PUBLIC MEETING FOR
RVAAP-001-R-01 RAMSDELL QUARRY LANDFILL
AREA 2 SOUTH
RVAAP-060-R-01 BLOCK D IGLOO
RVAAP-002-R-01 ERIE BURNING GROUNDS
MUNITIONS RESPONSE SITES

Contract W912DR-15-D-0016
Delivery Order 0001

US Army Corps of Engineers®

U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT
10 S. HOWARD STREET, ROOM 7000
BALTIMORE, MARYLAND 21201

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April 2019

REPORT DOCUMENTATION PAGE

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Public Meeting Memorandum for RVAAP-001-R-01 Ramsdell Quarry Landfill MRS Area 2 (South), RVAAP-060-R-01 Block D Igloo MRS, and RVAAP-002-R-01 Erie Burning Grounds MRS for the meeting held March 6, 2019.

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14. ABSTRACT
This draft public meeting memorandum describes the activities conducted, documents public attendance and public comment, and records details relevant to the public meeting held November 1, 2018. The Army National Guard conducted the public meeting, in consultation with the Ohio Environmental Protection Agency, to submit for public review and comments three Proposed Plans for munitions and explosives of concern and munitions constituents at three munitions response sites at the former Ravenna Army Ammunition Plant in Portage and Trumbull counties, Ohio: RVAAP-001-R-01 Ramsdell Quarry Landfill MRS Area 2 (South), RVAAP-060-R-01 Block D Igloo MRS, and RVAAP-002-R-01 Erie Burning Grounds MRS.

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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.

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.

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) or call Kathryn Tait at 614-336-6136.

RC, 2/24 & 3/3/2019, 12534680

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

PROOF OF PUBLICATION

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NOTARY PUBLIC

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

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ADVERTISING COST $ 592.77

Public Meeting Sign-In Sheet

PUBLIC SIGN-IN SHEET

Ravenna Army Ammunition Plant Restoration Program
Proposed Plans Public Meeting
March 6, 2019

Name	Phone Number	Email
OZZIE RICHENBACH	[redacted]	
KEVIN SEDLAK		
Sue Oliver		
CRAIG COOMBS		
Nat Peters		
Nick Roope		
KIM GROSS		
Dave Connolly		
Bob & Barb Stacy		
RYAN SHACKLEFORD		
Rebecca Rod		
Brian Miller		
Katie Tait		
Bob Princic		
JOHN CROOP		

PUBLIC SIGN-IN SHEET

Ravenna Army Ammunition Plant Restoration Program
Proposed Plans Public Meeting
March 6, 2019

Name	Phone Number	Email
Bruce Lange Charlestown TWP Trustee	[redacted]	
Chris Cerenelli WFMJ-TV21 - Youngstown		
Kathy Schumann		
Debra Ann Bennett		
A. Richards Montevilla		

Ramsdell Quarry Landfill Area 2 (South) Fact Sheet

Ravenna Army Ammunition Plant

RVAAP Facts

No Further Action Proposed Plan for Ramsdell Quarry Landfill MRS Area 2 (South)

Where is the Ramsdell Quarry Landfill MRS Area 2 (South)?

The RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site (MRS) Area 2 (South) is a 6.93 acre site located in the northeast portion of the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield. Camp James A. Garfield is located in east-central Portage County and southwestern Trumbull County, Ohio about 3 miles east-northeast of the city of Ravenna and 1-mile northwest of the city of Newton Falls.

How was this area used?

The Ramsdell Quarry Landfill MRS Area 2 (South) is located south of the separate site Ramsdell Quarry Landfill MRS Area 1 (North). The MRS is heavily wooded with thick ground vegetation and contains a small, inactive soil borrow pit which is now a small area of wetland. It was suspected that the MRS may have been used as a disposal area for DoD military munitions that were treated at the Ramsdell Quarry Landfill MRS Area 1 (North).

What is happening now at the Ramsdell Quarry Landfill MRS Area 2 (South)?

Between 2007 and 2015, the United States (U.S.) Army conducted investigative activities that included a site inspection (SI) and remedial investigation (RI) activities at the MRS under the Military Munitions Response Program (MMRP). The purpose of the investigations was to determine if any explosive safety hazards or risks due to munition constituents (MC)-related contamination associated with the historical activities that occurred at the MRS were present.

During the SI, instrument-aided visual surveys were performed. Munitions debris (MD) was found; however, two munitions debris (MD) items were encountered on the ground surface. The MD consisted of one inert 105-millimeter (mm) projectile and one inert 155mm projectile. No munitions and explosives of concern (MEC) were encountered at the MRS during the SI field work. Four soil samples were collected at the MRS and were analyzed for MC-related contamination. Based on the SI sampling results, further characterization for MC-related contamination was recommended in the RI.

Geophysical data collection, intrusive investigations, and environmental sampling were completed during the RI. All items recovered were inspected and classified and munitions debris (MD). No munitions and explosives of concern (MEC) were identified. The RI concluded that no known or suspected risk due to MC-related contamination exists at the MRS for either ecological or human receptors, including evaluation for the Unrestricted (Residential) Receptor. A summary of the previous investigations and findings from the most recent activities at the MRS are presented in the *Final Remedial Investigation Report for RVAAP-001-R-01 Ramsdell Quarry Landfill MRS, Version 1.0*, published in January 2015.

Based on further evaluation of the RI results, the Army concluded the Ramsdell Quarry Landfill MRS Area 2 (South) be recommended for No Further Action (NFA). Since the RI recommended conducting a Feasibility Study (FS), the FS was conducted to provide the necessary rationale to support and document the NFA determination. The NFA alternative is technically and administratively implementable and there are no costs. The NFA alternative is protective of human health and the environment because no explosive hazard or unacceptable risk due to MC-related contamination are present at the MRS.

Ravenna Army Ammunition Plant

RVAAP Facts

No Further Action Proposed Plan for Ramsdell Quarry Landfill MRS Area 2 (South)

What is the Proposed Plan?

The Proposed Plan is a document used to facilitate public involvement in the remedy selection process. The document presents the preliminary recommendations concerning how best to address contamination at the site, presents alternatives that were evaluated, and explains the reasons that the Preferred Alternative is recommended. In the case of the Ramsdell Quarry Landfill MRS Area 2 (South), the No Action alternative is protective of human health and the environment because no explosive hazard or unacceptable risk due to MC-related contamination is present at the MRS. The Proposed Plan meets the statutory requirements promulgated by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). The recommendations provided in the Proposed Plan are not final, and the Army, in consultation with the Ohio EPA, is soliciting input to provide the public with an opportunity to participate in the recommended action selection process. The *No Further Action Proposed Plan for RVAAP-001-R-01 Ramsdell Quarry Landfill MRS Area 2 (South)*, published in February 2019 is available for public comment.

What is the recommended action?

Since there are no explosive safety hazards or risks from MC-related contamination, the Army, in consultation with the Ohio EPA, is recommending NFA for the Ramsdell Quarry Landfill MRS Area 2 (South).

How can the public participate?

The recommended action can change based on public comments received during a 30-day comment period. The Army encourages interested citizens to review documents related to the Ramsdell Quarry Landfill MRS Area 2 (South) and comment on the proposed action. During the 30-day comment period from March 1, 2019 to April 3, 2019, the public can read about the proposed action, ask questions, and make recommendations. The Proposed Plan is available online at **www.rvaap.org** and at the following information repositories:

Reed Memorial Library
167 East Main Street
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(330) 296-2827
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204 South Canal Street
Newton Falls, Ohio 44444
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Hours of operation:
9 a.m.–8 p.m. Monday–Thursday
9 a.m.–5 p.m. Friday and Saturday

Where do I send my comments on the Proposed Plan?

Please send your comments, questions, or suggestions about the Proposed Plan to kathryn.s.tait.nfg@mail.mil or you can mail them directly to:

Ms. Kathryn Tait
Camp James A. Garfield Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444

The last day to postmark your responses to the Proposed Plan is April 3, 2019.

Block D Igloo Fact Sheet

Ravenna Army Ammunition Plant

RVAAP Facts

Proposed Plan for Block D Igloo MRS

Where is the Block D Igloo MRS?

The RVAAP-060-R-01 Block D Igloo Munitions Response Site (MRS) was originally a 101.6-acre site located in the north-central portion of the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield. Camp James A. Garfield is located in east-central Portage County and southwestern Trumbull County, Ohio about 3 miles east-northeast of the city of Ravenna and 1-mile northwest of the city of Newton Falls.

How was this area used?

The Block D Igloo MRS is the location of former Igloo 7-D-15. The 60-foot-long igloo was constructed of reinforced concrete with a steel door. The bunker was primarily earthen covered with the exception of the front of it where the door was located. The door location was designed to force any potential internal explosions toward the east. On March 24, 1943, the stored 2,516 clusters of M-41 20-pound (lb) fragmentation bombs exploded in Igloo 7-D-15 during loading into the bunker for storage. At the time of the incident, Igloo 7-D-15 was 95 percent full.

What is happening now at the Block D Igloo MRS?

Between 2004 and 2015, the United States (U.S.) Army conducted investigative activities that included a site inspection (SI) and remedial investigation (RI) activities at the MRS under the Military Munitions Response Program (MMRP). The purpose of the investigations was to determine if explosive safety hazards or risks due to munitions constituents (MC)-related contamination were present due to DoD military munitions activities conducted at the MRS.

During the SI, instrument-aided visual surveys and MC sampling were performed. Additionally, the pre-SI MRS was evaluated and the MRS established as a Block D Igloo MRS acreage of approximately 622.24 acres. A portion that extended beyond the installation boundary and was considered separately as a transferred site, Block D Igloo-TD MRS. The Final SI Report recommended the MRS boundary be further revised to reduce the size to 340.2 acres. The SI Report recommended further characterization of the MRS with for explosive hazards and MC-related contamination.

As part of the RI evaluation of historical data, the Army prepared a boundary evaluation for the maximum fragmentation distance-horizontal associated with the M-41 20-lb fragmentation bombs that exploded at the igloo. The results of the evaluation further reduced the size of the MRS to 92.14 acres. The RI field activities identified 178 munitions debris (MD) items on the ground surface and 3,135 subsurface MD items at a maximum depth of 8-inches below ground surface (bgs). Five of the items were identified as munitions and explosives of concern (MEC) and the RI concluded there is an explosive hazard present at the MRS.

Sampling to evaluate MC-related contamination was also conducted during the RI field work. The Human Health and Ecological Risk Assessments concluded that the detected chemicals do not pose risks to human and ecological receptors at the MRS. Therefore, the RI concluded there is no MC-related contamination at the MRS. A summary of the previous investigations and findings from the most recent activities at the MRS are presented in the *Final Remedial Investigation Report for RVAAP-019-R-01 Landfill North of Winklepeck MRS and RVAAP-060-R-01 Block D Igloo MRS, Version 1.0,* published in March 2015.

An FS was prepared to conduct a detailed analysis of the alternatives appropriate for the MRS. The FS developed remedial action objectives, evaluated possible alternatives in detail, and provided a comparative analysis of those alternatives based on criteria outlined in the *National Oil and Hazardous Substances Pollution Contingency Plan*. The FS identified four possible alternatives to address potential explosives hazards associated with DoD military munitions at the Block D Igloo MRS. The alternatives consisted of 1) No Action, 2) Land Use Controls (LUCs), 3) Surface Removal and LUCs, and 4) Surface and Subsurface Removal.

Ravenna Army Ammunition Plant

RVAAP Facts

Proposed Plan for Block D Igloo MRS

What is the Proposed Plan?

The Proposed Plan is a document used to facilitate public involvement in the remedy selection process. The document presents the preliminary recommendations concerning how best to address contamination at the site, presents alternatives that were evaluated, and explains the reasons that the Preferred Alternative is recommended. In the case of the Block D Igloo MRS, the Surface and Subsurface Removal (Alternative 4 in the FS) is the Preferred Alternative. The Preferred Alternative satisfies the remedial action objectives by reducing the unacceptable hazards of DoD military munitions for the Industrial Receptor. Alternative 4 is a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* preference since it attains unlimited use/unrestricted exposure, is protective of human health and the environment, and is applicable or relevant and appropriate requirement compliant. The recommendations provided in the Proposed Plan are not final, and the Army, in consultation with the Ohio EPA, is soliciting input to provide the public with an opportunity to participate in the recommended action selection process. The *Final Proposed Plan for RVAAP-060-R-01 Block D Igloo MRS*, published in February 2019 is available for public comment.

What is the recommended action?

No risks from MC-related contamination are present at the MRS. As there are explosive safety hazards, the Army, in consultation with the Ohio EPA, is recommending Surface and Subsurface Removal for the Block D Igloo MRS.

How can the public participate?

The recommended action can change based on public comments received during a 30-day comment period. The Army encourages interested citizens to review documents related to the Block D Igloo MRS and comment on the proposed action. During the 30-day comment period from March 1, 2019 to April 3, 2019, the public can read about the proposed action, ask questions, and make recommendations. The Proposed Plan is available online at **www.rvaap.org** and at the following information repositories:

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Newton Falls, Ohio 44444

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Erie Burning Grounds Fact Sheet

Ravenna Army Ammunition Plant

RVAAP Facts

No Further Action Proposed Plan for Erie Burning Grounds MRS

Where is the Erie Burning Grounds MRS?

The RVAAP-002-R-01 Erie Burning Grounds Munitions Response Site (MRS) is a 33.93-acre parcel located in the northeastern portion of the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield. Camp James A. Garfield is located in east-central Portage County and southwestern Trumbull County, Ohio about 3 miles east-northeast of the city of Ravenna and 1-mile northwest of the city of Newton Falls.

How was this area used?

The Erie Burning Grounds MRS is the location of a former burning ground that operated between 1941 and 1951. The Erie Burning Grounds MRS 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).

What is happening now at the Erie Burning Grounds MRS?

Between 2007 and 2014, the United States (U.S.) Army conducted investigative activities that included a site inspection (SI) and remedial investigation (RI) activities at the MRS under the Military Munitions Response Program (MMRP). The purpose of the investigations was to determine if any explosive safety hazards or risks due to munitions constituents (MC)-related contamination associated with the historical activities that occurred at the MRS were present.

During the SI, instrument-aided visual surveys were performed. One possible munitions and explosives of concern (MEC) item was encountered at the MRS during the SI field work. No MC sampling was conducted at the MRS as characterization of possible contamination was being conducted under the Installation Restoration Program (IRP). The Final SI Report recommended further characterization of the entire MRS with respect to MEC and MC (pond sediment only) under the MMRP.

Geophysical data collection, intrusive investigations, and environmental sampling of wet sediment were completed during the RI. All items recovered were inspected and classified and munitions debris (MD). No munitions and explosives of concern (MEC) was identified during the RI and the RI Report concluded that the data collected met the required 95-percent confidence level that the potential presence of MEC at the MRS is statistically low. The Human Health and Ecological Risk Assessments in the RI concluded that the site related chemicals in surface water, wet sediment, and subsurface soil are not present at concentrations great enough to pose risks to human and ecological receptors at the MRS. Therefore, the RI concluded there are no identifiable hazards from MEC in soil and the MC in soil poses no risk to human or ecological receptors. A summary of the previous investigations and findings from the most recent activities at the MRS are presented in the *Final Remedial Investigation Report for RVAAP-002-R-01 Erie Burning Grounds MRS, Version 1.0*, published in August 2014.

Based on further evaluation of the RI results, the Army concluded the Erie Burning Grounds MRS be recommended for No Further Action (NFA). The Army also determined that, because the RI recommended conducting a FS, the FS be conducted to provide the necessary rationale to support and document the NFA determination. The FS performed a detailed analysis of the NFA alternative for the MRS to support NFA at the MRS.

Ravenna Army Ammunition Plant

RVAAP Facts

No Further Action Proposed Plan for Erie Burning Grounds MRS

What is the Proposed Plan?

The Proposed Plan is a document used to facilitate public involvement in the remedy selection process. The document presents the preliminary recommendations concerning how best to address contamination at the site, presents alternatives that were evaluated, and explains the reasons that the Preferred Alternative is recommended. In the case of the Erie Burning Grounds MRS, the No Action alternative is protective of human health and the environment because no explosive hazards or unacceptable risk due to MC-related contamination is present at the MRS. The Proposed Plan meets the statutory requirements promulgated by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). The recommendations provided in the Proposed Plan are not final, and the Army, in consultation with the Ohio EPA, is soliciting input to provide the public with an opportunity to participate in the recommended action selection process. The *No Further Action Proposed Plan for RVAAP-002-R-01 Erie Burning Grounds MRS*, published in February 2019 is available for public comment.

What is the recommended action?

Since there are no explosive safety hazards or risks from MC-related contamination, the Army, in consultation with the Ohio EPA, is recommending NFA for the Erie Burning Grounds MRS.

How can the public participate?

The recommended action can change based on public comments received during a 30-day comment period. The Army encourages interested citizens to review documents related to the Erie Burning Grounds MRS and comment on the proposed action. During the 30-day comment period from March 1, 2019 to April 3, 2019, the public can read about the proposed action, ask questions, and make recommendations. The Proposed Plan is available online at **www.rvaap.org** and at the following information repositories:

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
9 a.m.–9 p.m. Monday–Thursday
9 a.m.–6 p.m. Friday
9 a.m.–5 p.m. Saturday
1 p.m.–5 p.m. Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9 a.m.–8 p.m. Monday–Thursday
9 a.m.–5 p.m. Friday and Saturday

Where do I send my comments on the Proposed Plan?

Please send your comments, questions, or suggestions about the Proposed Plan to kathryn.s.tait.nfg@mail.mil or you can mail them directly to:

Ms. Kathryn Tait
Camp James A. Garfield Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444

The last day to postmark your responses to the Proposed Plan is April 3, 2019.

Slide Presentation

PROPOSED PLANS
FOR THREE MUNITIONS RESPONSE SITES

RAMSDELL QUARRY LANDFILL MRS AREA 2 (SOUTH)
ERIE BURNING GROUNDS
BLOCK D IGLOO

Presented by:

HydroGeoLogic, Inc.

March 6, 2019

"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."

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Presentation Agenda

- Summary of Military Munitions Response Program
- The presentation of each munitions response site (MRS) Proposed Plan will include the following:
  - Historical Operations and Investigations
  - Current Conditions
  - Remedial Investigation and Feasibility Study Results
  - Recommendations and Rationale
- Questions

Acronym Cheat Sheet

AOC	Area of Concern
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CJAG	Camp James A. Garfield Joint Military Training Center
DoD	Department of Defense
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
NFA	No Further Action
RVAAP	Former Ravenna Army Ammunition Plant

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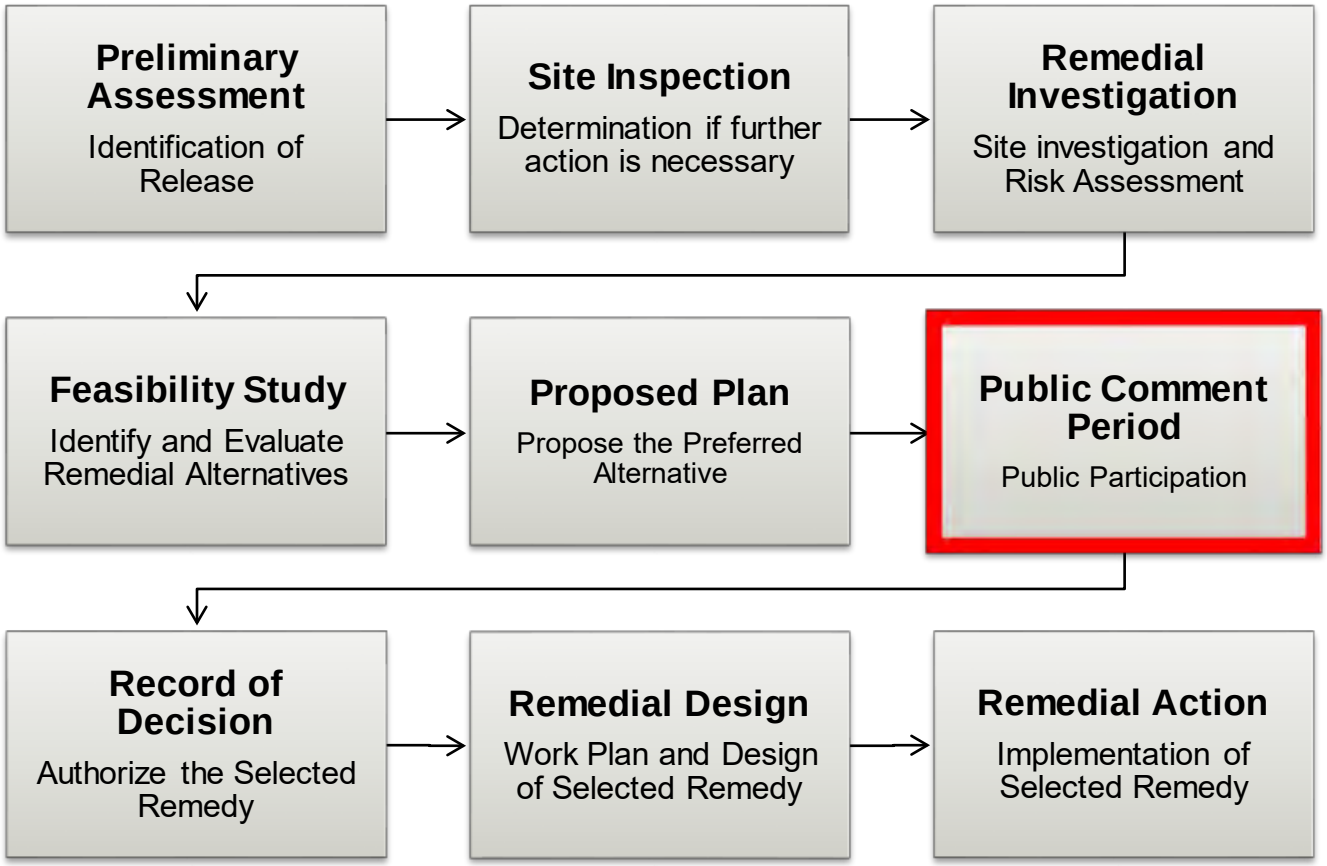
Understanding the MMRP

- The Military Munitions Response Program (MMRP) is a Department of Defense program
  - Follows the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund, process to address sites
  - These munitions response sites (MRS) are suspected or known to contain munitions and explosives of concern (MEC) and/or munitions constituents (MC)
- MEC may remain on an MRS due to former munitions-related activities:
  - Munitions firing training and testing
  - Munitions manufacturing or maintenance
  - Munitions destruction and disposal
- MC may be generated by munitions-related activities

The Stages of an MMRP Project



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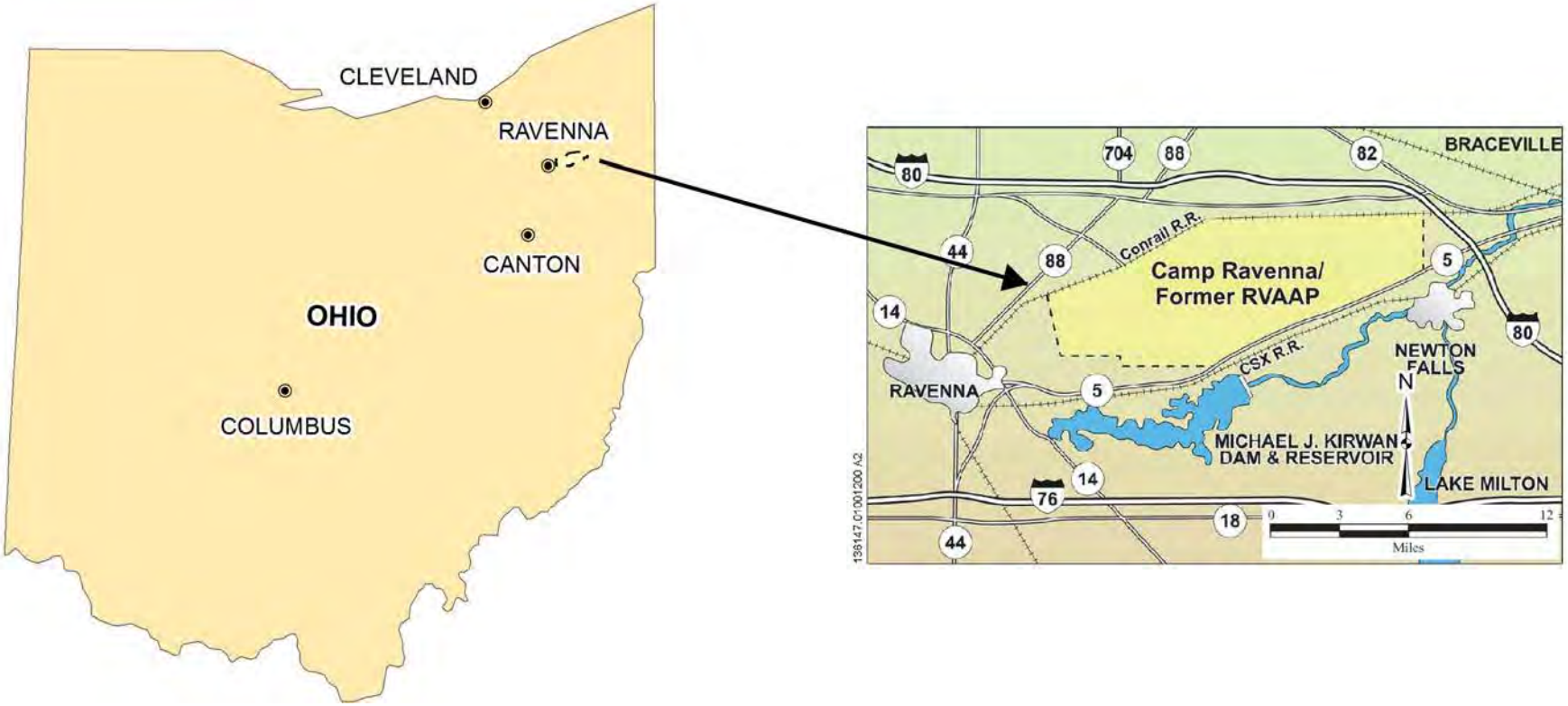
Former Ravenna Army Ammunition Plant Location



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

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RAMSDELL QUARRY LANDFILL MRS AREA 2 (SOUTH) LOCATION

MRS Location Map
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage and Trumbull Counties, Ohio

Legend

Munitions Response Site Boundary

Facility Boundary

Road

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

US Army Corps of Engineers.

Historical Background

- The MRS is located within a former quarry that was initially mined for construction material such as gravel.
- The Ramsdell Quarry Landfill MRS (RVAAP-001-R-01) was originally 13.43 acres and consisted of two areas:
  - **Area 1:** 6.5 acres and located in an old quarry bottom where open burning/open demolition operations of munitions occurred
  - **Area 2:** 6.93 acres located south of Area 1 composed of a small inactive soil borrow pit and wooded area that may have been used as a disposal area for the munitions treated in Area 1
- Disposal activities of munitions treated at Area 1 (North) were suspected to have occurred at Area 2 (South).

Historical Investigations

- **2007, Historical Records Review**
  - Report indicated the potential presence of MEC.
  - None of the DoD military munitions observed were evaluated to determine if they were MEC.
- **2008, Site Inspection**
  - Field investigation included a meandering path and planned transect magnetic surveys.
  - No DoD military munitions confirmed to be MEC were found
  - Two munitions debris (MD) items were encountered on the ground surface:
    - One inert 105-mm projectile
    - One inert 155-mm projectile
  - Soil samples were collected and concentrations of lead and manganese were detected above background values.
  - Further characterization for MC-related contamination only was recommended.
- **2015, Remedial Investigation**
- **2018, Feasibility Study**

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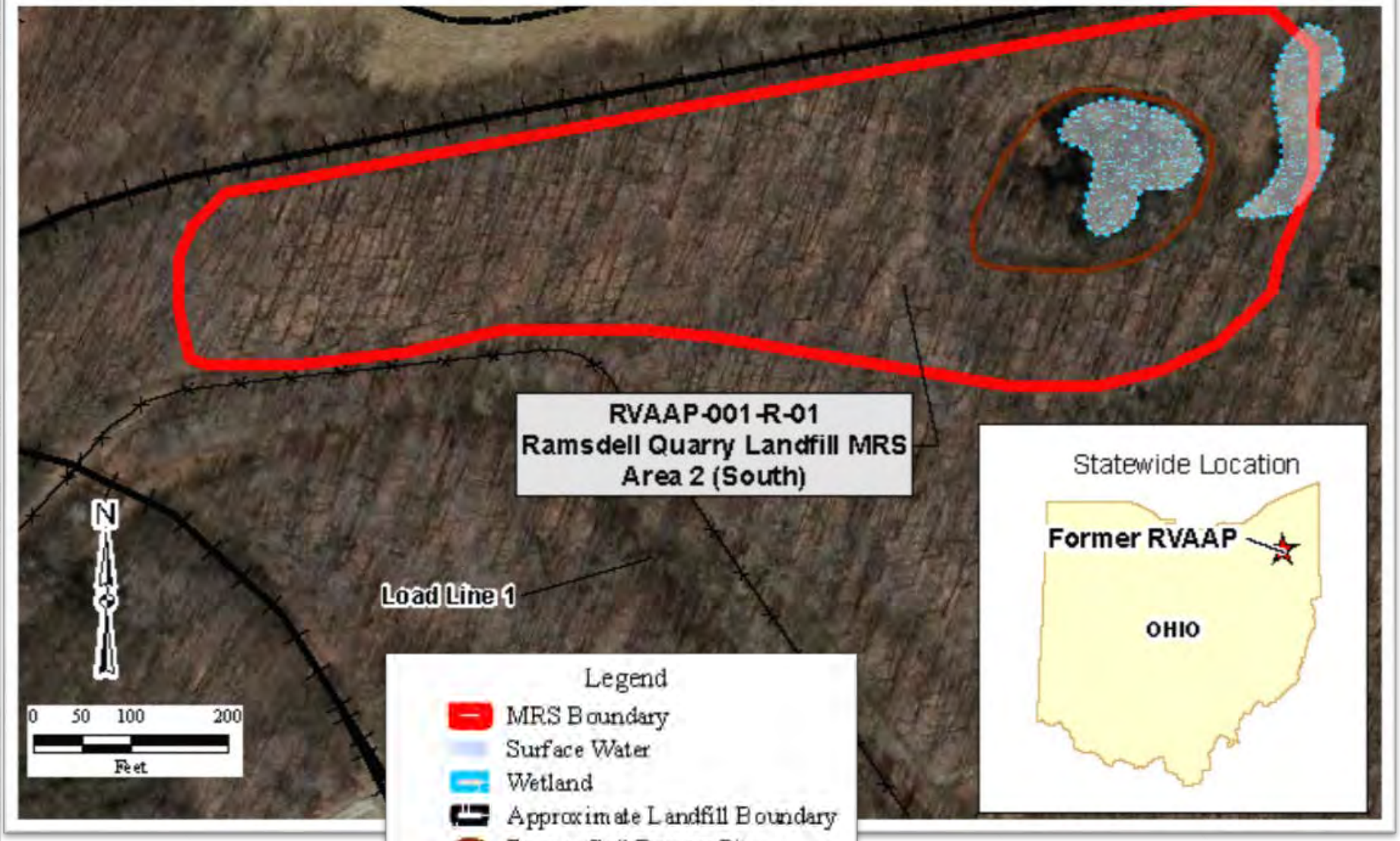
Ramsdell Quarry Landfill MRS Area 2 (South) Features



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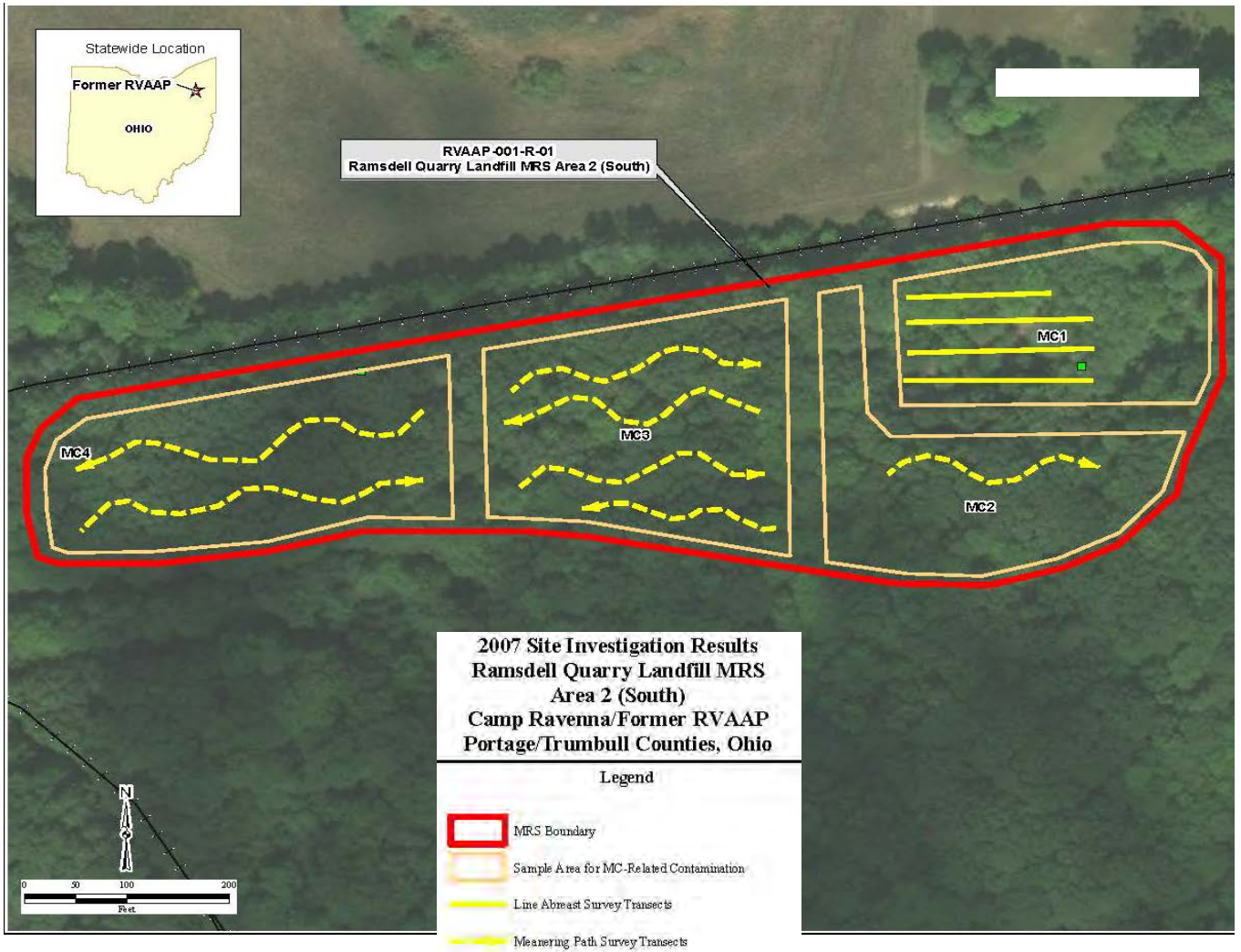
Site Inspection Results



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Current Conditions

- Ramsdell Quarry Landfill MRS Area 2 (South) is approximately 6.93 acres
  - The MRS is heavily wooded with thick ground vegetation
  - Contains a small, inactive soil borrow pit to the east
  - Approximately 0.5-acres of planning-level wetlands are present
- Access to the facility is controlled, stakes bound the MRS to deter access and alert facility personnel that the area is off limits (due to ongoing investigation)
- No buildings or structures are present at the MRS

Remedial Investigation

- Field work conducted in two phases
  - May through August 2011
  - August 2013

- Activities included:
  - Digital geophysical mapping survey
  - Intrusive investigation of buried metallic items in terrestrial areas
  - Environmental Sampling for MC
  - Two incremental soil samples were collected

Remedial Investigation Results

US Army Corps of Engineers.

Remedial Investigation Results

- Geophysical Investigation:
  - No MEC was encountered
  - 187 MD items (fragments and parts) were encountered:
    - 20-pound (lb) AN-M41 series bomb
    - 155mm MK-1 series projectile
    - 250-lb AN-M57 series general purpose (GP) bomb
    - 500-lb AN-M64 series GP bomb
  - MD were recovered between 0 and 24 inches bgs
  - Most MD were encountered within the first 6 inches of soil
  - No explosive hazards exist at the MRS
- MC-Related Contamination
  - ISM sample analysis detected several site related chemicals (SRCs)
  - Human Health and Ecological Risk Assessments were conducted
  - RI determined that no known or suspected risks associated with MC-related contamination exist at the MRS
- Evaluation of remedial alternatives in a FS was recommended

US Army Corps of Engineers.

Feasibility Study

- The project team further evaluated the RI results and determined no identifiable risk from MEC or MC is present at the MRS.
- The No Further Action Alternative was evaluated using the nine criteria listed below

US Army Corps of Engineers.

Feasibility Study

There are no hazards associated with exposure to DoD military munitions (no MEC identified) and no potential for MC risks to human or environmental receptors at the MRS. The Army concluded the Ramsdell Quarry Landfill MRS Area 2 (South) be recommended for NFA.

The No Further Action Alternative is:

- Technically and administratively implementable
- No costs associated with implementation
- Protective of human health and the environment since no explosive hazards or unacceptable risks exist

Proposed Plan Recommendations

The preferred remedy must be protective of the receptors associated with current and future land use.

Current and future receptors: Industrial receptors
(full-time employees or career military personnel at CJAG)

Current and future land use: Maintenance, natural resources activities, environmental sampling and military training

The results of the Remedial Investigation fieldwork and Feasibility Study evaluation for the Ramsdell Quarry Landfill Area 2 (South) support the determination that NFA is the preferred remedy and is also protective of a potential future residential receptor.

Note: The NFA determination is protective of potential future human receptors (such as residential receptors). Though 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 and no potential source of MC exists at the MRS.

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BLOCK D IGLOO MRS (RVAAP-060-R-01)

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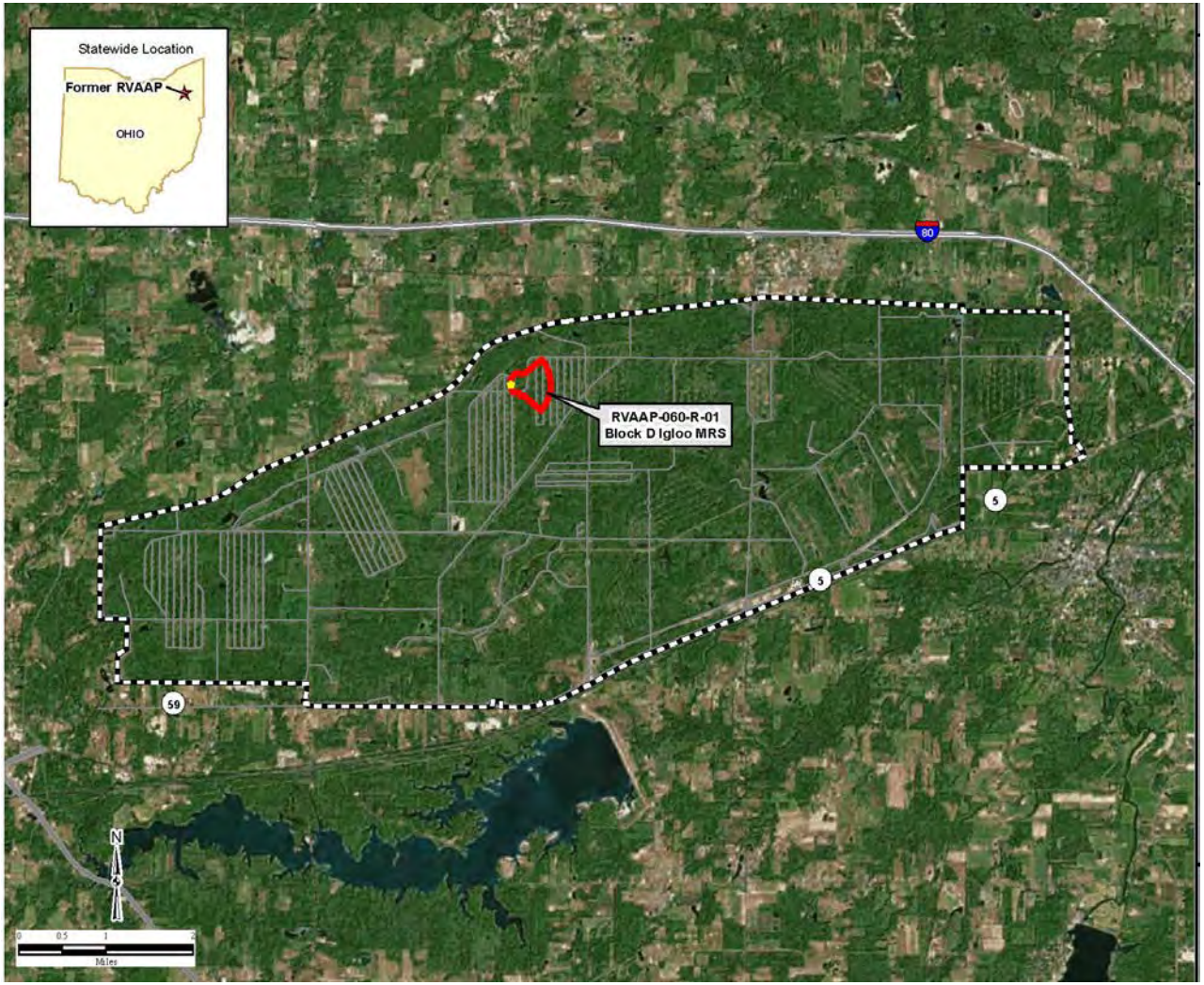
Historical Background

- Block D Igloo MRS is 101.6-acres located in the northeast-central portion of the facility.
  - March 24, 1943 - 2,516 clusters of M-41 20-pound fragment bombs exploded
  - The explosion was reported to have been caused by rough handling and faulty design of a fuze.

- The MRS is mostly heavily wooded with thick vegetation and ground cover.

- Roads, fields, and wetlands are also located within the boundary.

MRS Location Map



Legend

Location of Former Igloo 7-D-15

RVAAP-060-R-01 Block D Igloo MRS Boundary

Camp Ravenna Facility Boundary

Road

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

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Historical Investigations

- **2004, Archives Search Report**
  - The area surrounding the Block D Igloo potentially contained explosives ordnance.
  - Recommended further investigation under the MMRP.
- **2007, Historical Records Review**
  - The detonation of bombs in Igloo 7-D-15 (“D” Block) caused multiple fatalities and was believed to have sent shrapnel and demolished material up to 2.9 miles away, off installation property.
    - Materials consisted of concrete fragments, parts of clothing, and an oil filter.
  - An MRS boundary was established.
- **2008, Site Inspection**
  - MEC surveys were conducted at four documented debris locations.
  - Several subsurface anomalies were recorded but were attributed to possible remnants of the former concrete floor.
  - No subsurface anomalies were detected within 100 feet surrounding the former igloo locations.
  - Soil samples were collected to test for munitions constituents.
- **2015, Remedial Investigation**
- **2018, Feasibility Study**

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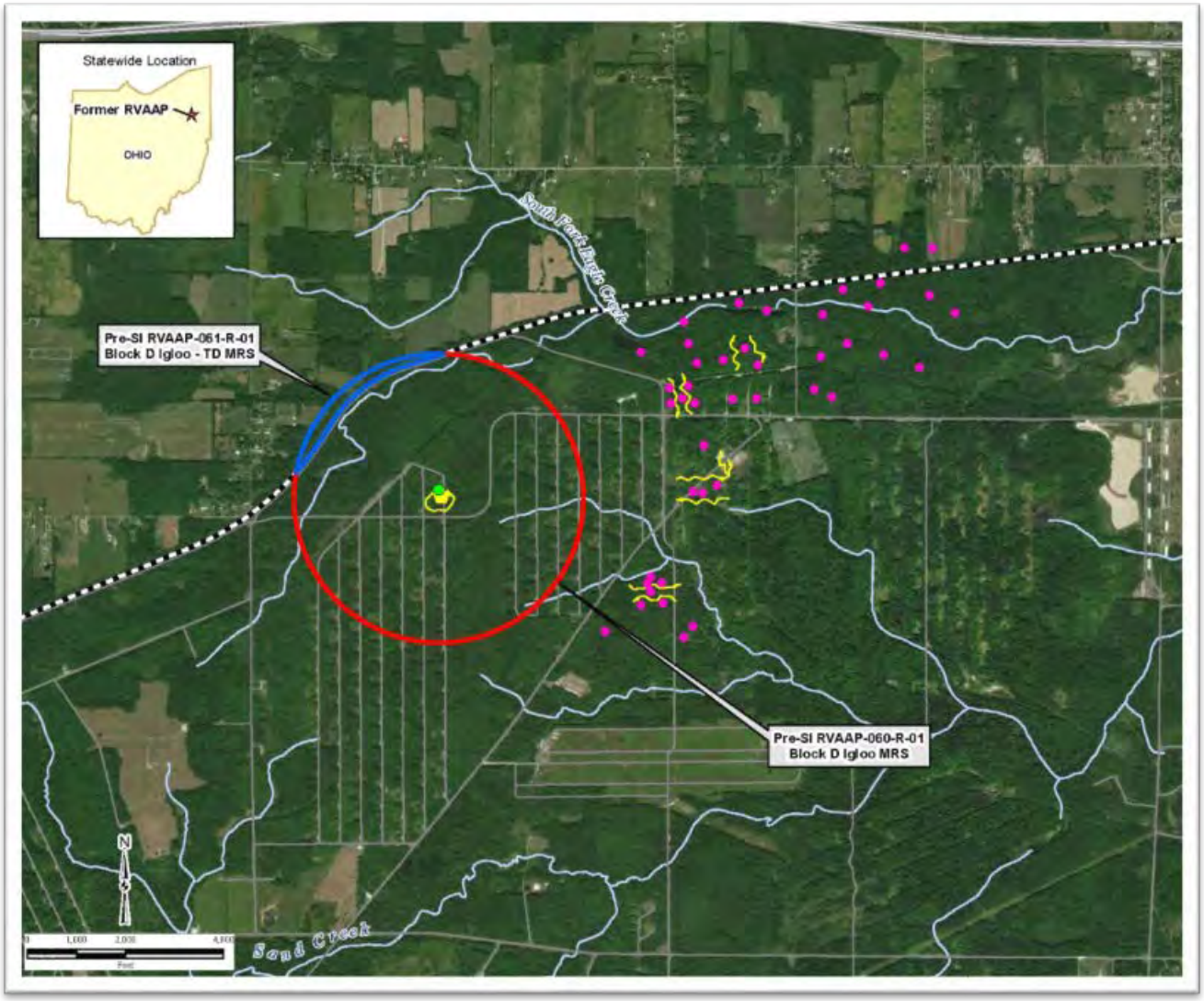
Block D Igloo MRS – Original Boundary



SI MRS Boundaries Map
Block D Igloo MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

Legend

- Location of Former Igloo 7-D-15
- MC Soil Sample Location
- Location of Non-munitions Debris from the 1903 Explosion of Igloo 7-D-15
- Survey Transects
- Pre-SI RVAAP-060-R-01 Block D Igloo-TD MRS
- Pre-SI RVAAP-061-R-01 Block D Igloo MRS
- Facility Boundary
- Road
- Stream

US Army Corps of Engineers.

Current Conditions

- The Block D Igloo MRS is approximately 101.6 acres
  - The MRS is mostly heavily wooded with thick vegetation and ground cover.
  - Roads, fields, and wetlands are also located within the boundary.

- Access to the MRS is unrestricted

- Interim Controls currently in place include:
  - Signage
  - Stakes

Remedial Investigation

- Site boundary reduced during RI planning based on the maximum distance a fragment from a M-41 20-lb bomb could travel

- Field work conducted in 2011

- Activities included:
  - Instrument-aided surface investigation
  - Seven “mag and dig” grids selected for intrusive investigation of buried metallic items
  - Environmental Sampling for MC
  - Three incremental soil samples were collected and two discrete soil samples were collected from beneath MEC

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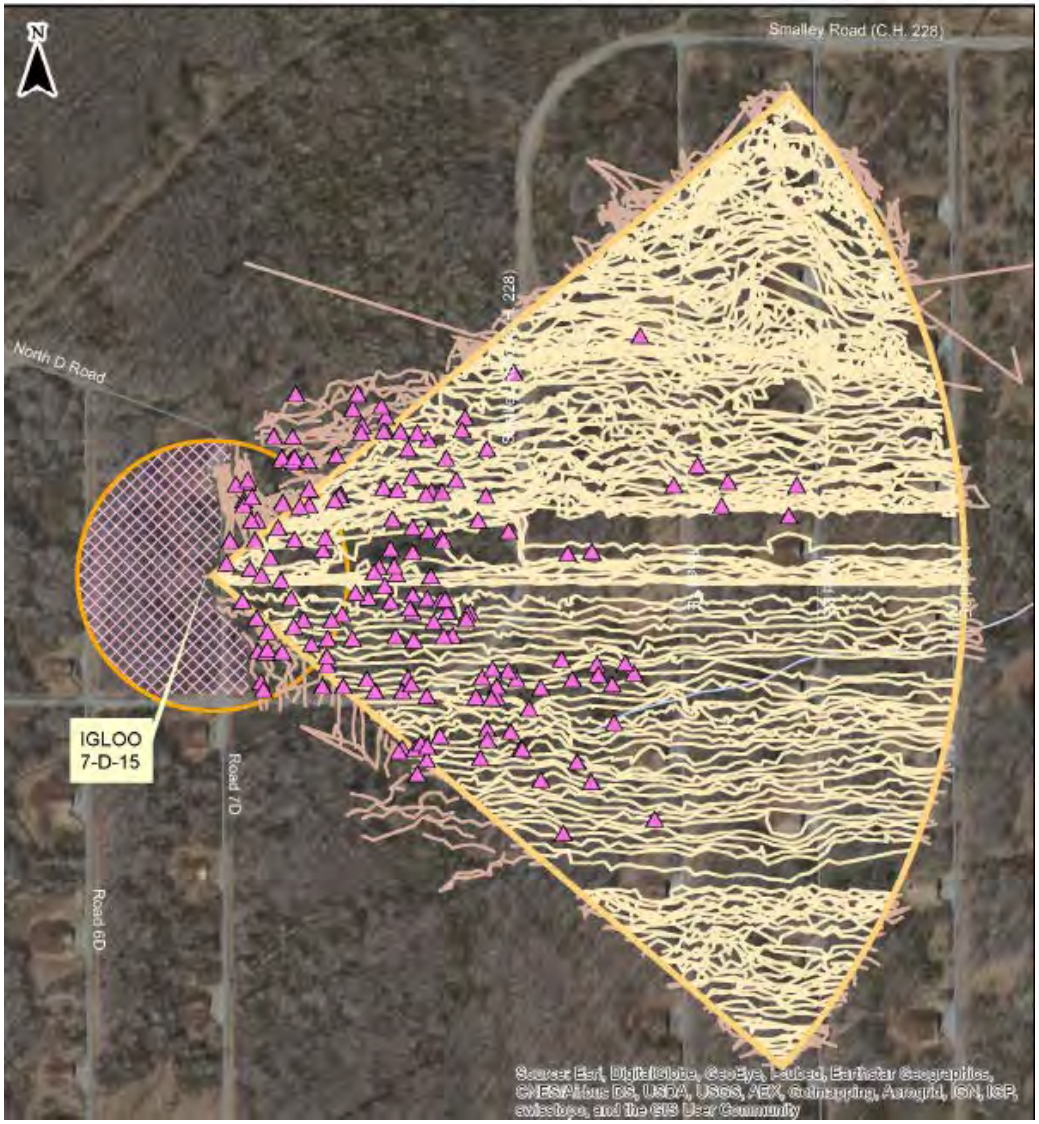
Remedial Investigation Results



- MRS Boundary at Conclusion of 2007 SI
- RI Investigation Area (92.14 acres)
- Actual Visual Transects (~53.9 ac./ 65.2 mi.)
- Step-Out Transects
- Muitions Debris Items (178 Items)
- Instrument-Assisted Visual Survey Behind (West) Igloo
- Stream

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Remedial Investigation Results

- Geophysical Investigation
  - 178 DoD military munitions and fragments were found on the ground surface.
  - All were MD items (no explosive hazard)
  - 3,140 subsurface DoD military munitions and fragments were encountered.
    - Maximum depth – 8 inches below ground surface
    - 3,135 were MD items (no explosive hazard)
    - Five were munitions of explosive concern (MEC)

Remedial Investigation Results

- MC-related contamination investigation:
  - Nitroguanidine was detected in 2 of 3 ISM locations
    - Low concentrations (below regulatory limits) and not associated with 20-lb cluster bombs
  - Antimony and iron were detected in the ISM samples
  - Human Health and Ecological Risk Assessments were conducted in the RI
  - RI Report indicated no risks due to MC-related contamination at the MRS

- Evaluation of remedial alternatives in a FS was recommended

Feasibility Study

- The project team further evaluated the RI results and determined risk from MEC is present at the MRS.
- FS evaluated four alternatives – 1) No Action, 2) Land Use Controls, 3) Surface Removal and Land Use Controls, and 4) Surface and Subsurface Removal

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Feasibility Study

Based on the evaluation of alternatives, the Army concluded surface and subsurface removal is preferred for:

- Reducing unacceptable hazards of MEC in surface and subsurface soils, and
- Protecting human health and the environment.

Proposed Plan Recommendations

The preferred remedy must be protective of the receptors associated with current and future land use.

Current and future receptors: Industrial receptors
(full-time employees or career military personnel at CJAG)

Current and future land use: Industrial land use

The results of the Remedial Investigation fieldwork and Feasibility Study evaluation for the Block D Igloo MRS support the determination that Surface and Subsurface removal of MEC is the preferred remedy.

Following completion of the response actions the Block D Igloo MRS can be used for the anticipated land use and will be protective of the Industrial Receptor or a potential future Residential Receptor (although not anticipated).

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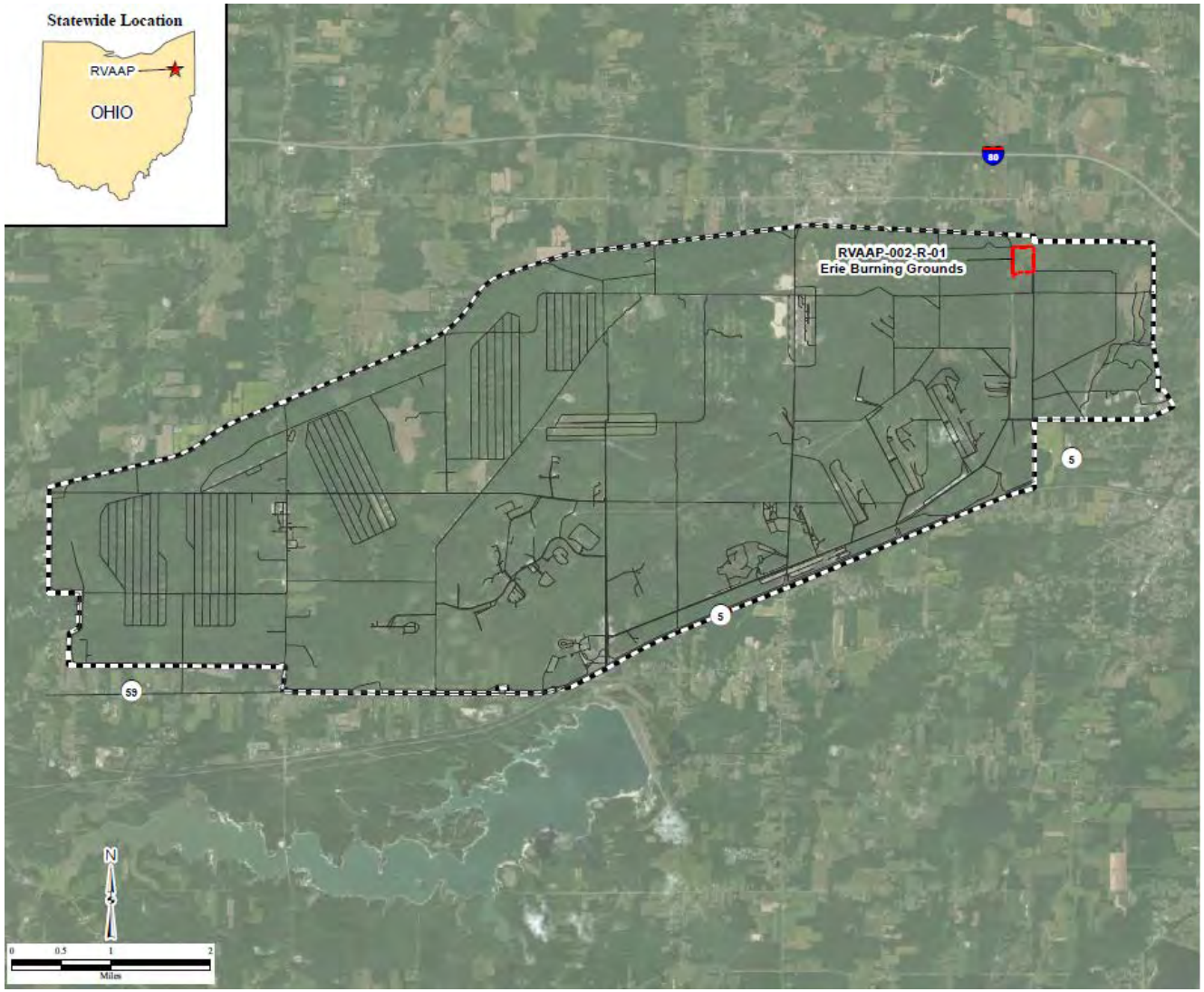
Erie Burning Grounds MRS (RVAAP-002-R-01)

Historical Background

- Erie Burning Grounds MRS is 33.93-acres located in the northeast portion of the facility.
  - Between 1941 and 1951 burning operations were conducted
  - Items received for open burning included bulk, obsolete, and off-specification propellants; conventional explosives; rags, and large, explosive-contaminated items
  - Residual ash remained at the MRS
- The MRS became inundated with water due to sedimentation, vegetation growth, and beaver damming
- The MRS is now occupied by wetland areas with intermittent open waters ranging from 3 to 5 feet deep

MRS Location Map



Legend

Road

MRS

Installation Boundary

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

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Historical Investigations

- **2007, Historical Records Review**
  - Identified four former burn areas as well as a former borrow area located in the western portion of the MRS
  - Partially buried munitions-related items were reportedly observed across the MRS
  - Recommended further characterization for MEC be performed at the MRS
- **2008, Site Inspection**
  - Metal detector-assisted MEC surveys were performed throughout the dry areas of the MRS
    - Subsurface anomalies were identified and locations recorded
    - No intrusive investigation was conducted
    - One possible MEC item was identified partially buried
  - No environmental sampling was conducted
  - Recommended further investigation for MEC and MC (in pond sediment only)
- **2014, Remedial Investigation**
- **2018, Feasibility Study**

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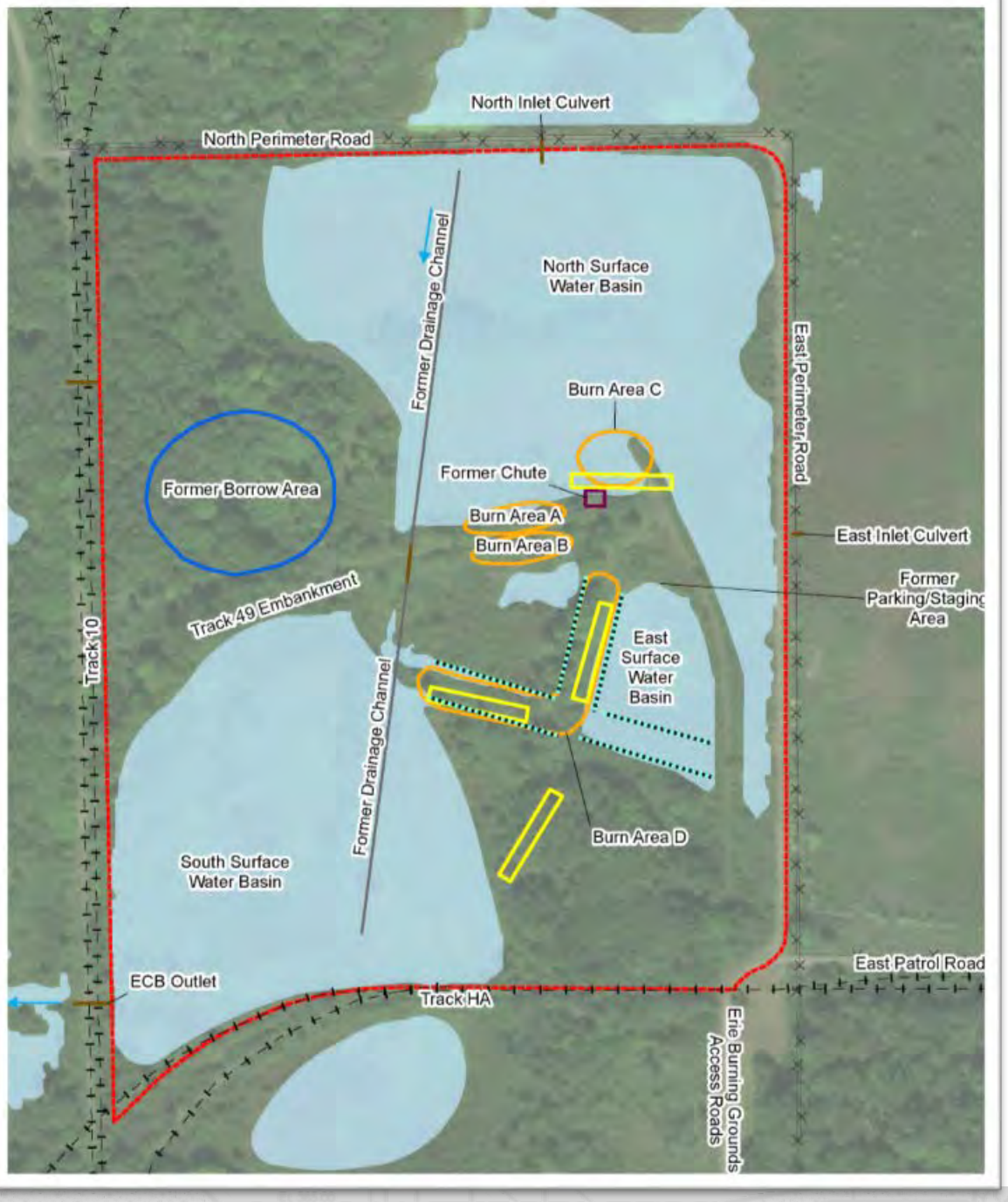
Erie Burning Ground MRS Features



Legend

- Culvert/Outlet
- Ditch
- Drainage Flow Direction
- Former Drainage Channel
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- Surface Water (OHARNG, 2014)
- MRS
- Installation Boundary

US Army Corps of Engineers.

Current Conditions

- The Erie Burning Grounds MRS is approximately 33.93 acres
  - Inundated with surface water
  - Thick vegetation and ground cover in terrestrial areas
- No structures or paved roads exist within the MRS
- Access to the MRS is unrestricted
- Interim Controls currently in place include:
  - Signage
  - Stakes

US Army Corps of Engineers.

Remedial Investigation

- Field activities were conducted in several phases:
  - Geophysical data collection - January and February 2012
  - Reacquisition and intrusive investigation – April and May 2012
  - Environmental sampling – May 2012

- Activities included:
  - Digital Geophysical Mapping
  - Intrusive investigations and tactile underwater investigations
  - Environmental sample collection:
    - Six wet sediment ISM samples were collected between sediment surface and 0.5 feet below sediment surface
    - Three surface water samples were collected
    - Two soil samples collected from trench bottoms where high densities of MD were recovered

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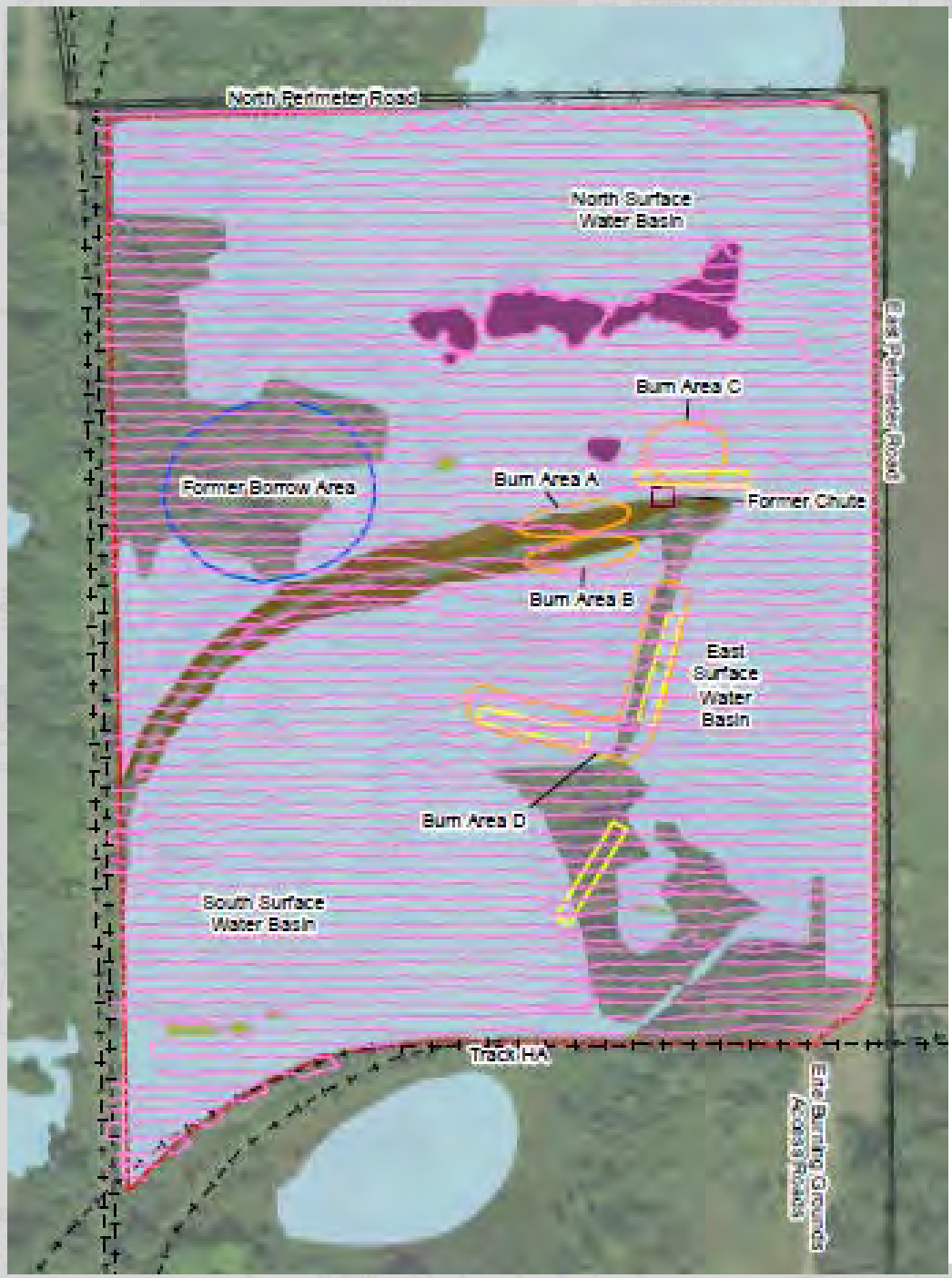
Remedial Investigation



Legend

- DGM Transect
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- Vegetation Area
- Island
- Steep Slope
- Surface Water (CB& I, 2014)
- MRS
- Installation Boundary

Notes:
DGM=digital geophysical mapping
MRS=munitions response site
RVAAP=Ravenna Army Ammunition Plant

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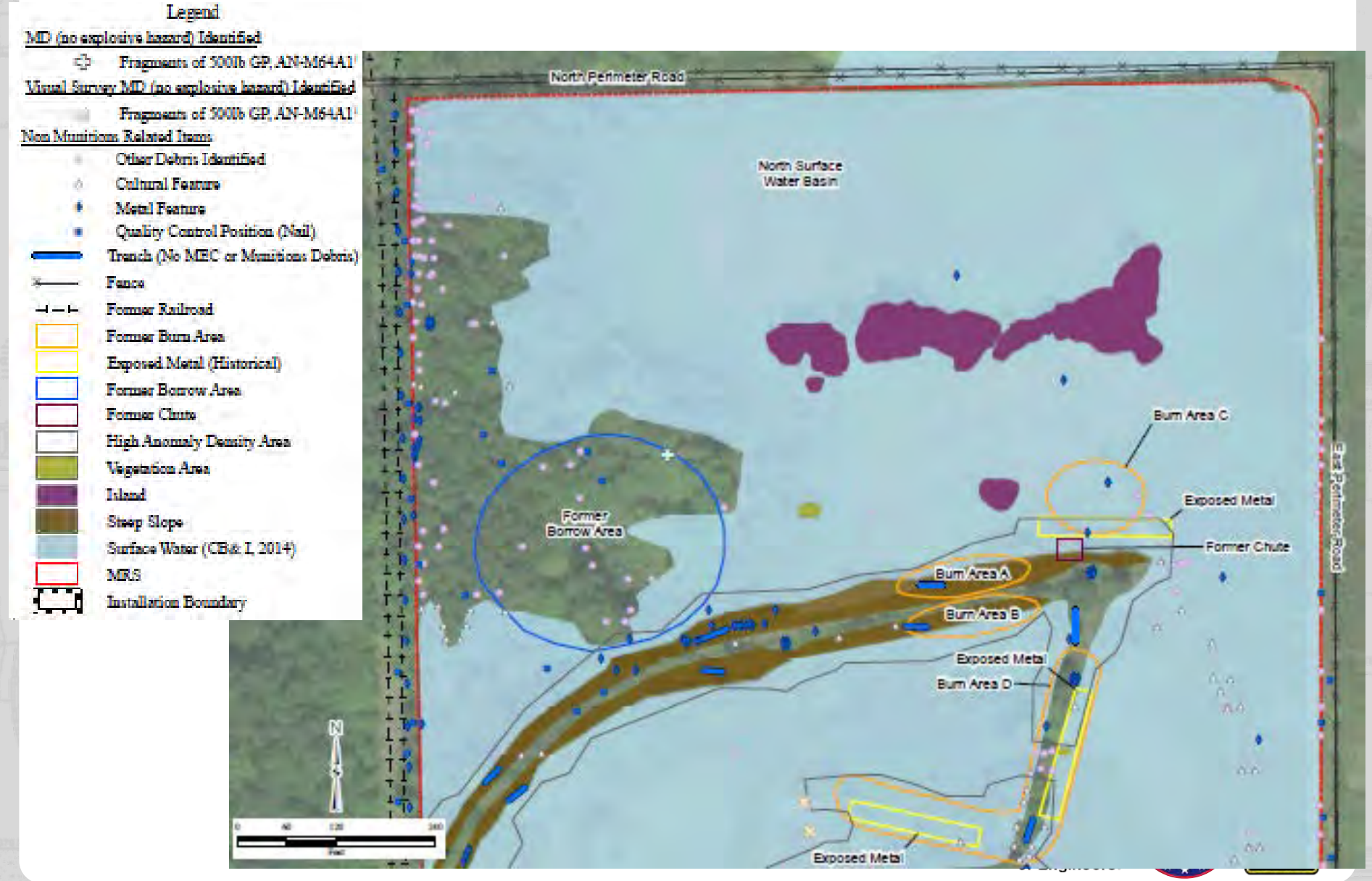
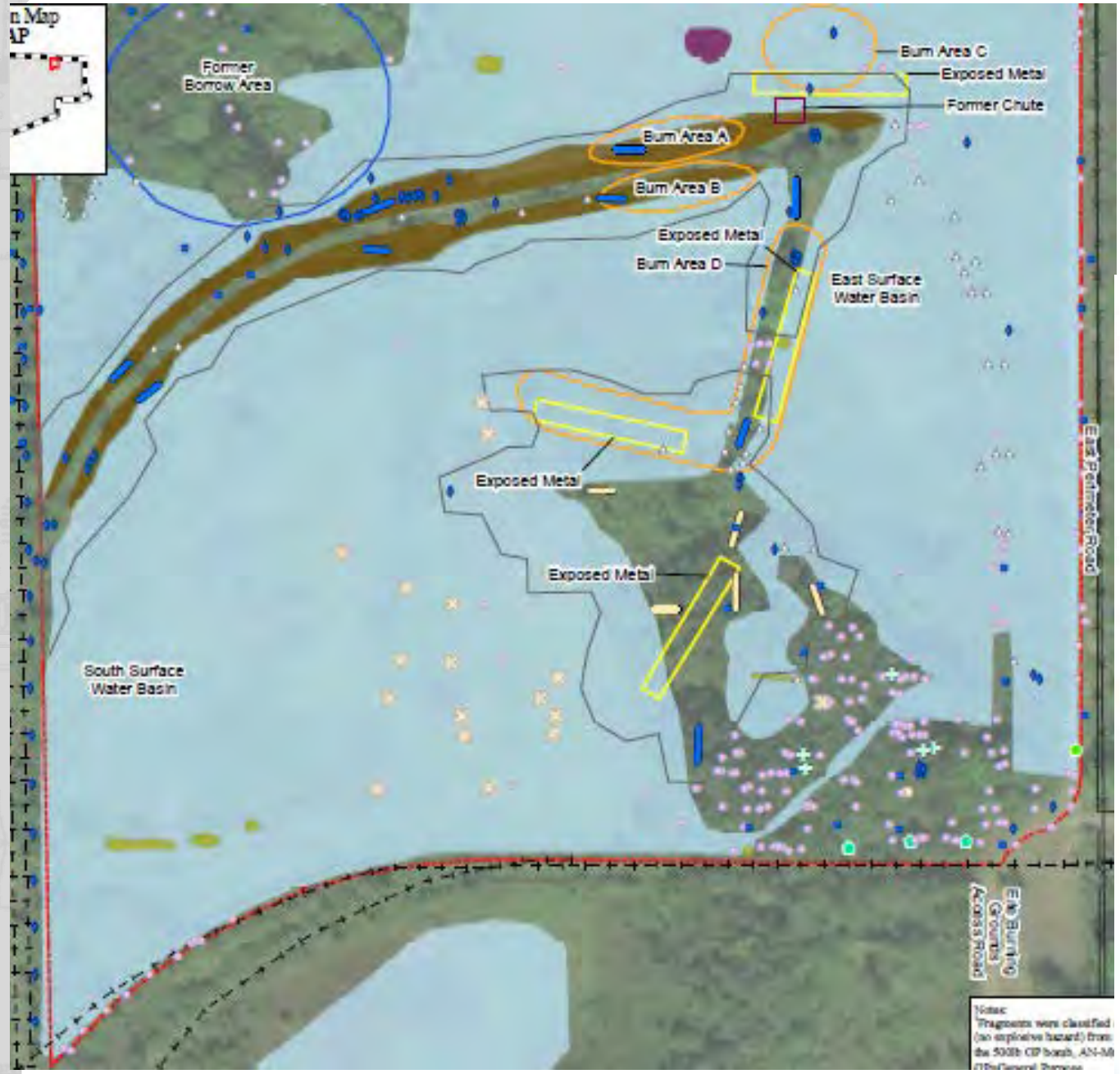
Remedial Investigation Results, North



RI Results, South



Legend

MD (no explosive hazard) Identified
- Fragments of 500lb GP, AN-M64A1
- Fragments from a Projectile, 75mm, HE, M309
- Fragments from a Projectile, 75mm, HE, M48

Visual Survey MD (no explosive hazard) Identified
- Ordnance Components
- Fragments of 500lb GP, AN-M64A1

Non Munitions Related Items:
- Other Debris Identified
- Cultural Feature
- Metal Feature
- Quality Control Position (Nail)
- 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

Remedial Investigation Results

- Geophysical Investigation:
  - 1,076 individual anomalies of interest and several high anomaly density areas identified
    - 1,052 individual anomalies were investigated by hand-digging
      - Fragments recovered from anomaly locations were associated with the M48-series 75 millimeter (mm) high explosive projectile and M309-series 75mm projectile.
    - 14 high anomaly density trenches were investigated by mechanical excavation
      - Fragments recovered from trench locations were various parts associated with an AN-M64A1-series 500-lb General Purpose bomb.
  - No MEC and no explosive hazards were identified at the MRS

Remedial Investigation Results

- MC-Related Contamination
  - ISM sample analysis detected several site related chemicals (SRCs)
  - Human Health and Ecological Risk Assessments were conducted
  - RI determined that no known or suspected risks due to MC-related contamination exist at the MRS

- Evaluation of remedial alternatives in a FS was recommended

Feasibility Study

- The project team further evaluated the RI results and determined no identifiable risk from MEC or MC are present at the MRS.
- The No Further Action Alternative was evaluated using the nine criteria listed below

US Army Corps of Engineers.

Feasibility Study

There are no hazards associated with exposure to DoD military munitions (no MEC identified) and no potential for MC risks to human or environmental receptors at the MRS. The Army concluded the Erie Burning Grounds MRS be recommended for NFA.

The No Further Action Alternative is

- Technically and administratively implementable
- No costs associated with implementation
- Protective of human health and the environment since no explosive hazards or unacceptable risks exist

Proposed Plan Recommendations

The preferred remedy must be protective of the receptors associated with current and future land use.

Current and future receptors: Industrial receptors
(full-time employees or career military personnel at CJAG)

Current and future land use: Maintenance, natural resources management (beaver dam removal), and environmental sampling. The high-quality wetlands present within the MRS will preclude some types of access and military training at the MRS.

The results of the Remedial Investigation fieldwork and Feasibility Study evaluation for the Erie Burning Grounds MRS support the determination that NFA is the preferred remedy and is also protective of a potential future residential receptor.

Note: The NFA determination is protective of potential future human receptors (such as residential receptors). Though 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 and no potential source of MC exists at the MRS.

US Army Corps of Engineers.

Questions?

Questions can be submitted several ways:

- In writing on the public comment forms provided for you
- By email (email address shown on the public comment forms)

  kathryn.s.tait.nfg@mail.mil
- By mail (mailing address shown on the public comment forms)

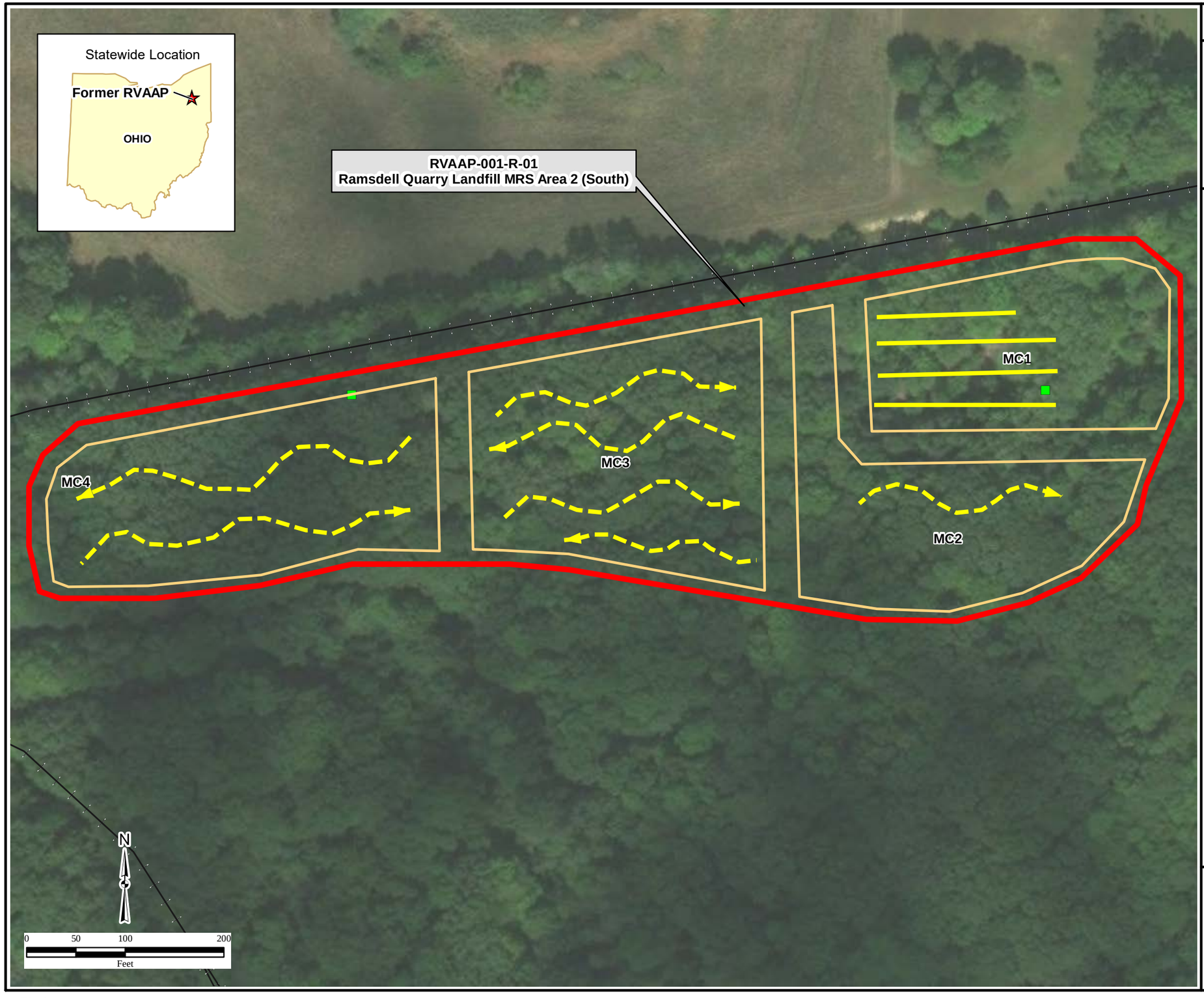
  Ms. Kathryn Tait
  Camp James A. Garfield Environmental Office
  1438 State Route 534 SW
  Newton Falls, Ohio 44444

- Asked in person at the public meeting

The public comment period began March 1, 2019 and continues through April 3, 2019.

US Army Corps of Engineers.

Figure 4
2007 Site Investigation Results
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio



Legend

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

H:\MAMMS\Ravenna\GIS_Documents\Project_Maps
\HGL\Feb2018\RQLF\HHGL_RVAAP_RQLF_004_Fig4_Area_2_Site_Invest.mxd
02/09/2018 JWR
Source APTIMI

Figure 5
2011 Remedial Investigation Results
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

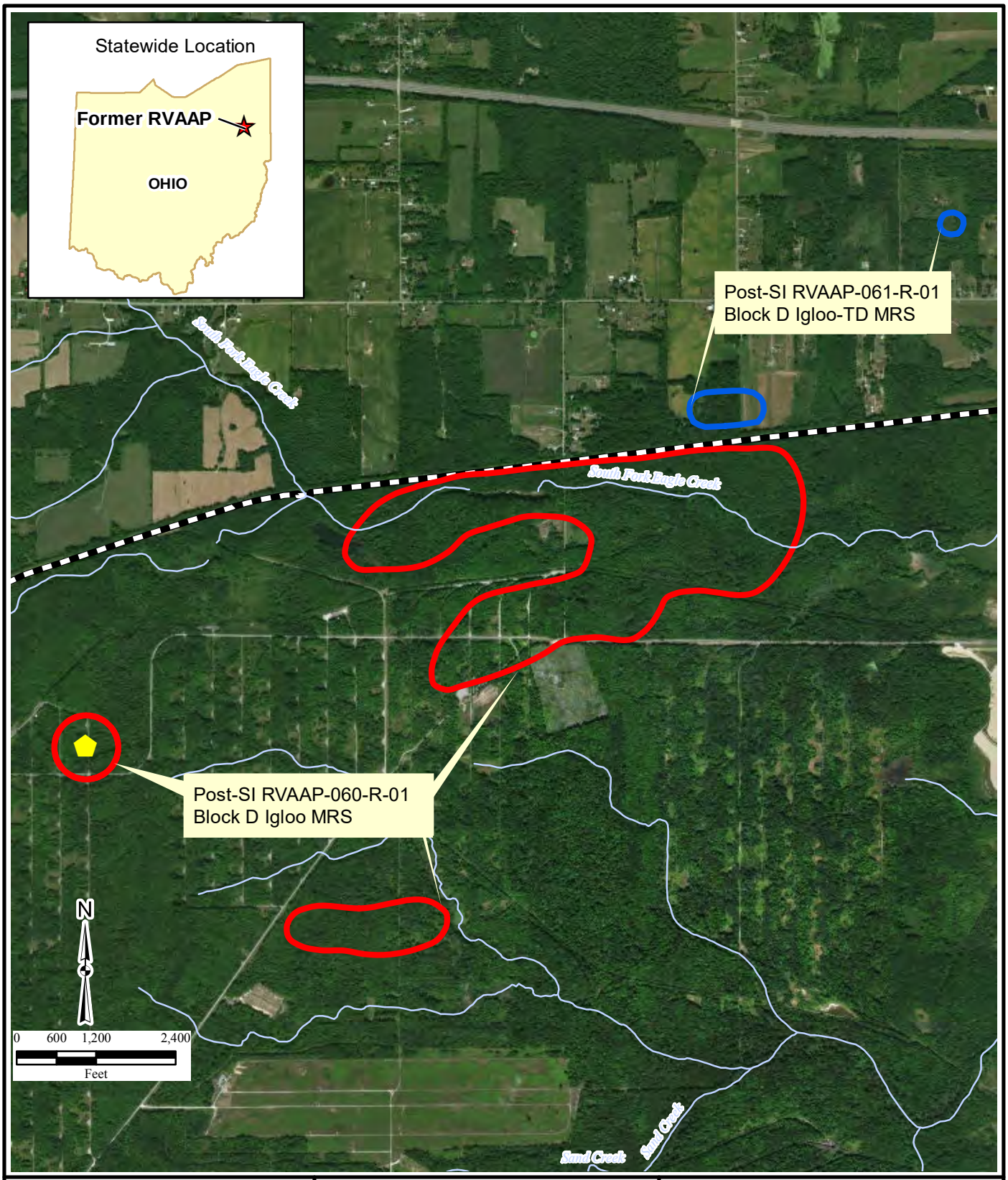
Legend

- 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

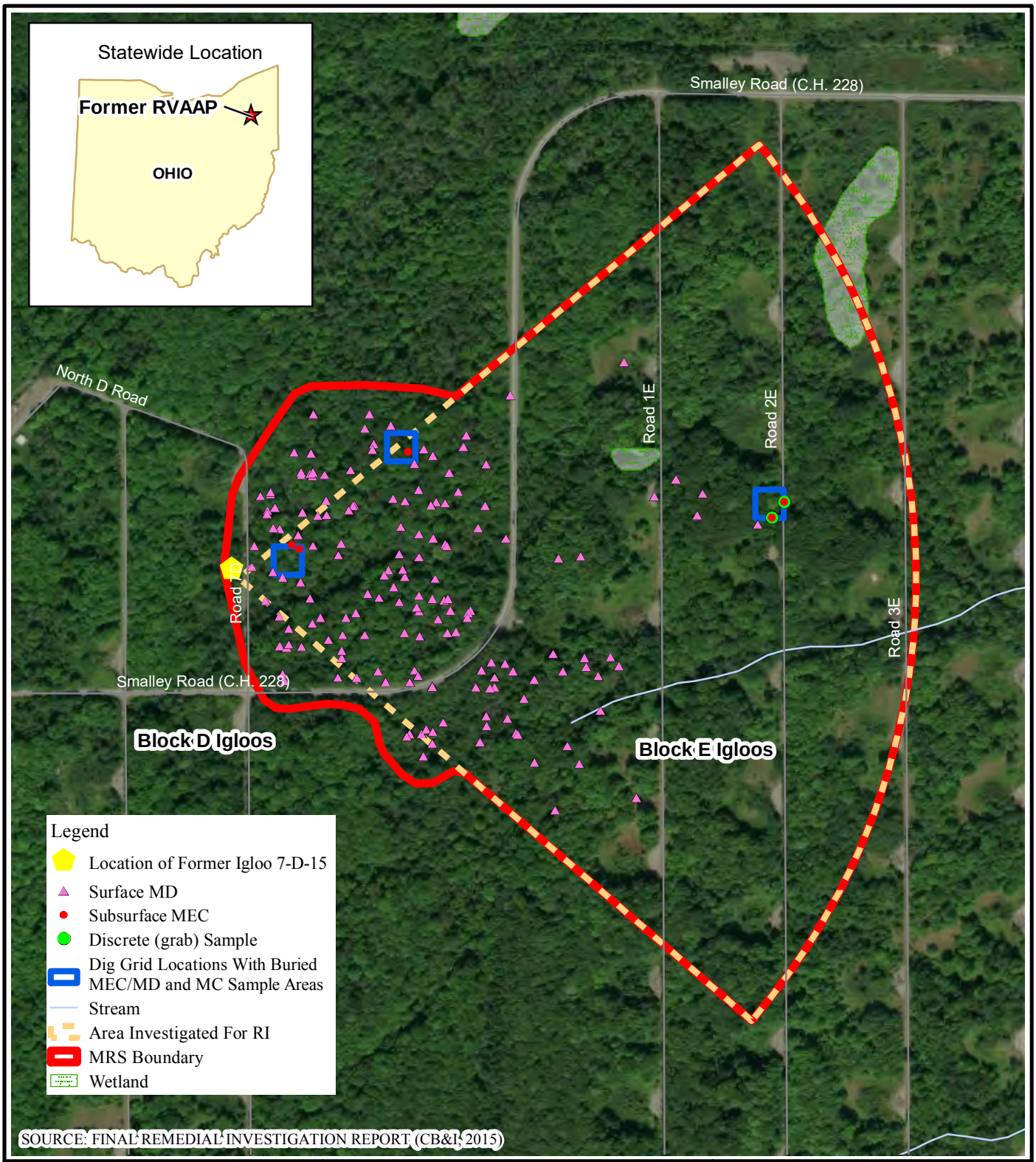
H:\MAMMS\Ravenna\GIS_Documents\Project_Maps
\HGL\Feb2018\RQLF\HHGL_RVAAP_RQLF_005_Fig5_Area_2_RI_Invest_R2.mxd
02/12/2018 JWR
Source APTIMI



H:\MAMMS\Ravenna\GIS_Documents\Project_Maps\HGL\May2018\Block_D_Igloo_PP\HGL_RVAAP_BDI_004_Fig4_BlockDIgloo_Post_SI_SiteFeatures.mxd
05/03/2018 JWR
Source Aptim

- Location of Former Igloo 7-D-15
- Stream
- Post-SI Block D Igloo MRS
- Post-SI Block D Igloo-TD MRS
- Facility Boundary

Figure 4
Post-SI MRS Boundaries Map
Block D Igloo MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties. Ohio



H:\MAMMS\Ravenna\GIS_Documents\Project_Maps\HGL\May2018\Block_D_Igloo_PP\HGL_RVAAP_BDI_005_Fig5_BlockDIgloo_Post_RI_Bounds_Map.mxd
07/10/2018 JWR
Source APTIM

N

0 250 500 1,000
Feet

Figure 5
Post RI MRS Boundaries Map
Block D Igloo MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

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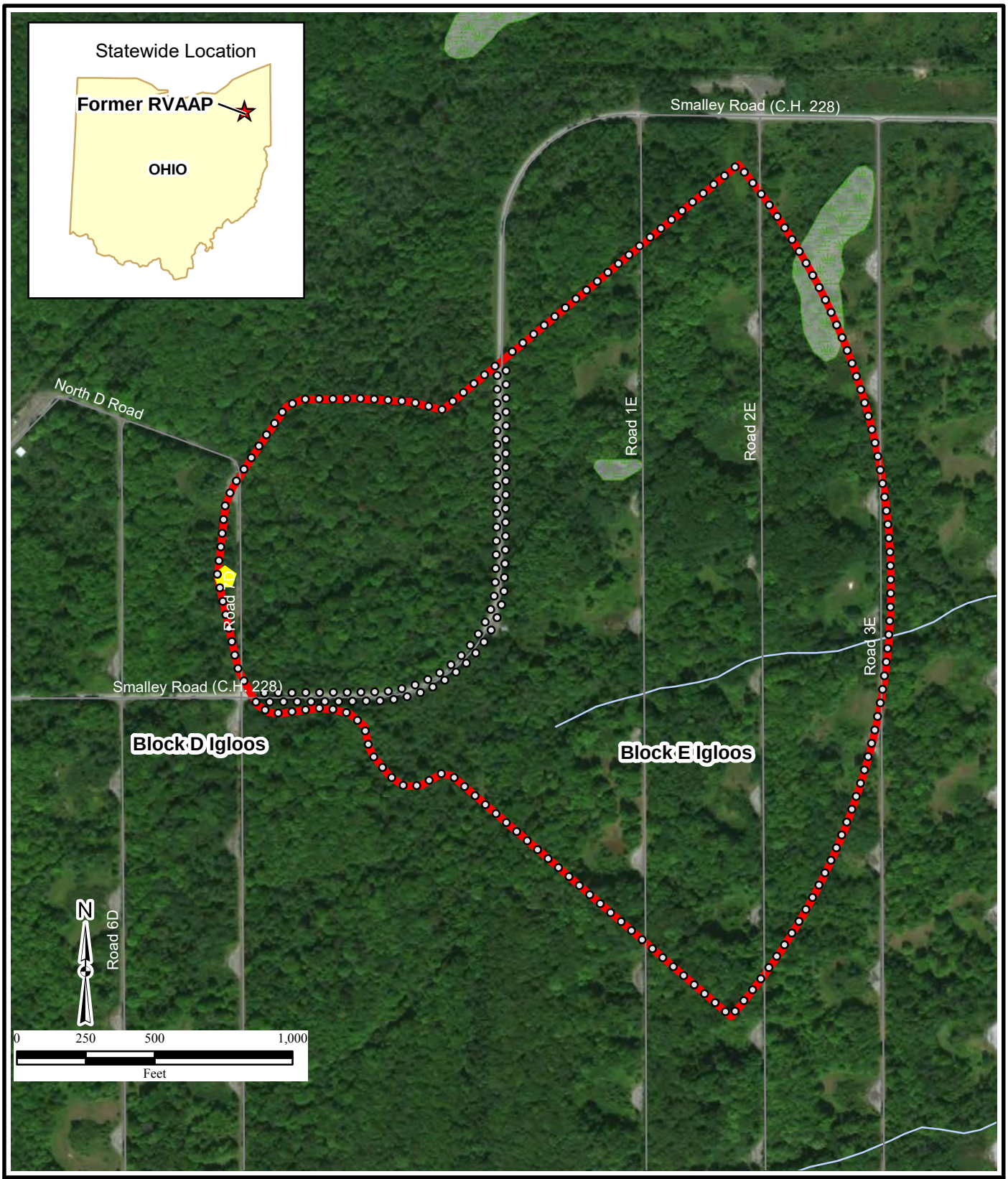
\HGL\July2018\Block_D_Igloo_PP
\HGL_RVAAP_BDI_006_Fig6_BlockDIgloo_CLF_Map.mxd
07/19/2018 JWR
Source Aptim

Legend

- Location of Former Igloo 7-D-15
- Stream
- Munitions Response Site Boundary
- Wetland
- Proposed 8' High Chain-Link Fence

Figure 6
Chain Link Fence Location
Block D Igloo MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio



H:\MAMMS\Ravenna|GIS_Documents\Project_Maps
\HGL\May2018\Block_D_Igloo_PP
\HGL_RVAAP_BDI_007_Fig_7_BlockDIgloo_Siebert_Map.mxd
05/30/2018 JWR
Source Aptim

Legend

- Location of Former Igloo 7-D-15
- Stream
- Munitions Response Site Boundary
- Wetland
- Siebert Stake/Sign Post (50 foot spacing)

Figure 7
Siebert Stake and Sign Locations
Block D Igloo MRS
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

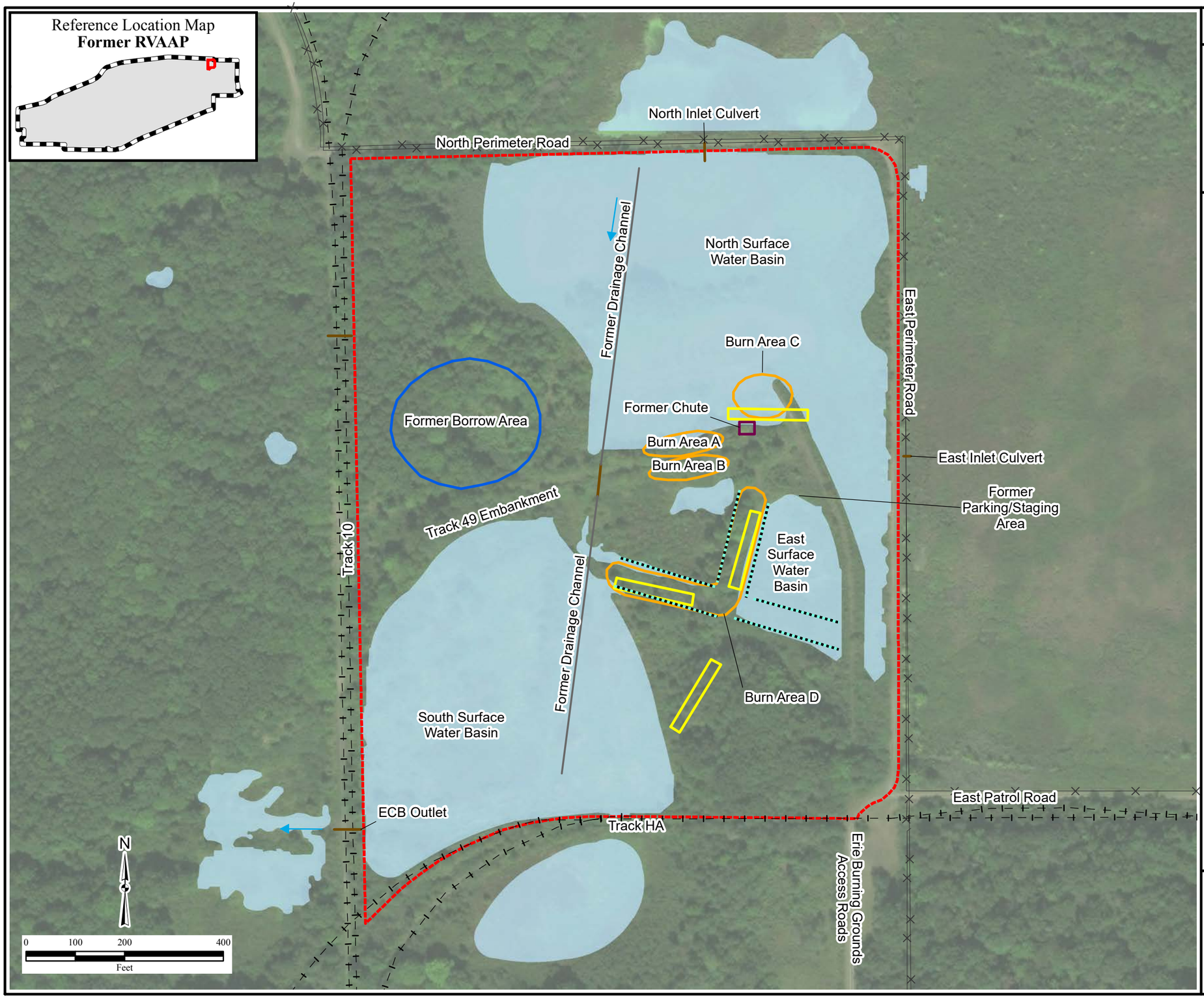


Figure 3
Site Features
Erie Burning Grounds MRS
Former RVAAP Portage and Trumbull Counties, Ohio

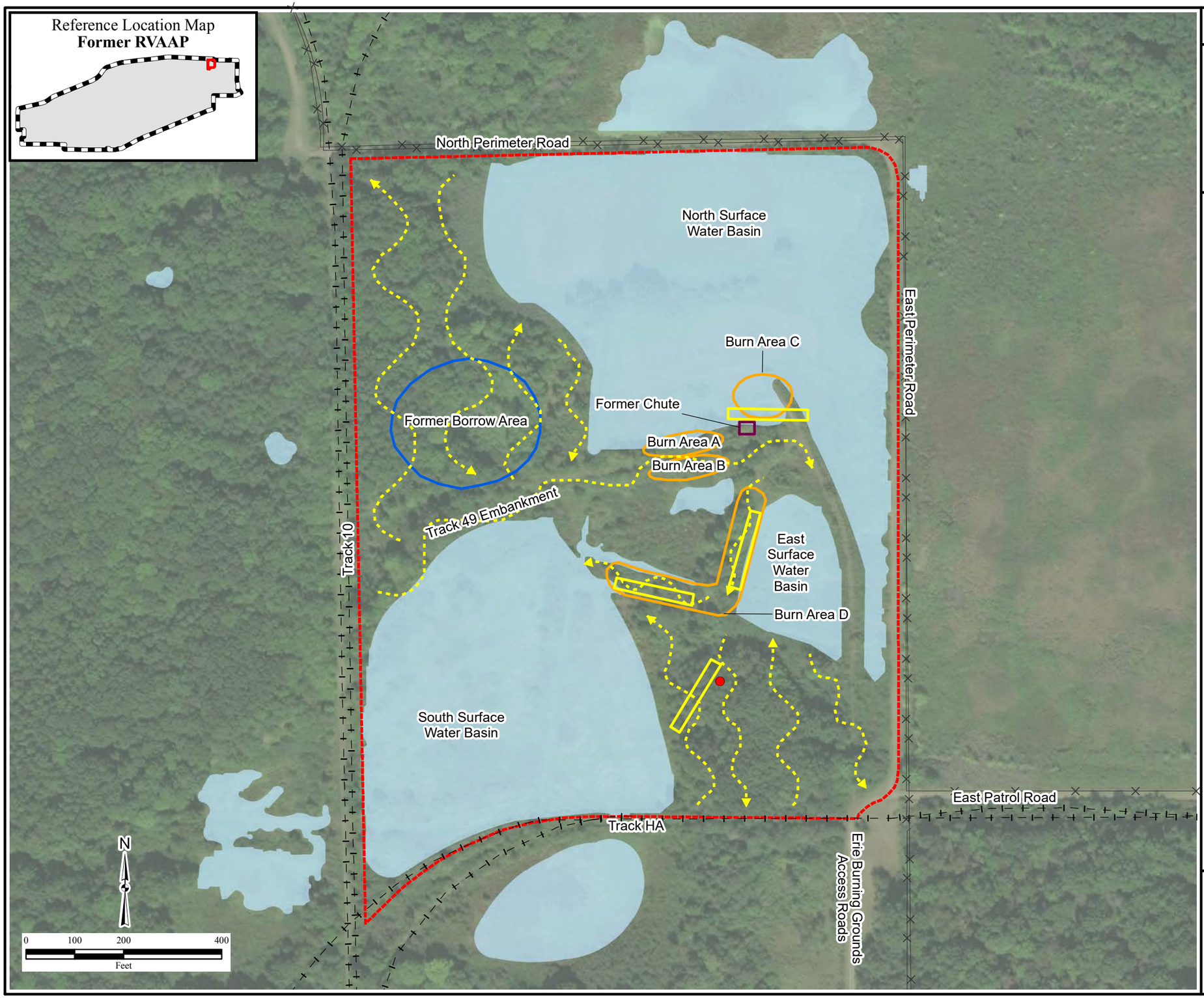
Legend

- Culvert/Outlet
- Ditch
- Drainage Flow Direction
- Former Drainage Channel
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- Surface Water (OHARNG, 2014)
- MRS
- Installation Boundary

Notes:
ECB=erosion control blankets
MRS=munitions response site
RVAAP=Ravenna Army Ammuntion Plant

\\Gst-srv-01\HGLGIS\Ravenna_AAP\ErieBG\PP\(03)EBG_SiteFeatures.mxd
5/1/2018 JAR
Source: HGL,CB&I, USACE, e²M, Ohio Army National Guard (OHARNG), 2014. Integrated Natural Resources Management Plan (INRMP) at the Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio. December. ArcGIS Online Imagery

Figure 4
Site Inspection Results
Erie Burning Grounds MRS
Former RVAAP Portage and Trumbull Counties, Ohio



Legend

- Suspected MEC
- Meandering Path Survey Transect
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- Surface Water (OHARNG, 2014)
- MRS
- Installation Boundary

Notes:
MEC=munitions and explosives of concern
MRS=munitions response site
RVAAP=Ravenna Army Ammuntion Plant

\\Gst-srv-01\HGLGIS\Ravenna_AAP\ErieBG\PP\(04)EBG_SIResults.mxd
5/1/2018 JAR
Source: HGL,CB&I, USACE, e²M, Ohio Army National Guard (OHARNG), 2014. Integrated Natural Resources Management Plan (INRMP) at the Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio. December. ArcGIS Online Imagery

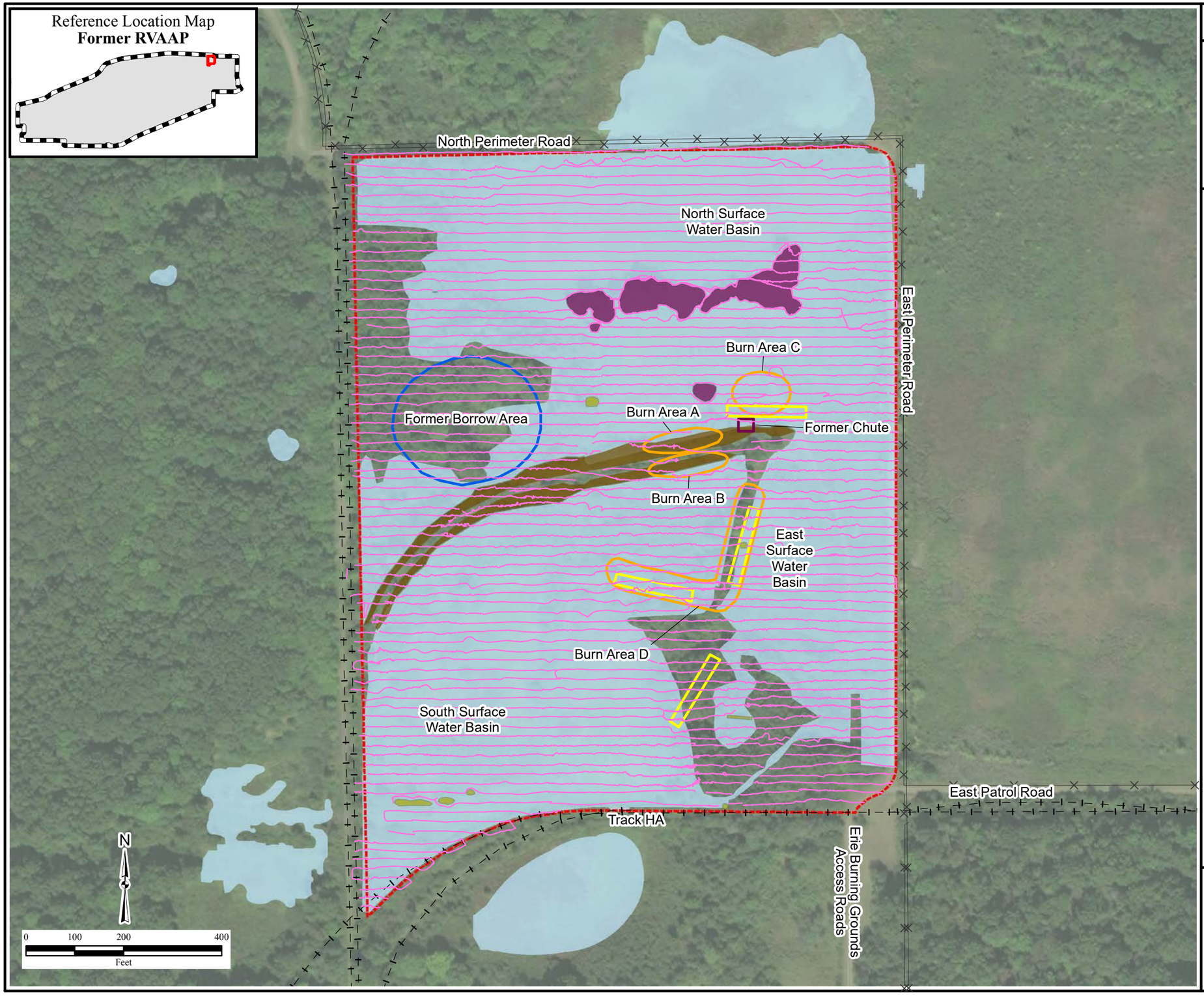


Figure 5
2014 Remedial Investigation Digital Geophysical Mapping Transect Coverage

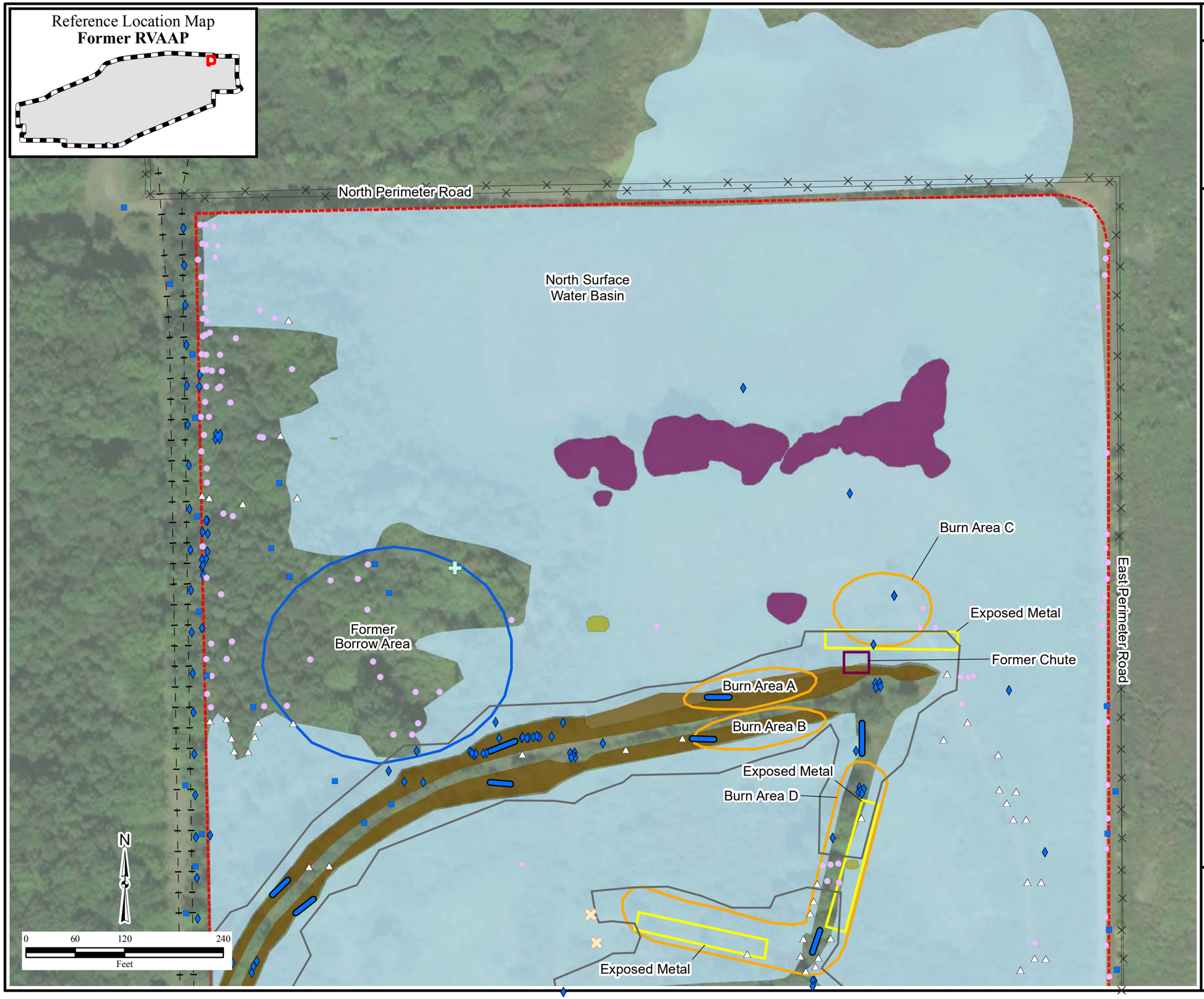
Legend

- DGM Transect
- Fence
- Former Railroad
- Former Burn Area
- Exposed Metal (Historical)
- Former Borrow Area
- Former Chute
- Vegetation Area
- Island
- Steep Slope
- Surface Water (CB& I, 2014)
- MRS
- Installation Boundary

Notes:
DGM=digital geophysical mapping
MRS=munitions response site
RVAAP=Ravenna Army Ammuntion Plant

\\Gst-srv-01\HGLGIS\Ravenna_AAP\ErieBG\PP\(05)EBG_DGMTransects.mxd
11/8/2018 JAR
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

Figure 6a
2014 Remedial Investigation
Intrusive Investigation Results
North Section
Erie Burning Grounds
Former RVAAP
Portage and Trumbull Counties, Ohio



Legend

MD (no explosive hazard) Identified

- Fragments of 500lb GP, AN-M64A1[1]

Visual Survey MD (no explosive hazard) Identified

- Fragments of 500lb GP, AN-M64A1[1]

Non Munitions Related Items

- Other Debris Identified
- Cultural Feature
- Metal Feature
- Quality Control Position (Nail)
- 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

Notes:
[1]Fragments were classified as MD (no explosive hazard) from the 500lb GP bomb, AN-M64A1.
GP=General Purpose
MD=munition debris
MEC=munitions and explosives of concern
MRS=munitions response site
RVAAP=Ravenna Army Ammuntion Plant

\\Gst-srv-01\HGLGIS\Ravenna_AAP\ErieBG\PP\(06a)EBG_Intrusive_North.mxd
11/20/2018 JAR
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

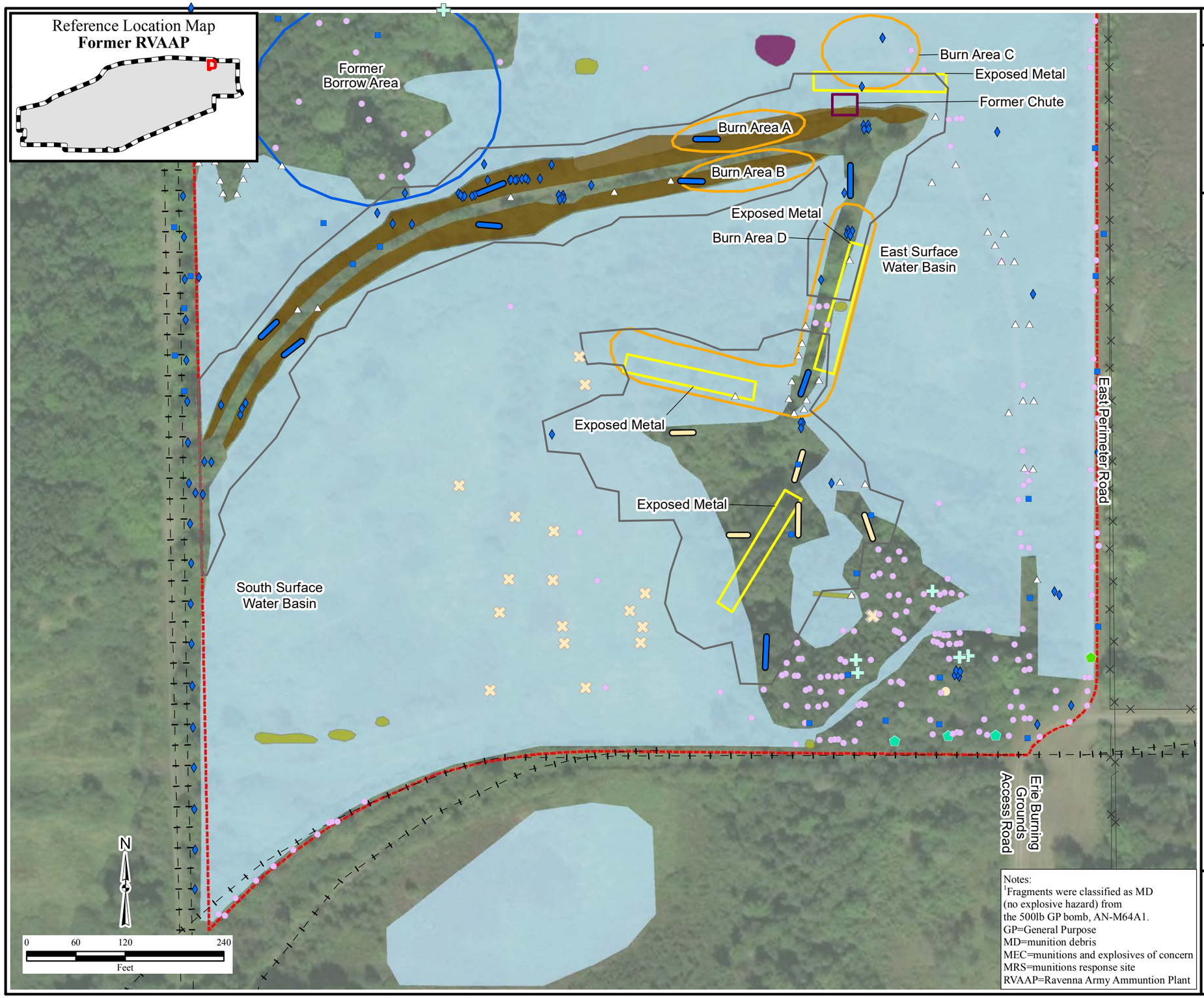


Figure 6b
2014 Remedial Investigation
Intrusive Investigation Results
South Section
Erie Burning Grounds
Former RVAAP
Portage and Trumbull Counties, Ohio

Legend

MD (no explosive hazard) Identified
- Fragments of 500lb GP, AN-M64A1[1]
- Fragments from a Projectile, 75mm, HE, M309
- Fragments from a Projectile, 75mm, HE, M48

Visual Survey MD (no explosive hazard) Identified
- Ordnance Components
- Fragments of 500lb GP, AN-M64A1[1]

Non Munitions Related Items
- Other Debris Identified
- Cultural Feature
- Metal Feature
- Quality Control Position (Nail)
- 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

Notes:
[1]Fragments were classified as MD (no explosive hazard) from the 500lb GP bomb, AN-M64A1.
GP=General Purpose
MD=munition debris
MEC=munitions and explosives of concern
MRS=munitions response site
RVAAP=Ravenna Army Ammunition Plant

\\Gst-srv-01\HGLGIS\Ravenna_AAP\ErieBG\PP\(06b)EBG_Intrusive_South.mxd
11/20/2018 JAR
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

Public Meeting Transcripts

PUBLIC MEETING

IN RE: PROPOSED PLANS FOR THREE

MUNITIONS RESPONSE SITES

RAMSDELL QUARRY LANDFILL MRS AREA 2 (SOUTH)

BLOCK D IGLOO

ERIE BURNING GROUNDS

Presented by:

U.S. Army Corps of Engineers

March 6, 2019
6:30 p.m.

Location:

Charlestown Town Hall
6368 Rock Spring Road
Ravenna, Ohio

Grace M. Hilpert-Roach, RPR

APPEARANCES:

On behalf of HydroGeoLogic, Inc.:

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ALSO PRESENT:

Timothy Leahy, APTIM
Kevin Sedlak, Army National Guard Restoration
Nicholas Roope, Ohio EPA
Mark Johnson, Ohio EPA
Kim Gross, U.S. Army Corps of Engineers
Katie Tait, Ohio Army National Guard

- - - - -

MS. VAUGHN: Welcome everyone. Thank you for your time and attending. Thank you for your patience. We had some time set aside at the beginning to grab handouts, read through them, get familiar with what we'll be presenting to you tonight.

I'm Kimberly Vaughn. I work for HydroGeoLogic. We work for U.S. Army Corps of Engineers and Army National Guard. We'll be presenting tonight details on the three sites listed here: Ramsdell Quarry, Block D Igloo, and Erie Burning Grounds.

We know from some of our conversations with you when people were arriving tonight that there may be other questions on other topics. So Ms. Katie Tait from Army National Guard over at Camp James A. Garfield was just going to speak to clarify, kind of, what tonight's meeting will be covering.

MS. TAIT: Hi. I'm Katie Tait. I'm with the Ohio Army National Guard.

I just want to state that we have no additional information about the Missile Defense Agency. And as Kimberly stated, tonight's meeting is going to present three munitions

response sites that are part of our cleanup program at the former Ravenna Army Ammunition Plant.

MS. VAUGHN: Thank you.

Welcome. Thank you for your time and attending and showing interest in the cleanup program at Ravenna. We really appreciate your time.

We've got restrooms up here to the left. Watch out for this electrical cord here. That should be just myself and Tim Leahy making sure. We have about an hour to cover the information on the three sites, and then we have a question and answer session, 30 minutes.

You'll notice we also have a court reporter here tonight. That's part of the program that we're working under; for the public record, and to make this meeting contents available to any other members of the public, it is recorded and made available.

So we'll ask you to please make a note of any questions that you might have. There's some blank public comment forms and pens at the back you can use to write down any questions, because if you want to present them tonight,

we'll have to get your name and that will have to be entered in the record with the court reporter.

My company, HydroGeoLogic, is working for U.S. Army Corps of Engineers, along with APTIM, Mr. Tim Leahy is here with APTIM, on this project.

I'll be covering one of the sites; Mr. Leahy will cover two of them. If you have a copy of the slide presentation from the handouts table, the second slide shows you the agenda of kind of what we'll run through tonight.

For the discussion this evening, we'll talk about the program that we're working under, that is the Military Munitions Response Program, for each of the sites. And we may slip into calling them "munitions response site" or slip into saying "MRS" for short, but each of those has a history, current site conditions at each site, the results of all the investigations that have been performed, and then the evidence for the recommendations being made tonight for the future approach on that site.

So, again, as I mentioned, if you wouldn't mind holding your questions so we can

make sure to get them down clearly in the record.

We'll try not to – Tim and I will try not to slip into acronyms usage so that we can be more clear. But in case we do, I think I already spoke about a munitions response site or an MRS. And then some of the other words that we may use tonight would be MEC or whether something has an explosive hazard, the munitions and explosives of concern; or munitions debris, that is an item that's a fragment from a munition, but it has no explosive hazard; or munitions constituents, which would be some of the chemical components that may be present after munitions have been in the environment.

An overview of the program that I talked about, the Military Munitions Response Program that we're working under, it's a Department of Defense program. We follow CERCLA. You may have commonly heard that referred to as the Superfund program. And it's a process that we address all these sites, different phases for the investigations that are done for the sites we're summarizing tonight.

So a munitions response site is a

location where we would have reason to believe that munitions may have been used in the past and a way in which those munitions may have been used. It may have been training. They may have been testing the munitions. They may have been manufacturing them or doing maintenance, or even at the end of their life span, they may have been destroying them or disposing of them in some way.

But a munitions response site is anywhere that history shows that munitions may have been used in one of those ways on that site. MC, munitions constituents, then may also be present in the soil or other media from – related to the munitions used.

So overall, for a Military Munitions Response Program project, that site, that munitions response site, will go through all of these phases of the CERCLA Superfund investigation. We're at the public comment period. That is what tonight's meeting is for, is to put the proposed plans in front of the public and gather comments from you guys.

So each – the only thing I would like to point out for the phases of all of these

sites in the CERCLA process are that each of these phases – you'll hear Tim and I talk about some of the site inspection results or the remedial investigation results. But for each of these, there's also another set of requirements and guidances that has been covered and we've been held to those standards for each of those phases involving review, input from the regulators and guidance and requirements for how each of those phases are completed.

Just the location of where we all are this evening: I think we all know where Camp James A. Garfield is and where the facility exists in relation to the state of Ohio.

Now I can turn it over to Mr. Leahy. He'll be covering two of the MRS's and then I'll wrap it up with the third and final of the MRS's for tonight. Tim?

MR. LEAHY: Thanks, Kimberly.

As Kimberly said, my name is Tim Leahy and I'm with APTIM. We're subcontractors to HydroGeoLogic on this project. And I'm going to talk about two of the munitions response sites this evening.

The first one is the Ramsdell Quarry

Landfill Munitions Response Site, or MRS, Area 2, which is the southern of the two areas. You can see the red dot in the middle there. That is where the site is within the boundary. The dashed white and black line is the boundary of Camp James A. Garfield or the Former Ravenna Army Ammunition Plant. And the site, Ramsdell Quarry, is that red spot that's in the northeast part of the map.

The historical background on the site: The site is a former quarry that was used to mine for construction material like gravel. And it is two areas that total about 13.5 acres in size. The first area, Area 1, is 6.5 acres and it's located in the quarry bottom and open burning of munitions occurred there. Area 2 is a little bit larger; it's almost seven acres in size. And it's located south of Area 1, and there's a small inactive soil borrow pit there. And they think that the munitions that were burned at Area 1 in the north were disposed of in Area 2 in the south and that's what led to this site.

Now, some of the historical investigations that have taken place while the

site – since it's been turned into a site: The first one is called the historical records review, and that's about equivalent to the preliminary assessment phase. It's more of a records review type of document where they look at historical records and see whether or not there's any evidence that there was MEC on the site.

And then a report indicated that there was the potential presence of MEC munitions at the site, but none of those munitions at the time were actually evaluated to see if they were MEC. So they could have been inert or they could have been live. There was no determination made. And because these were historical reports, there was no way to go back and check at that point.

So based on that, the next step in the process is the site investigation, and that was done in 2008. And that's really sort of the first boots on the ground type of investigation at the site.

The field investigation at that site included both a meandering path survey and a planned transect magnetic survey. The

meandering path – I'll show you both of these in a second on the next slide or in a couple of slides – is basically just walking through the woods with a metal detector and looking to see what you see on the surface or right below the leaf-litter surface there. The planned transect magnetic is more of a straight line, and that's usually used when they're looking for a specific target or a dump site or something like that.

They did find a couple of items there that were munitions debris. They found no MEC, no munitions that were actually explosively configured or able to go off, but there were a couple of inert items. One was a 105-millimeter projectile and one was an inert 155-millimeter projectile.

They also collected some soil samples out there to see whether there was any chemical contamination from past munitions, even though there were no munitions present during that time. They did find some concentrations of lead and manganese that were above background values, and they recommended in the ESI that further investigation be done for munitions constituents because of that lead and manganese.

There was a remedial investigation and the feasibility study, and I'll talk about them in a couple more slides.

This slide here shows the outline of the actual landfill MRS Area 2 south. The two circled areas are intermittent wetlands. They sometimes are wet, swampy areas, but a lot of times they're not. They are dry at times. And the borrow pit is up there. It's hard to see in this, but there's a brown line around the left of the two blue areas, and that's where the borrow pit itself was. There's a railbed that goes along the north side and the red line itself is the outline of the site.

So the meandering path surveys and the straight line surveys, you can see on this the squiggly dash lines are the meandering path surveys and they walk through the woods and they look to see what they can find there. And then the straight line is up where the borrow pit area was where they thought there may have been some disposal. When there's straight lines like that, they can see whether or not there's a pattern to the way things are disposed and whether they missed anything in between those

lines. And that's the difference between the two areas and the way they're investigated.

The current conditions at the site, as I said earlier, it's almost seven acres, it's 6.93. It's heavily wooded with thick ground vegetation, and there's a small borrow pit. And approximately half an acre is what they're calling planning-level wetlands, which means that it is wet and it does retain water for part of the year but, it's not always wet.

Access to the facility is controlled, and there are stakes that bound the MRS, the munitions response site, so that people know there's something there and they're not supposed to go there. And there are no buildings or structures present at the site.

So the next phase in that CERLA process that Kimberly talked about earlier was a remedial investigation. And this was done in two phases, in 2011 and 2013. And they did some more what they're calling digital geophysical mapping, and that's sometimes abbreviated as DGM, but it's a geophysical instrument that's used to go across the ground to detect subsurface anomalies, which are typically buried

metal objects.

And then they did intrusive investigations of some of the buried metallic objects that were found in those DGM surveys. They also did some more environmental sampling for munitions constituents, which are the chemical parts of the bombs that may still be present in soil or in other environmental media.

They collected two what are called incremental soil samples. And they take little bits of soil from a bunch of places and they homogenize them to get a better representation of the overall chemical concentrations in soil. If you just get one grab sample, you might miss something that would be picked up in one of these ISM samples, so they give you a better idea of overall contamination levels at the site.

And this slide here, it's in your packet so you can look at it in more detail at home, but the thing to note about it is there's a lot of dots on there and most of them are pink. And those pink dots are other debris, so those are metallic objects that are not associated with munitions. It's just junk metal

out in the ground.

There are also – and it might be hard to see it here – smaller pink dots with circles, and those were locations where they found MD, which is munitions debris. So it was related to munitions, but it had no explosives and was not dangerous in that way.

There were some other dots where they were able to identify what type of munitions debris was found. So the green dots are projectile fragments; the red and yellow and blue crosses are various bomb fragments that we're able to identify. So they're identified separately on the map. Again, they were all inert. They were all munitions debris.

So here's the results and sort of what I just said. They did a geophysical investigation. There was no munitions and explosives of concern found; no configured MEC items. There were 187 munitions debris, which are little fragments of metal from bombs and things like that. And there's a list of what some of them were, different types of munitions and nothing that was explosive.

They were all found within the top two

feet of the ground surface, so nothing was deeper than two feet, and most of them were found within the first six inches. So based on the results of the RI, there was no explosive hazard at the site. There's nothing that could go actually go boom anymore. All the explosives are gone.

For the chemical contamination there may be related to past use, that's the MC-related contamination, which is munitions constituents, they did take those ISM, those incremental sampling method samples. And they took the results of those samples, so anything that was detected in those samples was run through what's called a Human Health Risk Assessment and Ecological Risk Assessment. And there are two ways to look at the chemicals that are in there. They look at both individually and cumulatively, whether those chemicals could impact either people through various scenarios, including somebody who lived at the site, people who work at the site. They have different exposure scenarios with the number of days and hours that people would be on-site.

And they ran all the chemical results

through those two assessments, and they determined that there was no risk associated with the soil from munitions constituents at the site.

Just to be extra conservative, they did still recommend that this go through the FS process. And so they looked at different remedial alternatives in a feasibility study, and that's the next step in the CERCLA process.

Within the feasibility study, they look at the RI results and they look at these criteria here. There are three types of criteria and nine overall criteria that any action would have to meet to be considered a feasible alternative for the site.

In this particular case, No Further Action is the alternative that was evaluated because there was no explosive contamination at the site and there was no chemical contamination resulting from past munitions used at the site. That alternative was acceptable based on those threshold criteria, the balancing criteria and the modifying criteria.

So, again, this is summarizing what I just said. There are no hazards associated with

military munitions and there's no potential for MC risks, munitions constituent risks, to humans or environmental receptors.

Based on that, the Army has concluded this site be recommended for No Further Action, and that's what NFA is. It's technically and administratively implementable, this no action, so it's technically easy to do. There's no costs associated with it, and it is protective of human health and the environment since there are no explosive hazards and no unacceptable risks to any receptors.

The next stage is the Proposed Plan. And this is where the alternative that's developed in the feasibility study is presented to you, the public, and everybody else. And the remedy must be protective of the receptors that currently use the area and receptors that may use the area in the future.

The current and future land use for the site are both for industrial receptors; that would be in full-time employees or career military personnel at CJAG. They currently use it for maintenance, natural resources activities, environmental sampling and military

training. And that's not expected to change in the future.

And based on all that, it is still recommended for No Further Action in the Proposed Plan. And one other thing to note here is that even though it's never expected to be used for residential purposes, nobody thinks they're going to tear it down and build a house out there, they do evaluate that alternative just to make sure that 100 years from now, if things change and it does get turned over and used for residential, they can still go back and say, okay, look, even in that case, even in the most conservative case, there was still no risk to anybody. And they look at that so that they can have that determination in the future if ever needed. But right now that isn't expected to ever happen.

The second site that I'm going to talk about this evening is called the Block D Igloo Munitions Response Site. And it's a 101-acre site in the north-central portion of the facility. And I'll show you on the next slide where it's located.

And, basically, this is a site because

on March 24th, 1943, 2,516 clusters of M-41 20-pound fragment bombs exploded at the site. And they think it was caused by rough handling of the items and the faulty fuse design. The site is heavily wooded now and there are some roads, fields, and wetlands within the boundary.

Okay. Again, the white and black dash line is the outline of Camp James A. Garfield, and the red outline within that is the Block D Igloo MRS. The yellow dot is the actual former location of the igloo itself.

So, again, these are some of the historical investigations, some of what I just talked about for the other site. They did the archives search report, which is another sort of a historical records search but it's a more basic one.

And based on that, they did another one, a historical records review in 2007. And they determined that the detonation of the bombs caused multiple fatalities and sent some of the demolished material and shrapnel up to three miles away from the site, 2.9 miles away. The stuff that was found that far away was concrete fragments, parts of clothing, and some filters.

In the 2007 historical records review they did establish an outline for it and I'll show you that in the next slide.

In 2008, they went back and did an actual investigation on the ground. They did some MEC surveys, again, munitions and explosives of concern; had four documented debris locations. They found several subsurface anomalies, but they were not able to attribute it to anything except for remnants of the former concrete floor of the site. And no anomalies were detected within 100 feet of the former igloo location. They also collected some ISM soil samples at the site to test for munitions constituents.

Here's the original outline of the site. You can see that red circle with the blue part goes off in a different site but, again, it went all the way around. The igloo is the green dot in the middle there. And those yellow lines and fuchsia dots that are off to the east there are locations where they did some surveys for the debris, the four building debris piles that they had investigated out there.

So right now it's 101 acres in size.

It's mostly heavily wooded. There are roads, fields, and wetlands located within it. There's unrestricted access, and there are signs and stakes marking out where the site is.

So when they went to do the RI, one of the things they realized is that the site boundary was possibly too big. So what they wanted to do was go back and look and see how far these fragments could really have gone. So they looked at the distance that the fragments of the M-41 20-pound bombs could travel and did some field work to confirm that in 2011.

They did an instrument-aided surface investigation, which is, again, the trained UXO technician walks around with a metal detector. And the UXO technician is somebody who's been trained to find bombs in the ground.

They also did seven what we call "mag and dig" grids, and they're similar. You walk along with the metal detector, but wherever you find something, where it rings off, they mark it with a flag and then they go back later and dig it up to see what it actually was.

They did some environmental sampling for munitions constituents. They collected

three incremental soil samples and then they collected two discrete soil samples, which the other ones I said were based on a bunch of lots put together into a single sample. These discrete soil samples were just taken from one area, and they were collected from those areas because they found potential MEC and they took them from beneath them to see if anything had leached out of that into the soil.

So this is the results of the RI investigation. And it may just look like a big yellow triangle from out there, but those are all individual lines that people walked with the metal detectors. And it comes out to a little over 62 miles that they walked through the site looking for things.

All of those pink triangles that are on there are munitions debris items that were found on the surface. So they found 178 DOD military munitions on the surface. No MEC was found on the surface. Nothing explosive was found on the surface.

When they went back and dug some of the other items up, though, they did find 3,140 subsurface items. Of those, 3,135 were

munitions debris, but five were MEC. So five did have an explosive hazard at this site.

The munitions constituent sampling detected nitroguanidine, which is a chemical which can be associated with explosives. It was detected in two of the three ISM locations, but it was found at low concentrations, below regulatory limits, which are used to determine whether or not there needs to be a cleanup.

Nitroguanidine is also not associated with the explosives that were used within the 20-pound cluster bombs. Antimony and iron were also detected in the samples.

They did Human Health and Ecological Risk Assessments at this site as well, just like at the other site, and they ran all of these chemicals that I was just talking about through that. And they did find that there was no risk due to the MC-related contamination at the MRS. So that's just the chemical contamination.

And they recommended evaluation of alternatives and an FS based on the results of finding some explosively configured MEC items and no munitions constituents contamination.

So the project team looked at the RI

results and evaluated four alternatives in the feasibility study. The first one is no action; the second one is land use controls, which is similar to no action except that you formally document that there's something there, some reason why people can't go there or some other control on why certain activities can't take place; the third one is a surface removal and land use controls because there may potentially still be things buried; and the fourth one is a subsurface and surface removal. So in that case they would take anything that was on the surface and remove it and then also look for things that were buried and remove them as well.

So based on the findings of some MEC in the soil, the Army has concluded that the surface and subsurface removal is the best – the preferred alternative for this site. And it would reduce unacceptable hazards associated with the explosives, and it is protective of human health and the environment.

Again, the stage we're at now is the Proposed Plan, and that's where the remedy and the feasibility study is presented. And that has to be protective of current and future land

use of the receptors there. And, again, the current and future receptors are expected to be industrial and the land use is expected to remain industrial. And the surface and subsurface removal is a preferred remedy because it will be protective of those receptors in the future.

Following the completion of that removal, then the land will be able to be used safely for that intended use. So industrial land use receptors will be able to use the land safely after the alternative is implemented.

And that's it for the two sites that I'm presenting. I'll turn it back over to Kimberly, and she'll talk about the third site we're going to talk about.

MS. VAUGHN: One more to wrap it up, guys. Thanks for hanging in with us.

Erie Burning Grounds Munitions Response Site is the third and final site for tonight. So a little bit of history first, and some of this is in your packet.

It's about a 34-acre site. It is at the northeast corner of the facility. We'll have a map up next. Burning was conducted here

between '41 and '51, open burning in four different areas of propellants, explosives, some type of contaminated items, even a railcar.

And then after the site operation ceased, the site became inundated with water. There are some surface water areas in existence here. It now has those wetland areas at depths varying from three to five feet. The location is in the northeast corner up here. That's not showing up in the light there, but it is up in that right-hand corner.

Historically, running through it again, these mimic the phases of an MMRP process, so starting with the historical records review that Tim described, the records search to see if there's a history of munitions use on the site. For this site there was and it moved forward in the process. A site inspection was performed. Those are the hand-held metal detector surveys that Tim had already described a little bit.

One potential explosively hazardous munitions or explosives of concern item was identified. It was partially buried and nothing was dug up during the site inspection. That's not part of that phase of the work. So the site

inspection did recommend that it move forward to the next phase in the process, a remedial investigation.

So the current conditions, where are we now when the remedial investigation data began to be collected. You heard me speak of the burning areas, the four burned areas. So I wanted to point those out, burn area A, B, C, and D. D is kind of a linear L-shaped feature, and then the surface water that is present in north, south, and then east surface water. And we'll mention those again when we talk about remedial investigation results.

So this slide kind of summarizes some of those features shown on the map. 34 acres, does have surface water, thick vegetation and ground cover; no structures or paved roads existing. There are some remnants of the previous structures that were present when the site was in use from 1941 to 1951. And those four burn areas.

So that's where we were with the site conditions when we moved to the remedial investigation phase. So we have several slides here and several figures to summarize the

remedial investigation data collected.

There are several phases to that investigation: Geophysical surveying, which Tim described, digital geophysical mapping or sometimes we'll abbreviate it DGM. And that's surveying and looking for buried metal.

Now, following that, you may know that you have a map that shows you where the subsurface metal may be, but you don't know what it is. So you then move to an intrusive investigation. That's just a fancy word for literally digging it up to see what it is. So we collected that geophysical data. That data was evaluated. There was then location of those places and then digging them up for the intrusive and then the environmental sampling for munitions constituents.

And that sampling included six incremental sampling methodology samples. I think that Tim had already mentioned how those were collected in increments to gather data, surface water samples, and then soil samples from trench bottoms. And I'll describe the trenching and why it was done also in here in a bit.

So we have three slides coming up that are all maps. These maps are at the back of the slide presentation, the very last three pages, if you can't see them as well as I would like up here.

So the first map has a lot of pink parallel lines showing. The take-away for this one, before we remove these pink parallel lines so that you can see other results, are these are the geophysical surveying transect. So you can see that they do cover the site, you know, pretty much completely and are parallel.

The intent of that is to – it's intentional; it's designed to allow us to identify where any concentrated areas of buried metal may be. And you can actually see that in the data once it's processed and evaluated.

So the next two figures, we're going to remove those survey transect lines so we can then see the results of what was dug up when we did the intrusive investigation.

So two types of digging were done. In areas where we had a lot of concentrated buried metal, we went ahead and put in trenches, actually excavated out a trench to see what was

buried in the subsurface.

So where those high concentrations of buried metal were, we put in 14 trenches. In other places where single anomalies were able to be dug, we did point digging. And you can see if they are pink, it was other metal debris; it did not have an explosive – it wasn't munitions related at all. And then if it is the blue cross color, there were munitions debris, but no MEC, no munitions or explosives of concern were ever found, so nothing with an explosive hazard.

In the burned areas and in the structures and remnants, kind of, of the prior use of the site, which is logical, it's where you would expect, there were higher concentrations of buried metal. And the rectangular blue features shown were the trenches.

So where we knew we had a lot of buried metal, that's where a trench was placed. And the blue color of the trench shows that there was no munitions debris found, nothing explosively hazardous, and no munitions debris, nothing even related to munitions. So it was other types of metal.

This is the northern portion of the site, just to help it show up better. Moving to the southern portion on the next slide, you'll see there were – out of the 14 trenches placed, there were four that had, in this color here, the sort of creamy brown color, that did have some munitions debris in the trench. But the remainder of the trenches again were all blue. The pink were other debris not related to munitions. The green crosses were some fragments of that general purpose bomb there, but they were not explosively configured.

So that's a lot of data to throw at you on three maps, but I did want to make sure that the take-aways were we had a full picture of the site with the geophysical surveying of where the metal might be, and then we had two methods in which we went in and then dug up those buried metal to see what it was with the trenching and with the single-point digging.

And then the last thing to mention were the different types of sampling done. Again, there was wet sediment sampling done in the areas of these basins, three in the north surface water basin, two in the south, and one

on the east. And then there was also a sampling done of the surface water itself and at the trench bottoms in some of those trenches that were placed.

Now, we have a text slide kind of summarizing everything that was presented in the figures just giving the results. So, again, just to again mention that that geophysical surveying did identify those points or concentrated areas where we knew there was buried metal.

Out of the 1,000 and some odd individual points that were of interest and that we would like to dig, 350 of those were dug in areas that could be accessed and only 29 had any munitions debris even present. And none of it was explosively configured, so no munitions and explosives of concern.

And then in the concentrated areas where even more metal was shown to be present in the surveying, that's where we just went ahead and the RI teams were putting in actual trenches to see what was present. And out of the 14, only five of them had munitions debris present and those were fragments of the types described

there. So nothing explosively hazardous was found in all of that intrusive investigation or just digging that was done during the remedial investigation.

The remedial investigation also had the environmental sampling that I described and both the Human Health and Ecological Risk Assessments were done on the data that was generated from the sampling. And that's documented in the IR report and concluded that there's no risk to receptors, no MC-related contamination present at the site.

So following the remedial investigation phase, it then moved forward to a feasibility study, which we've talked about the criteria for each site that we've run through, the rationale evaluated in the feasibility study that No Further Action was appropriate because there is no risk. There's no explosive hazard present at the site and no munitions constituent risk to any of the receptors.

So No Further Action was what was evaluated in the feasibility study. Again, as I stated, because there are no hazards present, that No Further Action alternative is

implementable, and most importantly, the bottom bullet here is that it is protective of human health and the environment since there are no hazards or MC risk present.

So the wrap-up slide that we have for each site tonight shows the Proposed Plan, which is the document that's gone through its review processes and is now ready to present to the public tonight.

The Proposed Plan presents a preferred remedy for comment. It has to show, of course, that it's protective of the receptors. Receptors, you know, are the humans using the site. And that's for the appropriate current and future land uses at the site.

One thing slightly different for Erie Burning Grounds MRS is because of those wetlands that are present, you know, it may not be used for military training by this facility because it does have the wetlands present. So it's kind of slightly different from the other two sites we've talked about.

But, again, that No Further Action is protective and even more so conservatively any potential future residential receptor would also

be protected if the site land use were to change in the future, though there's no plan to do so.

I know that that was a lot of data on three unique sites with very different histories and very different investigations that proceeded over time.

So we can move to the questions portion. But the one thing we would like to point out before that is all of these phases that have occurred, the Ohio EPA has been a team member and does review and chime in for all of the conclusions presented to you tonight. So I think, Mr. Nick Roope, you were going to summarize Ohio EPA feedback.

MR. ROOPE: Yes. Ohio EPA concurs with the preferred alternatives that are being proposed.

MS. VAUGHN: Thank you, Nick.

So, again, I would just like to clarify these questions that we want to record for purposes of the record tonight we hope are related to the three sites that we've been talking about. I mean, we do have team members here once we conclude the formal presentation and the formal Q and A and we stop our official

record, you know, we'll still be here informally until we wrap up.

But can I ask if there's any questions on any of the three sites that we're summarizing tonight?

Yes, ma'am. Do you mind giving your name for the court reporter?

MS. SCHUMAN: It's Kathy Schuman. And do you need anything else?

MS. VAUGHN: Your name is great.

MS. SCHUMAN: My concern is, you know the pink water, you know, the TNT, that stuff that came out of all of these thousands of, you know, projectiles.

So they went into the ground and then they went into underlying pits. So they went into the ground, which was not protected, and then they went into these primitive – I mean, this would never happen today, right? This is –

MS. VAUGHN: Is this for a specific site here?

MS. SCHUMAN: All these. I mean, all these sites. The igloo, right? I mean, all these sites, nothing was protected. There was

no linings to anything, right?
So what happened to the – the – you know, it's toluene, it's cancer-causing, you know. It's –
MS. VAUGHN: I want to make sure I understood because you had mentioned –
MS. SCHUMAN: Yeah. The TNT. Were you not shocked when these results came back as totally nothing?
MS. VAUGHN: Well, specifically these three sites, there has been sampling conducted. There has been sampling of the soil conducted, anywhere where there were concentrated areas of munitions found in the ground.
And that sampling was then evaluated as part of the remedial investigation that's available to the public, you know, has been reviewed by Ohio EPA and that was evaluated, whether or not there were munitions constituents present in the soil that could then either migrate elsewhere or cause a risk to anyone in contact with the soil.
So for these three sites there were no MC risks. There were no munitions constituents.
MS. SCHUMAN: They were not enough;

there wasn't enough to be a risk. There was – you know, there's got to be – we know there are. There are – the TNT is in the ground.
MS. VAUGHN: I would have to go and look. I'm not sure whether any explosives were even detected for any of these three sites.
MS. SCHUMAN: Nothing was even detected? Because I thought it was the lower levels.
Can we see the lab reports on that?
MS. VAUGHN: Yes. All of the information is in the archive reports.
MS. SCHUMAN: How do we get that?
MS. VAUGHN: It's available on the website.
MS. SCHUMAN: Okay. Where was that? I didn't see that lab report.
MS. VAUGHN: RI reports are part of the administrative records.
MR. SEDLAK: It's rvaap.org. All reports that we've ever done are on there and they have all the complete reports.
MS. SCHUMAN: All the lab reports are on there?
MR. SEDLAK: They're all in the

documents.
MS. SCHUMAN: I'm sorry. Again, what was that?
MS. VAUGHN: Rvaap.org.
MS. SCHUMAN: Oh, yeah. I knew that. I went on there. Where on that site can I find the lab report?
MR. SEDLAK: Well, there's – we have tens of thousands of lab reports –
MS. SCHUMAN: Oh, really?
MR. SEDLAK: – from all the sites. We have over 84 sites on the facility. Most of them probably have some sort of lab reports.
And so every site that we've discussed will have the remedial investigation. It will have all of the analytical data for that site.
You can look them up by site on the website by clicking on documents by site or study area. And then you can look at each study area and look at all the reports that are listed that come from that study area up until the last week or so. We get them up very rapidly. So everything is on that site.
Like I said, there's probably hundreds of thousands of analytical results available.

They're all in reports. They're in tables. They're easy to look at and understand.
MS. VAUGHN: Right. There will be a summary of the samples collected, any detections that occurred, and a summary of the entire risk assessment process in each of the remedial investigation reports.
MS. SCHUMAN: And who did those? Is it the same lab?
MR. SEDLAK: No. There's different labs. We've been doing some of these investigations since the '90s, so there are different laboratories. There's been different contractors. There's been the BRAC, there was – before that it was the Army Health Command or something like that, and now there's the Army National Guard and the Ohio Guard.
So it's always been federal and it's always been the government, but it's been several different – we've had several contractors that have collected data out here, and all of it has been reviewed, all of it has been validated, all of it has been QA/QC. It's all the highest quality data.
MS. VAUGHN: I think that's just why I

was trying to ask if it was about a specific site, just to help you find the report, you know, that it's for a specific site that you're concerned about.

MS. SCHUMAN: Uh-huh. Yeah.

Well, and then, like, Bob Downing, he was an Akron Beacon Journal – he used to work there, and I guess it was 2011 they were supposed to do something with the arsenal. He said something was going to happen and then I just wondered if it happened. They were supposed to do a big cleanup.

MR. SEDLAK: That's ongoing right now.

MS. SCHUMAN: Yeah. Do you know what I'm talking about?

MR. SEDLAK: That's what this is all a part of.

MS. SCHUMAN: That's what this is all a part of?

MR. SEDLAK: Yeah.

MS. SCHUMAN: Okay. Because they had set aside money for that.

MR. SEDLAK: We spend the money rapidly.

MS. SCHUMAN: Yeah. They had set

aside. So I figured something must need to be done if they said it was going to be done.

MR. SEDLAK: Yes. We've been – all of this is all a part of the cleanup process. When we do the Proposed Plan for Block D Igloo, it says that we're going to go and further investigate and clean that up. And if two of the sites don't need any cleanup but they're Block D Igloo, it will be remediated and cleaned up.

We have several sites and they're all in different phases. We have, like I said, over 84 sites. Some have been cleaned up; some are still in the process of going through these deals.

But, yeah, they're ongoing. We've been cleaning up and remediating sites out there for 20 years. It's constantly ongoing every year, more and more sites.

MS. SCHUMAN: But actually now that they're saying it, these other ones, there's nothing – you know –

MR. SEDLAK: Correct.

MS. SCHUMAN: But you're still going to be maybe testing stuff, right?

MR. SEDLAK: We test all the sites until we get to where the regulator agrees that we can take them No Further Action.

MS. SCHUMAN: So is that what's going on now here?

MR. SEDLAK: Two of these sites.

MS. SCHUMAN: Two sites?

MR. SEDLAK: Right.

MS. SCHUMAN: So you're not going to do anything now to those two sites?

MR. SEDLAK: No. No Further Action.

MS. SCHUMAN: No Further Action.

It's a little concerning because you got thousands and thousands of these things that – weren't they full of TNT?

MR. SEDLAK: No.

MS. SCHUMAN: Were they just the shells, just making the shells or –

MR. SEDLAK: Well, it depends on what – a lot of the times we don't know exactly what went on at the sites because it was so long ago. But that's why we take samples. That's why we do analysis.

We sample in the most possible contaminated areas, and then when we don't find

anything, we don't find anything. It was 70 years ago and these things have a tendency – you know, it depends what the site was used for. Some sites we find there's nothing there, but they thought they should have been a site so they became a site. Then we find out through sampling and a thorough process of the CERCLA process. We can determine that the site is no longer any kind of a risk to human health and the environment, and that's what we do with these Proposed Plans and we move on from there.

They've all been thoroughly investigated. And if there's nothing there, there's nothing there. We've been – some of these sites have been investigated for 15 years on their own. There's been multiple rounds of sampling, cleanup, and things like that. So we're pretty sure –

MS. SCHUMAN: Do they have a well on the site that they check, a water well that they used to drink out of?

MR. SEDLAK: We have 324 monitoring wells on the facility.

MS. SCHUMAN: So you're checking the water?

MR. SEDLAK: The sampling is twice a year right now. Again, you can see all those samples also for the groundwater plant and all of that has been sampled and all the results are all on the website for all –

MS. SCHUMAN: People are drinking that water now?

MR. SEDLAK: There are some in the cantonment area.

MS. TAIT: We do have some potable wells, yes. But they have been scanned and nothing has been found in those wells.

MS. SCHUMAN: So people are drinking out of those wells?

MS. TAIT: There are potable wells, yes.

MS. SCHUMAN: It's potable? So they're not drinking out of those wells?

MS. TAIT: They are drinking out of those wells.

MS. SCHUMAN: They are drinking out of those wells.

MS. TAIT: Not drinking out of the groundwater wells. We have five potable wells that we use in our main cantonment area where we

have staff that work there. And they are used for drinking water; they're also used for washing hands, toilets.

MS. SCHUMAN: Why aren't they drinking that water?

MS. TAIT: They are.

MS. VAUGHN: They are. She's saying they are. The potable wells are used for drinking water.

MS. SCHUMAN: The potable wells. So they're drinking the well water that's coming out of that?

MS. TAIT: Yes. It is available for drinking, yes.

MS. VAUGHN: Yes, sir. Do you mind giving your name?

MR. MONTEVILLE: Richard Monteville.

MS. VAUGHN: What's your last name?

MR. MONTEVILLE: Monteville.

This is probably a pretty simple question for you, but just curious on my part, and plus it was very interesting, thank you, because through a lot of this period I lived there. I was – my parents were living in the arsenal when I was born. My dad was brought

from Dover to be an inspector and watched this, and I know he has turned in and complained to his superiors about improper disposal of a lot of these things. And he always told me they buried things where they shouldn't have and turned them in. So it's interesting how far you guys are going to try to clean this up. He would have loved to have seen this.

But, anyways, just out of curiosity, you said that the one site that you recommended that you would take the surface and the subsoil and dispose of it.

Where is a safer place – or how do you dispose of it? It seems like the safest place is right where it's at. If you start moving it, it could –

MS. VAUGHN: Block D Igloo, where the surface removal –

MR. MONTEVILLE: Yes.

MS. VAUGHN: – will be done? Yeah.

MR. MONTEVILLE: What will you do with the soil?

MR. LEAHY: What they'll do is they'll go back in and do another digital geophysical survey across the area, and they'll go and then

dig up every anomaly they find.

MR. SEDLAK: They're not going to take the soil off-site.

MS. VAUGHN: They're going to remove –

MR. SEDLAK: They're just going to remove the munitions.

MR. MONTEVILLE: That makes sense because it sounded like they were talking about removing the soil, and I thought, boy, that could contaminate all kinds of areas, plus all the people trying to move it, it just seemed like that would be a mess.

MS. VAUGHN: Just the munitions. Just the metal out of the soil.

MR. MONTEVILLE: Thank you.

MS. VAUGHN: Yes, ma'am?

MS. CHRISTIAN-BENNETT: Hi. I'm Sabrina Christian-Bennett, and I'm Portage County Commissioner.

And for the last three nights I've had the honor and the privilege to have met with – I don't know if you guys are familiar with him – his name is Ricky Ellison. He is the founder and director of the Missile Defense Advocacy. And when we were talking –

MS. VAUGHN: I don't know if we might need to hold that question. So it's not going to become part of the public record for these three sites.

MS. CHRISTIAN-BENNETT: Oh, no. It's part of it.

MS. VAUGHN: Okay.

MS. CHRISTIAN-BENNETT: And I had never heard this until last night. We were talking about, you know, the site selection, those three sites. And in his opinion, because he's, like, an expert in this, and he goes around all over for test sites and different countries and stuff, and he's very familiar with what's going on with the east coast, he mentioned last night that he thought it was down to Ohio and Michigan.

And I said, "Why us and Michigan?" Besides we're big football rivals, right? And he said, "The thing that's concerning for our site here is the cleanup going on." And that is the first time that I had heard that, because I went out there in 2018 when RVAAP received that prestigious award from the Army regarding the restoration of a CJAG, or at that time it was

Camp Ravenna.

And so I was wondering if there's anything you can add to that, if there were any – I mean, I understand it's a continual process out there, but can any of you speak to that? Because that was the first we had ever heard that that was a concern because before we had always got kudos about how many years it's taken, they've cleaned up, everyone is continuing, and that was the first that we had actually heard that it was a concern. So I don't know if anyone can –

MS. TAIT: I can answer that question. There are cleanup sites that are within the footprint or the potential footprint for the Missile Defense Agency.

Most of them have actually achieved Remedy In Place or No Further Action. There's one site remaining that needs a soil removal action. So he might have been – I wasn't there for the conversation, but he might have been concerned as far as timeline for that site.

MS. CHRISTIAN-BENNETT: Okay.

MS. TAIT: Be aware that we're aware that, obviously, the Missile Defense Agency

chooses us as a site. We are able to clean up that site in a productive manner, so that obviously we won't – we can facilitate their construction, if needed.

MS. CHRISTIAN-BENNETT: Thank you. Thank you for answering that.

MS. TAIT: Yep.

MS. VAUGHN: Would it be helpful to clarify that none of these three are part of that footprint?

MS. TAIT: That's true. None of these sites are located –

MS. VAUGHN: I wanted to make that clear.

MS. CHRISTIAN-BENNETT: I figured there's a continual cleanup being done out there. Like I said, I remember attending the ceremony for the big award we received from the Secretary of Army of Restoration. And it was a big event because of the restoration that had been done and the cleanup at our Camp. And then to hear that last night, I'm like, really, because that's the first we've heard.

Okay. Thank you.

MS. VAUGHN: Thank you. All right.

MR. LEAHY: Thanks for the question.

MS. VAUGHN: All right. And there are other ways – I want to make sure you know there are other ways, if any questions occur to you after you leave, there's forms in the back, you can write them in, e-mail them in to what's shown there.

I really thank you for your time in coming out. Appreciate it very much. It's valuable and thank you for participating.

(Public meeting concluded.)

CERTIFICATE

I, Grace M. Hilpert-Roach, do hereby certify that as such Reporter I took down in Stenotypy all of the proceedings had in the foregoing transcript; that I have transcribed my said Stenotype notes into typewritten form as appears in the foregoing transcript; that said transcript is the complete form of the proceedings had in said cause and constitutes a true and correct transcript therein.

Grace M. Hilpert-Roach, Notary Public within and for the State of Ohio

My commission expires 7-11-2021