

Final

**Proposed Plan
for Soil and Dry Sediment at
Erie Burning Grounds (RVAAP-02)**

**Ravenna Army Ammunition Plant
Ravenna, Ohio**

February 2007

**Contract No. GS-10F-0076J
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Prepared for:



**US Army Corps
of Engineers®**

**United States Army Corps of Engineers
Louisville District**

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**LIST OF ACRONYMS AND
ABBREVIATIONS**

AOC	area of concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
EBG	Erie Burning Grounds
EPC	Exposure Point Concentration
IRP	Installation Restoration Program
MEC	munitions and explosives of concern
NGB	National Guard Bureau
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
RI	remedial investigation
ROD	Record of Decision
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SVOC	semivolatile organic compound
USACE	U. S. Army Corps of Engineers
VOC	volatile organic compound

1.0 INTRODUCTION

This Proposed Plan presents conclusions and recommendations for cleanup of contaminated soils and dry sediment within the Erie Burning Grounds (EBG) at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio (Figure 1), and provides the rationale for this preference. The US Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), issues this Proposed Plan. The Proposed Plan provides the public with information to comment upon the selection of an appropriate response action. The US Army, in consultation with Ohio EPA, will select the remedy for the area of concern (AOC) after reviewing and considering all comments during the 30-day public comment period. Therefore, the public is encouraged to review and comment on all conclusions presented in this Proposed Plan.

The US Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (40 *Code of Federal Regulations* 300). Selection and implementation of the remedy will also satisfy the requirements of the Ohio EPA Director's Final Findings and Orders, June 10, 2004.

The Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) Reports [U. S. Army Corps of Engineers (USACE) 1998, 2001, and 2005a], the RI Addendum (USACE 2006), and other documents contained in the Administrative Record file for EBG. The US Army encourages the public to review these documents to gain a more comprehensive understanding of the AOC and activities that have been conducted to date.

Public Comment Period:

March 7, 2007 to April 5, 2007

Public Meeting:

The US Army will hold an open house and public meeting to explain the Proposed Plan. Oral and written comments will also be accepted at the meeting. The open house and public meeting is scheduled for 6:00pm, March 13, 2007, at the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio 44444.

Information Repositories:

Information used in selecting the conclusion is available for public review at the following locations:

Reed Memorial Library

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

Hours of operation:

10AM – 8:45PM Monday – Friday

10AM – 5:45PM Saturday

Newton Falls Public Library

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

Hours of operation:

9AM – 8PM Monday – Thursday

9AM – 5PM Friday and Saturday

12PM – 5PM Sunday

The **Administrative Record File**, containing information used in selecting the conclusion, is available for public review at the following location:

RVAAP

Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314

Note: Access is restricted to the Ravenna Army Ammunition Plant (RVAAP), but the file can be obtained or viewed with prior notice to RVAAP.

2.0 RVAAP AND AREA OF CONCERN BACKGROUND

RVAAP is approximately 4.8 km (3 miles) east-northeast of the city of Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls. When the RVAAP Installation Restoration Program (IRP) began in 1989, RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a 2-year period (2002 and 2003) and the actual total acreage of the property was found to be 21,683 acres. As of February 2006, a total of 20,403 acres of the former RVAAP have been transferred to the National Guard Bureau (NGB) and subsequently licensed to OHARNG for use as a military training site. The current RVAAP consists of 1,280 acres scattered throughout the Ravenna Training and Logistics Site (RTL5). The current RVAAP portions of the property are solely located within Portage County.

The RVAAP IRP includes investigation and cleanup related to past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document include the historical extent of RVAAP, which is the combined acreages of the current RTL5 and RVAAP, unless otherwise specifically stated.

RVAAP is approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (Figure 1). RVAAP is surrounded by several communities: Windham on the north; Garrettsville 9.6 km (6 miles) to the northwest; Newton Falls 1.6 km (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 km (3 miles) to the south.

RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading and placed on standby status in 1950. Production activities were resumed from 1954 to 1957 and 1968 to 1972.

Demilitarization activities, including disassembly of munitions and explosives melt-out and recovery, continued until 1992. When RVAAP was operational, the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The only activities still being carried out at RVAAP are environmental restoration, ordnance clearance and infrequent demolition of any unexploded ordnance discovered during investigation and remediation activities, and building decontamination and demolition.

EBG, designated as AOC RVAAP-02, covers approximately 35 acres in the northeastern corner of RVAAP/RTL5 (Figures 2 and 3). The area may have been used for brick manufacturing prior to its acquisition by the US Army in 1940. From 1941 to 1951, the site was used to perform open burning of propellants, bulk explosives, and explosives-contaminated materials, such as rags, paper, and sawdust. Metal items contaminated with explosives were also burned to make them safe for salvaging or recycling. Once burned, the metal items were recovered and processed as scrap. Ash residues were not removed. A wooden chute at the east end of Track 49 was used to move material to a burn area immediately north of the rail spur. A burning area, enclosed by water-filled ditches for fire control, was constructed south of Track 49. This area is informally called the T-Area. A borrow area between Tracks 49 and 10 may have also been used for open burning. In the 1990s, the area became inundated due to sedimentation, vegetation growth, and beaver activity, which plugged some drainage culverts and small streams that drained EBG. The resulting wetlands now cover approximately 60% of the AOC. The eastern end of the Track 49 embankment, the former burn area, the northern part of the gravel access road, and the T-Area are where most burning activities are known or suspected to have occurred.

EBG is currently managed as "Restricted Access". The AOC is considered environmentally valuable and the Army intends to preserve the high quality wetlands at EBG. Additionally, there is a potential

presence of munitions and explosives of concern (MEC), although minimal MEC has been found. OHARNG plans to maintain EBG as a restricted access area in the future. Restricted access means that EBG will not be used for training purposes. Surveying, environmental sampling, and other essential security, safety, and natural resources management activities may be conducted only after personnel are properly briefed on potential hazards/sensitive areas. Individuals unfamiliar with the hazards/restrictions are escorted by authorized personnel at all times while in the restricted area (USACE 2006).

3.0 AREA OF CONCERN CHARACTERISTICS

Elevations at EBG range from approximately 285.9 to 287.2 m (938.1 to 942.4 ft) above mean sea level. Extensive beaver damming has turned approximately 60% of the AOC into wetlands (ponds with no emergent vegetation as well as vegetated areas). There are four main surface water basins occupying the lowlands. The largest pond, the North Surface Water Basin, has a depth of 5 ft in the former drainage channel, but is less than 1 ft in other areas. Surface water enters EBG through several culverts on the eastern and northern sides of the AOC. Water flows from north to south through the wetlands and exits EBG at the southwest corner through a large concrete culvert. There are no buildings and no historical evidence of permanent buildings. Wooden frame debris in the vicinity of the former burn area at the end of Track 49 was observed during low water conditions at the time of the Phase I RI and is believed to be remnants of the wooden chute used to offload materials for burning.

Native soil at EBG was disturbed by the construction of the railroad tracks, access road, and the T-Area. In these areas, large amounts of sandy fill dirt and ballast material, including stone and slag, were placed to raise the ground surface above the surrounding low-lying areas.

Soil sampling during the RI phase identified contaminants in soil that included low levels of

explosives, metals, and semivolatile organic compounds (SVOCs) along the Track 49 embankment, near the former burn area, and in the T-Area. Explosives were detected along the north and south embankment of Track 49. The Track 49 embankment, gravel access road, and T-Area were the primary areas of metals contamination.

Sampling detected explosives in underwater (wet) sediment at the north inlet and in the former drainage channel in the south basin. Explosives were not detected in wet sediment samples collected downstream of the EBG drainage outlet. Metals were observed at the north and east inlets, the former drainage channel in the south basin, and downstream of the EBG outlet. SVOCs were not detected in the surface water basins or beyond the AOC boundary in the Phase I investigation. Volatile organic compounds (VOCs) were detected at the EBG outlet and stations downstream.

No explosive compounds, SVOCs, pesticides, or polychlorinated biphenyls were detected at eight surface water stations sampled during the Phase II RI. A total of seven metals were detected above background criteria at least once in Phase II surface water samples. The Phase II samples contained only a few detectable VOCs and these were limited primarily to the T-Area and the east inlet.

Groundwater samples were analyzed from eight wells. No explosives were detected in any of the groundwater wells sampled during the Phase II RI. Eleven metals were detected above RVAAP facility-wide groundwater background values. SVOCs were detected in two wells. The VOC carbon disulfide was detected in seven wells during the Phase II RI. One pesticide was detected in one well on the southwest corner of the AOC. Groundwater monitoring will continue to be conducted under the facility-wide monitoring program.

A facility-wide investigation of surface water (USACE 2005b) showed surface water in the EBG wetland exhibits slight exceedances of a few metals compared to chronic Water Quality Standards criteria. These exceedances do not

appear to impact the biological community. Water quality conditions were comparable to reference ponds. No fish were sampled because of shallow water. Macroinvertebrates were sampled and found to be different from reference ponds because the sediment at EBG was softer, oxygen levels were lower, and the plant communities were different. Some sediment samples contained some metals above reference levels, and also contained some explosives, but no explosives were detected in sediment samples downstream of the EBG outlet. The wetlands were assessed with the Ohio Rapid Assessment Method and found to be of high quality (USACE 2005a). Based on these data, the EBG wetland is a valuable, high-quality ecological resource (Category 3 or highest category) (USACE 2006). Surface water monitoring may be conducted in the future if conditions warrant.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The US Army plans to transfer EBG to NGB. The intended future land use for EBG will be restricted access due to the presence of wetlands and possible MEC. EBG may be used in the future by National Guard personnel using surface water for fire or dust suppression and recreational users involved in waterfowl hunting. These limited activities are compatible with protection of the wetland resources and safety concerns regarding MEC.

The potential exists for MEC to exist throughout the AOC. Because of the unique hazards associated with MEC, response actions are regulated separately from environmental hazards at the federal level. The EPA Military Munitions Rule (40 CFR Part 266) addresses the management and response for MEC. The Department of Defense implements the regulations through the Military Munitions Response Program (MMRP), which is separate from IRP. Any MEC throughout EBG will be addressed under the MMRP.

This Proposed Plan addresses soil and dry sediment in ditches that are only occasionally filled with water during storm events.

Remediation of groundwater, surface water, and wet sediment is not included in the scope of the Proposed Plan. These media will be addressed under future actions. However, the selected remedy for soil/dry sediment at EBG must be protective of these other media. Groundwater at EBG may also be monitored under the RVAAP Facility-Wide Groundwater Monitoring Program conducted in accordance with the Ohio EPA Director's Findings and Orders. Monitoring of surface water may be conducted in the future if conditions warrant.

5.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

The human health risk assessment at EBG evaluated risks and hazards for two potential human receptors (Hunter/Trapper and Fire/Dust Suppression Worker). Three media were evaluated: shallow surface soil (0 to 1 ft below ground surface), sediment, and surface water. Although not intended for future land use by OHARNG due to physical constraints (e.g., wetlands and MEC), a National Guard Trainee, Security Guard/Maintenance Worker, Resident Subsistence Farmer (adult and child), and Trespasser (adult and juvenile) were evaluated for exposure to soil, groundwater, underwater sediment, and surface water. Because of these considerations, the Hunter/Trapper and Fire/Dust Suppression Worker are considered as reasonably anticipated land uses for EBG. Although not a reasonably anticipated land use, the Resident Subsistence Farmer is included to provide a baseline comparison to the Hunter/Trapper and Fire/Dust Suppression Worker.

No shallow surface soil (0 to 1-ft depth range) constituents of concern (COCs) were identified for the Hunter/Trapper and Fire/Dust Suppression Worker at EBG. Two COCs [arsenic and benzo(a)pyrene] were identified in surface soil and subsurface soil for the Resident Subsistence Farmer. Neither of these COCs requires remediation because the exposure point concentrations (EPCs) in surface and subsurface soil are less than the preliminary cleanup goals developed for these

chemicals for a Resident Subsistence Farmer. Also, their distribution in soil was limited to isolated occurrences (e.g., no definite areas or hotspots of contamination).

Both land and water animals and plants are found at EBG, including a few state-listed species (e.g., Marsh Wren) and unique natural resources (e.g., swamp forest along Blackberry Lane) (USACE 2006). Wetlands occupy a large part of the 35 acres of EBG. The wetlands constitute a high-quality habitat (Category 3) as shown by the Ohio Rapid Assessment Method (USACE 2005a).

The ecological risk assessment for EBG evaluated risk to plants and animals from contaminants in soil, surface water, and sediment. Chemicals of ecological concern identified for these media include metals, one explosive, SVOCs, one VOC, and one pesticide. The RI Addendum (USACE 2006) presents a weight-of-evidence evaluation that no quantitative ecological preliminary cleanup goals be developed at EBG. This weight-of-evidence includes discussion that reducing ecological risk from chemicals (i.e., by extensive soil excavation) could result in destruction of much high-quality wetland and other ecological habitat.

6.0 CONCLUSIONS AND RECOMMENDATIONS

As outlined in the EBG RI Addendum (USACE 2006), no COCs in soil/dry sediment were identified for remediation for either a military land use (Hunter/Trapper and Fire/Dust Suppression Worker) or for residential land use (Resident Subsistence Farmer). The US Army, in consultation with Ohio EPA, is recommending no further action with respect to chemical contamination in soil/dry sediment at EBG. This recommendation is not a final decision. The US Army, in consultation with Ohio EPA, will select the remedy for this AOC after reviewing and considering all comments submitted during the 30-day public comment period. Interim use restrictions will be maintained at EBG until such time that a final remedial

decision regarding MEC is determined under the Military Munitions Response Program.

7.0 COMMUNITY PARTICIPATION

7.1 Community Participation

Public participation is an important component of remedy selection. The US Army and Ohio EPA are soliciting input from the community on the preferred alternative. The comment period extends from March 7, 2007 to April 5, 2007. This period includes a public meeting at which the US Army will present the Proposed Plan as agreed to by Ohio EPA. The US Army will accept both oral and written comments at this meeting.

7.2 Public Comment Period

The 30-day comment period is from March 7, 2007 to April 5, 2007, and provides an opportunity for public involvement in the decision-making process for the proposed action. All public comments will be considered by the US Army and Ohio EPA before selecting the remedy. The public is encouraged to review and comment on this Proposed Plan. During the comment period, the public is encouraged to review documents pertinent to EBG. This information is available at the Information Repositories and online at: www.rvaap.org. To obtain further information, contact the RVAAP Facility Manager.

7.3 Written Comments

If the public would like to comment in writing on the Proposed Plan or other relevant issues, please deliver comments to the US Army at the public meeting or mail written comments (postmarked no later than April 5, 2007).

7.4 Public Meeting

The US Army will hold an open house and public meeting on this Proposed Plan on March 13, 2007, at 6:00pm, in the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio, 44444, to accept

comments. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed. The Record of Decision (ROD) will be added to the RVAAP Administrative Record and Information Repositories.

7.5 US Army Review of Public Comments

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

POINT OF CONTACT FOR WRITTEN COMMENTS

Facility Manager
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
Office: (330) 358-7311
Fax: (330) 358-7314

ADMINISTRATIVE RECORD FILE

RVAAP
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314

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INFORMATION REPOSITORIES

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GLOSSARY OF TERMS

Administrative Record: a collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record represents the information used to select the preferred alternative. It is available for public review at RVAAP, Building 1037; call (330) 358-7311 for an appointment.

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

Constituent of concern (COC): site-specific chemical substance that potentially poses significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Exposure point concentration (EPC): The EPC is used in the human health and

ecological risk assessments to quantify exposures for all or part of an area of concern. The EPC is the smaller value between the maximum detected concentration and the calculated 95% upper confidence limit (UCL₉₅) of the average concentration for the area.

Human receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, a Hunter/Trapper is considered as a representative human receptor in this Proposed Plan.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): abbreviation for the National Oil and Hazardous Substances Pollution Contingency Plan. It is the set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

Record of Decision (ROD): legal record signed by the US Army and Ohio EPA. It describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

Remedial Action Objective (RAO): these specific goals, developed from the evaluation of ARARs, are to be protective of human health and the environment.

Remedial investigation (RI): CERCLA investigation that involves sampling environmental media, such as air, soil, and water, to determine the nature and extent of contamination and to calculate human health and environmental risks that result from the contamination.

Responsiveness summary: a section of the ROD where the US Army documents and responds to written and oral comments received from the public about the Proposed Plan.

Risk assessment: an evaluation that determines potential harmful effects, or lack thereof, posed to human health and the

environment due to exposure to chemicals found at a CERCLA site.

Weight-of-evidence: a procedure for identifying, organizing, and evaluating or weighing various types, quantities, and qualities of information about natural resources, ecological risk from chemicals, and likely consequences of any remediation on those plants, animals, and ecological systems.

REFERENCES

Ohio EPA 2004. *Director's Final Findings and Orders in the matter of US Army, Ravenna Army Ammunition Plant.* June.

USACE (U. S. Army Corps of Engineers) 1998. *Phase I Remedial Investigation Report for the Phase I Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio, DACA-62-94-D-0029, Delivery Order Nos. 0010 and 0022, Final, February.*

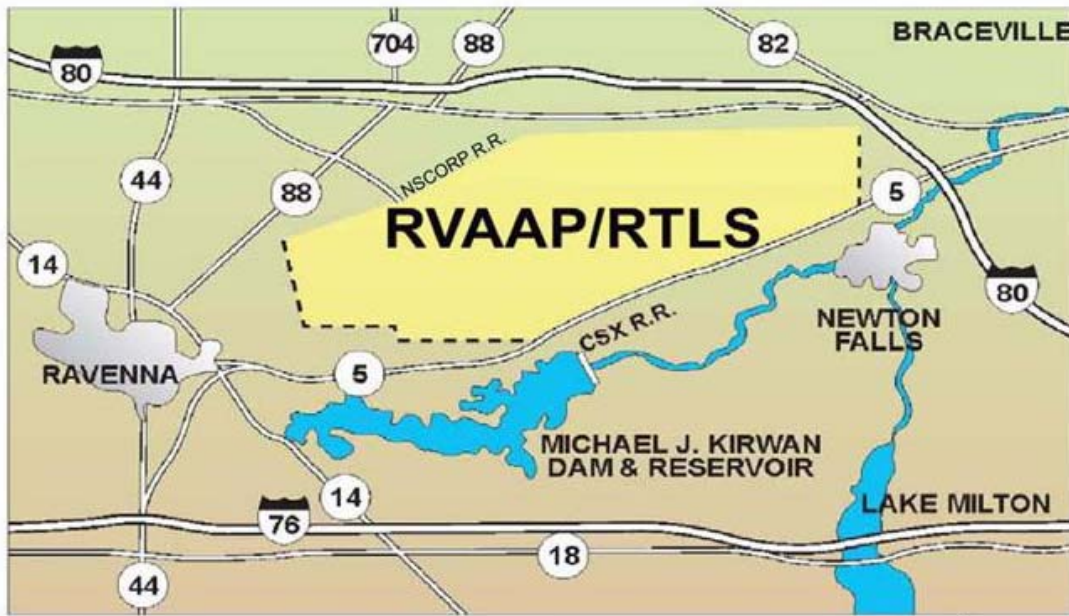
USACE 2001. *Phase I Remedial Investigation Report for the Erie Burning Grounds at the Ravenna Army Ammunitions Plant, Ravenna, Ohio, DACA62-94-D-0029, Delivery Order 0072, Final, December.*

USACE 2005a. *Phase II Remedial Investigation Report for the Erie Burning Grounds (RVAAP-02) at the Ravenna Army Ammunition Plant, Ravenna, Ohio, GS-10F-0076J, Delivery Order W912QR-05-F-0033, Final, September.*

USACE 2005b. *Facility-wide Biological and Water Quality Study 2003, Ravenna Army Ammunition Plant.* Part 1 -- Streams and Part 2 -- Ponds. USACE, Louisville District, with the Ohio Environmental Protection Agency, Division of Surface Water.

USACE 2006. *Addendum to the Phase II Remedial Investigation Report for Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio, GS-10F-0076J, Delivery Order W912QR-05-F-0033, Final, September.*

FIGURES



LOCATION MAP



(NOT TO SCALE)

Figure 1. General Location and Orientation of RVAAP/RTLS

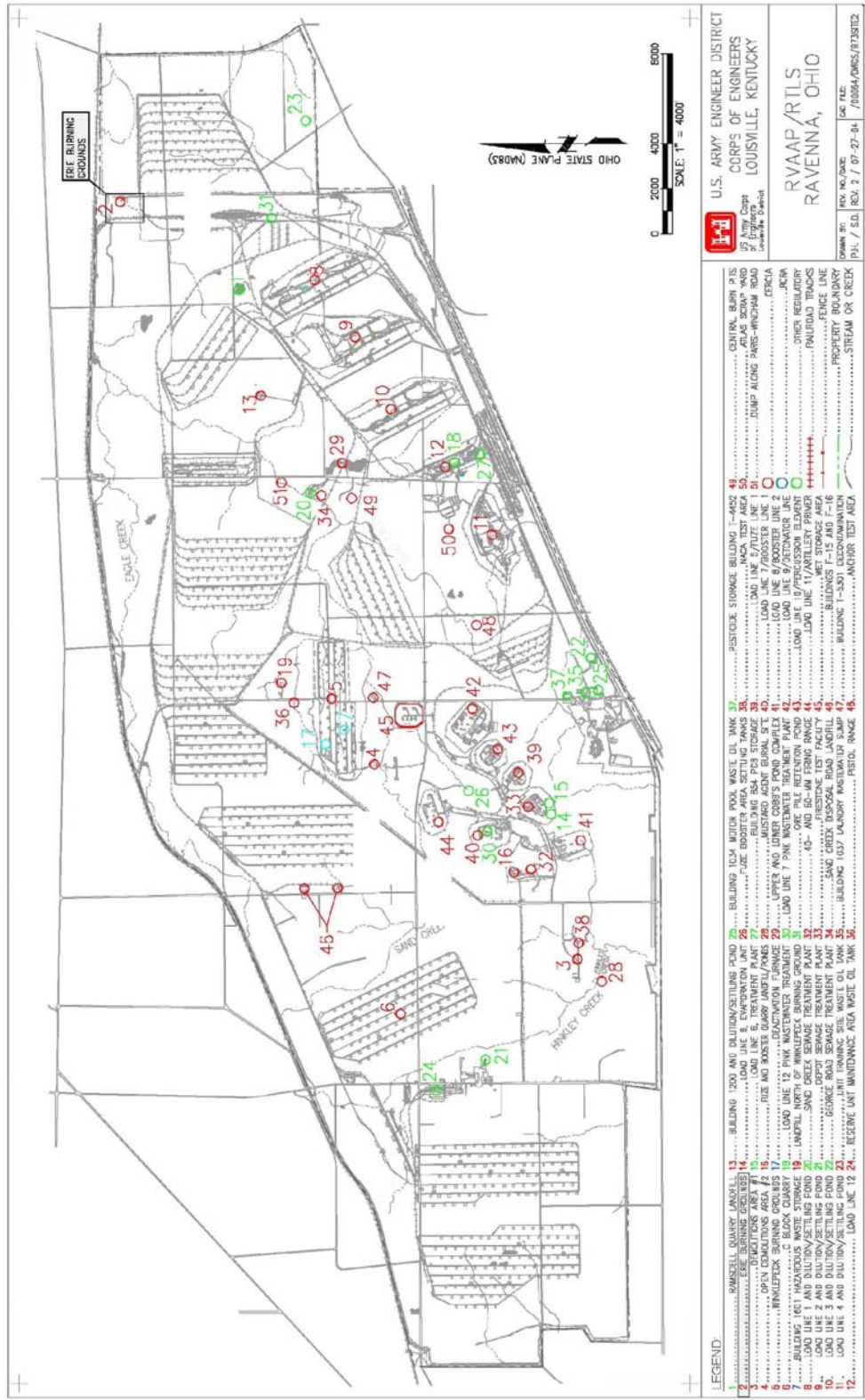


Figure 2. RVAAP/RTLS Installation Map

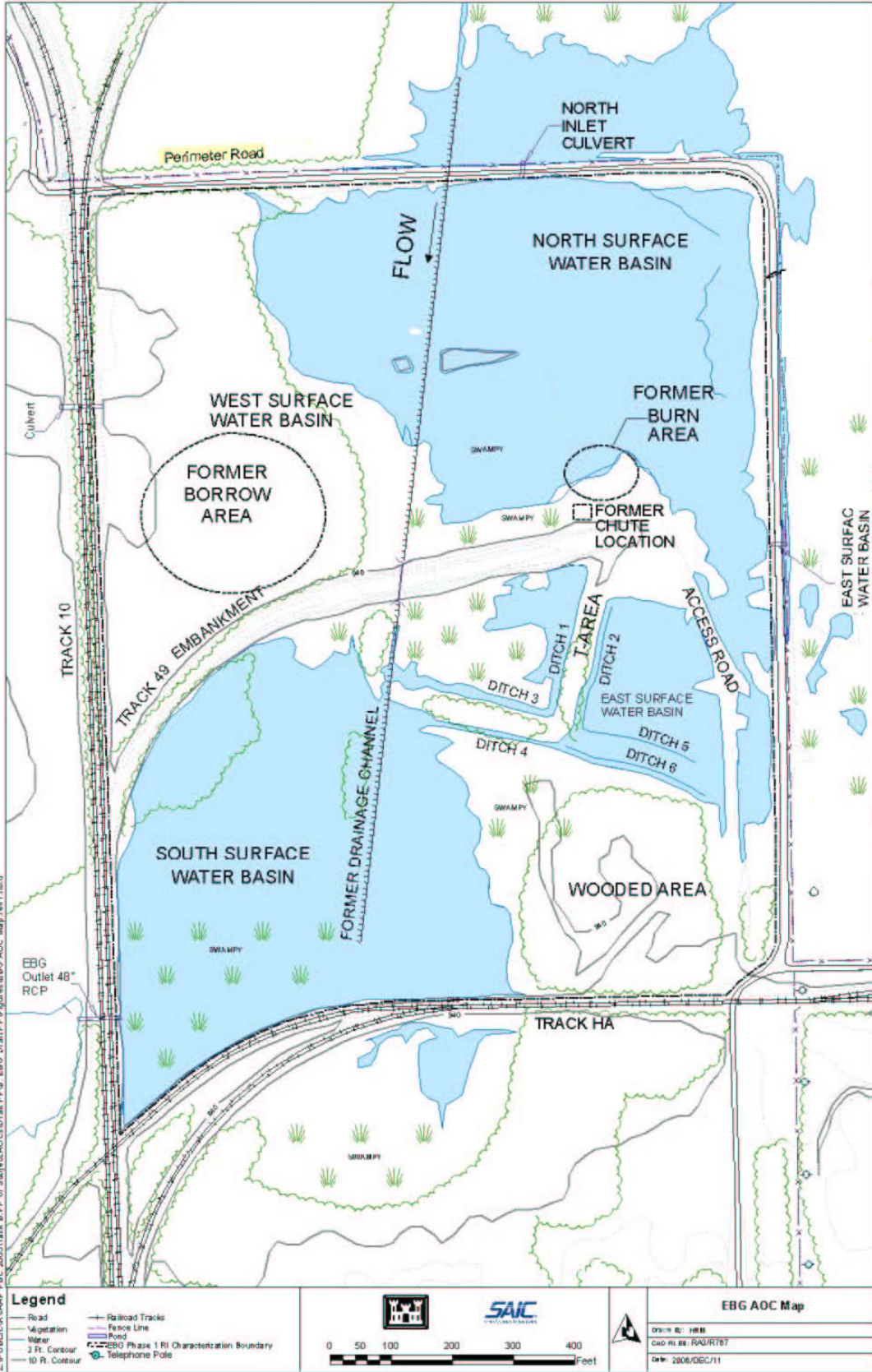


Figure 3. Erie Burning Grounds Area of Concern Map