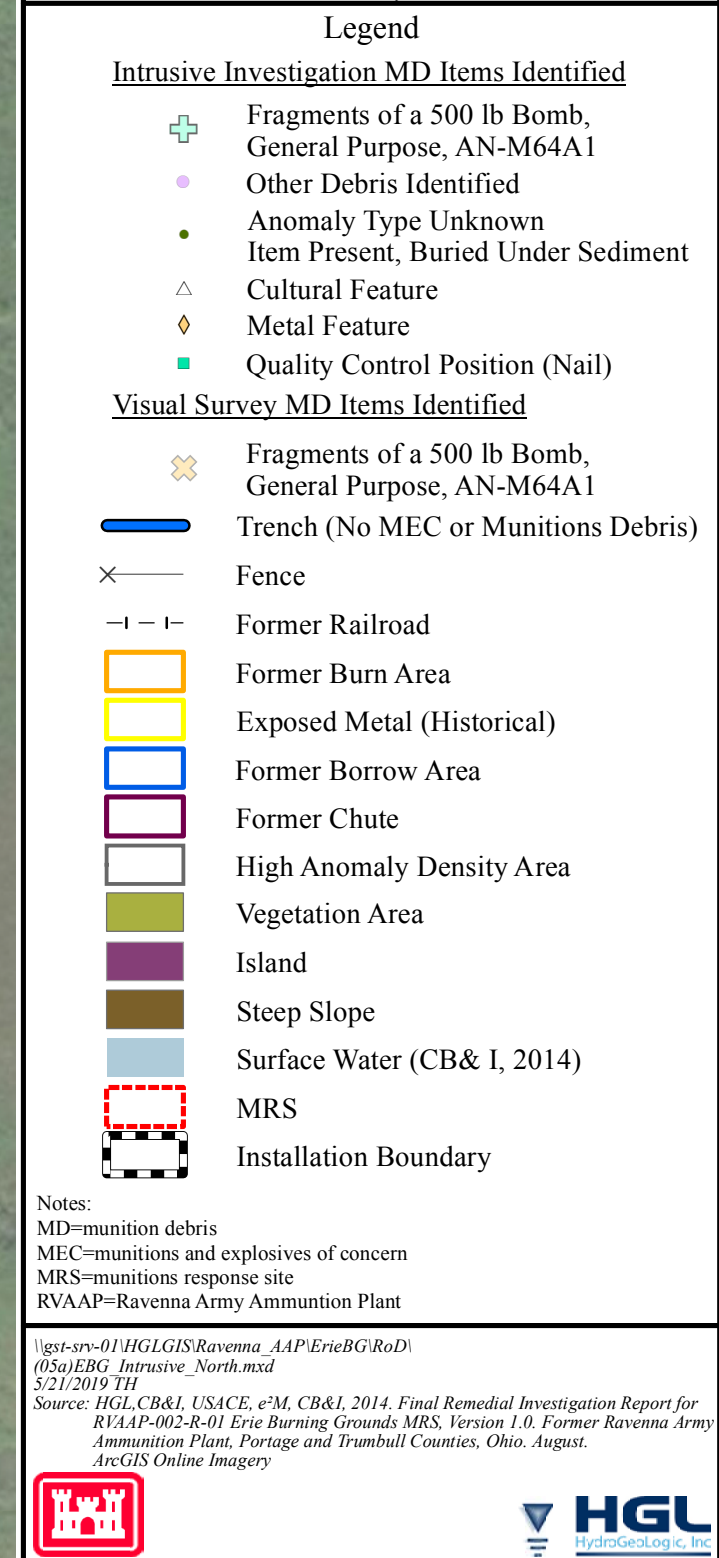
*This page was intentionally left blank.*





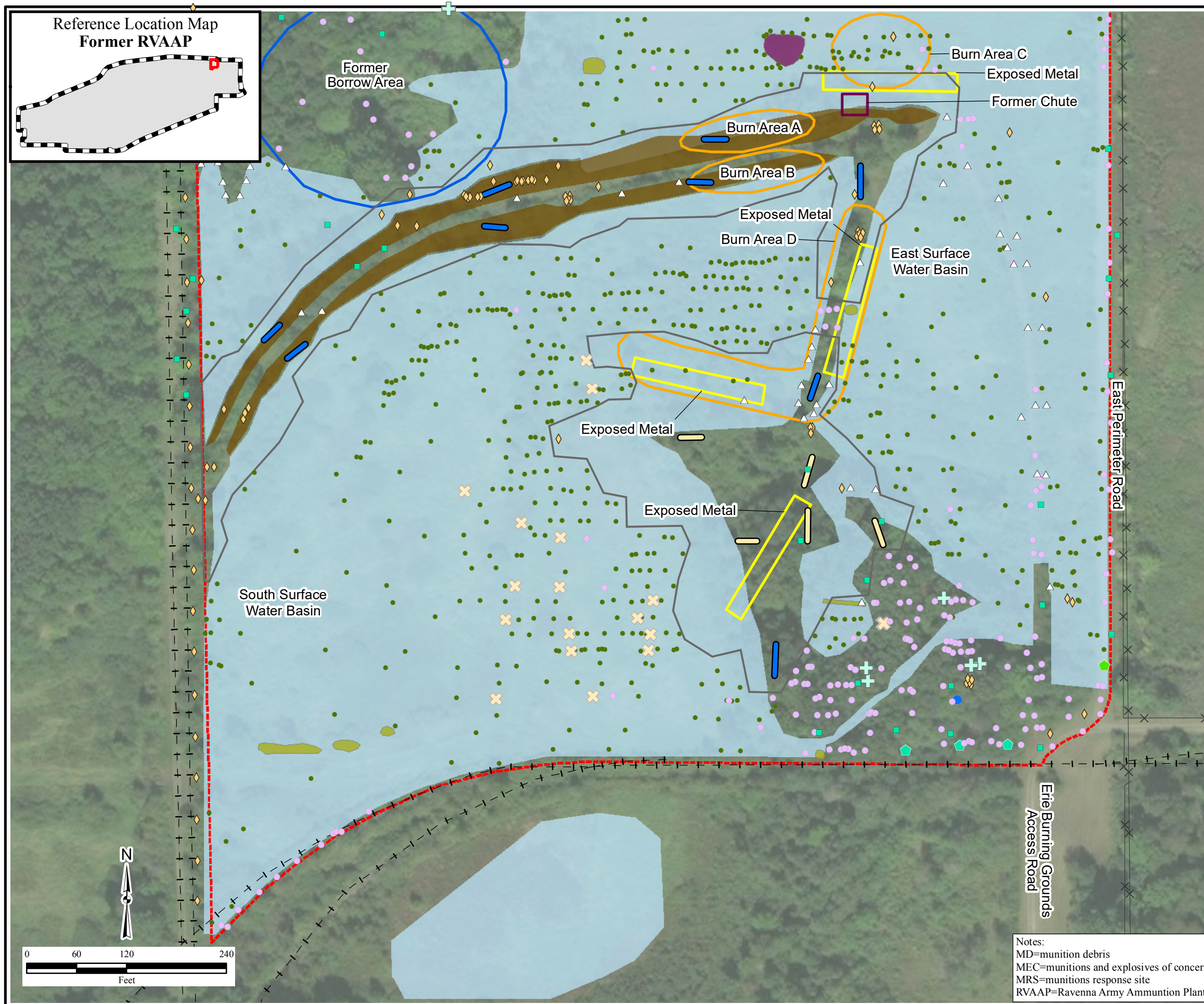
*This page was intentionally left blank.*





*This page was intentionally left blank.*





HGL—No Further Action Record of Decision  
Former RVAAP, Ohio

**Figure 5b**  
**2014 Remedial Investigation**  
**Intrusive Investigation Results**  
**South Section**  
**Erie Burning Grounds**  
**Former RVAAP**  
**Portage and Trumbull**  
**Counties, Ohio**

- Legend**
- Intrusive Investigation MD Items Identified
- Fragments of a 500 lb Bomb, General Purpose, AN-M64A1
  - Projectile Fragments, 75mm, HE, M309
  - Projectile Fragments, 75mm, HE, M48
  - Other Debris Identified
  - Anomaly Type Unknown
  - Item Present, Buried Under Sediment
  - Cultural Feature
  - Metal Feature
  - Quality Control Position (Nail)
- Visual Survey MD Items Identified
- Ordnance Components
  - Fragments of a 500 lb Bomb, General Purpose, AN-M64A1
- Trench (Munitions Debris Identified)
- Trench (No MEC or Munitions Debris)
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- High Anomaly Density Area
- Vegetation Area
- Island
- Steep Slope
- Surface Water (CB&I, 2014)
- MRS
- Installation Boundary

\\gst-srv-01\HGLGIS\Ravenna\_AAP\ErieBG\RoD\05b\EBG\_Intrusive\_South.mxd  
5/21/2019 TH  
Source: HGL, CB&I, USACE, e2M, CB&I, 2014. Final Remedial Investigation Report for RVAAP-002-R-01 Erie Burning Grounds MRS, Version 1.0. Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio. August. ArcGIS Online Imagery



*This page was intentionally left blank.*



**Appendix A**  
**Public Notice of the Proposed Plan**

*This page was intentionally left blank.*

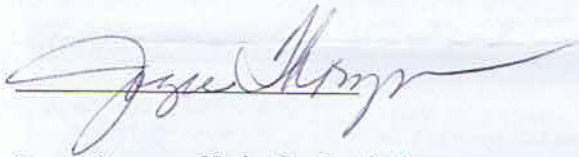
31240405

**Proof of Publication**

Record Publishing Company  
1050 W. Main Street,  
Kent, OH 44240  
Phone (330) 541-9400  
Fax (330) 673-6363

I, Thompson being first duly sworn depose and say that I am Advertising Clerk of  
**Record Publishing Company**

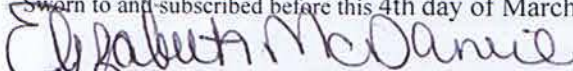
30 Record-Courier a newspaper printed and published in the city of Kent, and of General circulation in the County of Portage, State of Ohio, and personal knowledge of the facts herein stated and that the notice hereto annexed was Published in said newspapers for 2 insertions on the same day of the week from and after the 24th day of February, 2019 and that the fees charged are legal.



Name of Account: HydroGeoLogic Inc  
Ad Number: 12534680  
No. of Lines: 70

Day(s) Published: 02/24, 03/03.  
Printers Fee: \$432.00

Sworn to and subscribed before this 4th day of March, 2019.



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.



**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 (MRSSs) within the former RVAAP in Portage and Trumbull Counties, Ohio. These MRSSs 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 MRSSs. The Proposed Plans detail the recommendation for No Further Action or other appropriate recommendation at the MRSSs 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 MRSSs, 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 MRSSs 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.

#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.

THAT THE ATTACHED ADVERTISEMENT WAS PUBLISHED IN

THE TRIBUNE CHRONICLE EVERY: SATURDAY  
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

Lawrence J. Kovach  
NOTARY PUBLIC

SEAL

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

ADVERTISING COST \$

593.77





**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.

#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.

THAT THE ATTACHED ADVERTISEMENT WAS PUBLISHED IN

THE TRIBUNE CHRONICLE EVERY: SATURDAY  
FOR ONE CONSECUTIVE WEEKS AND  
THAT THE FIRST INSERTION WAS ON SATURDAY  
THE 2ND DAY OF MARCH 2019

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS

8TH DAY OF MARCH 2019

NOTARY PUBLIC

LAWRENCE J. KOVACH, Notary Public  
STATE OF OHIO

MY COMMISSION EXPIRES SEPT EMBR 23, 2022

SEAL

ADVERTISING COST \$ 592.77