

Final

**Action Memorandum
for Central Burn Pits (RVAAP-49)**

**Ravenna Army Ammunition Plant
Ravenna, Ohio**

June 2007

**Contract No. GS-10F-0076J
Delivery Order No. W912QR-05-F-0033**

Prepared for:



**US Army Corps
of Engineers®**

Louisville District

Prepared by:



Science Applications International Corporation

8866 Commons Boulevard, Suite 201

Twinsburg, Ohio 44087

FINAL ACTION MEMORANDUM

**CENTRAL BURN PITS (RVAAP-49)
RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO**

APPROVAL

This Action Memorandum presents the selected removal action to eliminate potential dispersal of contaminants in Piles M and N at the Central Burn Pits at the Ravenna Army Ammunition Plant, Ravenna, Ohio. The US Army is the lead agency under the Defense Environmental Restoration Program (DERP) at the Ravenna Army Ammunition Plant Formerly Used Defense Site, and developed this Action Memorandum consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, and consistent with the National Oil and Hazardous Substances Contingency Plan. This decision document will be incorporated into the larger Administrative Record file for the Ravenna Army Ammunition Plant, which is available for public view at 8451 State Route 5, Ravenna, Ohio 44266-9297. This document, presenting a selected removal action with a present worth cost estimate of \$91,366, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, Subject: Policies for Staffing and Approving Decision Documents (DDs), and to Engineer Regulation 200-3-1, Formerly Used Defense Sites (FUDS) Program Policy.

APPROVED:

Irving Venger
Acting Facility Manager
Ravenna Army Ammunition Plant

Date

TABLE OF CONTENTS

LIST OF FIGURES.....	iii
LIST OF ATTACHMENTS.....	iii
LIST OF ACRONYMS	iii
1.0 INTRODUCTION	1
1.1 Facility Description	1
1.2 Central Burn Pits Description.....	2
1.3 Anticipated Future Land Use at CBP	3
2.0 STATEMENT OF BASIS AND PURPOSE.....	3
3.0 PROJECT JUSTIFICATION.....	Error! Bookmark not defined.
4.0 ALTERNATIVES CONSIDERED	4
4.1 No Action	4
4.2 Excavation of Waste Piles with Off-Site Treatment and Disposal.....	4
5.0 COMMUNITY ACCEPTANCE	4
6.0 COORDINATION SUMMARY	5
7.0 SELECTION CRITERIA	5
7.1 Effectiveness	5
7.2 Implementability	6
7.3 Cost.....	6
7.4 Compliance with ARARs.....	Error! Bookmark not defined.
7.5 Regulatory and State Acceptance.....	6
7.6 Community Participation	7
8.0 DESCRIPTION OF SELECTED REMEDY	7
8.1 Proposed Action Description.....	7
8.1.1 Removal Action Work Plan.....	7
8.1.2 Excavation, Transportation, and Disposal.....	7
8.1.3 Confirmatory Sampling	8
8.1.4 Restoration.....	8
8.1.5 Cost.....	8
8.2 Coordination of Response Action	9
9.0 TRADE-OFF ANALYSIS.....	9
10.0 DOCUMENT OF SIGNIFICANT CHANGES.....	9
10.1 Impact if Action Not Taken	9
10.2 Responsiveness Summary.....	9
11.0 REFERENCES	10

LIST OF FIGURES

Figure 1. General Location and Orientation of RTLS/RVAAP	12
Figure 2. RTLS/RVAAP Location Map.....	13
Figure 3. Central Burn Pits Location Map	14

LIST OF ATTACHMENTS

Attachment A. Public Review Comments	
Attachment B. Applicable or Relevant and Appropriate Requirements for the Central Burn Pits, Ravenna Army Ammunition Plant	

LIST OF ACRONYMS

AOC	Area of Concern
ARAR	Applicable and Relevant or Appropriate Requirements
CBP	Central Burn Pits
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
<i>CFR</i>	<i>Code of Federal Regulations</i>
DD	Decision Document
DERP	Defense Environmental Restoration Program
EE/CA	Engineering Evaluation/Cost Analysis
FUDS	Formerly Used Defense Sites
IRP	Installation Restoration Program
MI	Multi-increment
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NCP	National Contingency Plan
NGB	National Guard Bureau
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
RCRA	Resource Conservation and Recovery Act
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time-critical Removal Action
TERP	Transportation and Emergency Response Plan
USACE	United States Army Corps of Engineers
US Army	U. S. Department of Army

***ACTION MEMORANDUM
CENTRAL BURN PITS
RAVENNA ARMY AMMUNITION PLANT
PORTAGE COUNTY, OHIO***

1.0 INTRODUCTION

1.1 FACILITY DESCRIPTION

When the Ravenna Army Ammunition Plant (RVAAP) Installation Restoration Program (IRP) began in 1989, the 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 21,683.289 acres. As of February 2006, a total of 20,403 acres of the former 21,683-acre 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 OHARNG Ravenna Training and Logistics Site (RTLS).

The RTLS is in northeastern Ohio within Portage and Trumbull Counties, 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. The RVAAP portions of the property are solely located within Portage County. The RTLS/RVAAP is a parcel of property 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 (Figures 1 and 2). The RTLS 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.

When the RVAAP was operational, the RTLS did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP. Therefore, references to RVAAP in this document are considered to be inclusive of the historical extent of RVAAP, which is inclusive of the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated.

Industrial operations at the former RVAAP consisted of 12 munitions-assembly facilities referred to as "load lines." Operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Other load lines were used to manufacture fuzes, primers, and boosters. From 1946 to 1949, one facility (Load Line 12) was used to produce ammonium nitrate for explosives and fertilizers. Demilitarization activities were also conducted at RVAAP that included disassembly of hot water or steam melt extraction of

explosive compounds from varied-sized military projectiles. Periodic demilitarization of various munitions continued through 1992.

Other areas at RVAAP were used for the burning, demolition, and testing of munitions. These burning and demolition grounds consist of large parcels of open space or abandoned quarries. Several landfills also exist at RVAAP. Principal contaminants include explosives, propellants, metals, and semivolatile organics.

1.2 CENTRAL BURN PITS DESCRIPTION

Central Burn Pits (CBP) is located in the east-central portion of RVAAP at the intersection of Paris-Windham Road and Lumber Yard Road and covers approximately 20 acres (Figure 3). CBP has been transferred to the NBG and is currently licensed to OHARNG for future military training use. The Area of Concern (AOC) is bordered by old railroad beds to the north (Track 39) and south (Track 33), and Sand Creek to the west-northwest. The AOC was originally used as a lumber and building materials storage area, and later used for open burning of non-explosive wastes, electrical components, wooden boxes, and scrap and the disposal of other non-hazardous waste material.

The topography across the majority of CBP is relatively flat due to historical grading and fill activities. Undisturbed topography is characterized by gently undulating contours. Sand Creek forms the western AOC boundary. Elevations vary from 292 to 298 meters (960 to 980 ft).

Soils within CBP consist primarily of Mahoning silt loams, Trumbull silt loams, and Ellsworth silt loams. The Ellsworth silt loam is found near the southwestern boundary of the AOC. The Trumbull silt loam is found in the eastern portion of the AOC. The Mahoning silt loam covers the remainder of CBP (western and extreme eastern boundary). Subsurface lithology at CBP consists mostly of clay to sand-rich silt tills with interbedded sands scattered throughout. These deposits are generally firm, moderately plastic, and tend to hold water where encountered.

Features at CBP include debris piles and berms in the central area and burn areas in the eastern area. These debris piles and berms are placed materials, dumped over a period of time from other areas of RVAAP, and not conventional environmental media. Visual observations of the debris piles and berms show they consist of primarily of gravel and excess fill dirt. Some of the piles and berms contain minor miscellaneous general construction debris (scrap metal, aluminum door frames, glass).

The debris piles and berms were sampled in accordance with the *Supplemental Phase II Remedial Investigation of Central Burn Pits, Fuze and Booster Quarry Landfill/Ponds, and Open Demolition Area #2* [United States Army Corps of Engineers (USACE) 2005]. Debris Piles M and N (Figure 3), which appear to be burning residues based on visual observations, exhibited higher levels of inorganic contaminants than the surrounding soil. Pile M (approximately 63

cubic yards in volume) exceeded the maximum concentration of lead for toxicity characteristics. Pile N (approximately 26 cubic yards in volume) exhibits higher concentrations of hexavalent chromium than the surrounding soil.

1.3 ANTICIPATED FUTURE LAND USE AT THE CENTRAL BURN PITS

OHARNG has established future land use at the CBP area as Dismounted Training, No Digging based on anticipated training, mission, and utilization of the RTLS (USACE 2005). Future land use will also include the development of small arms ranges. These anticipated future land uses form the basis for identifying and evaluating alternatives in the Engineering Evaluation and Cost Analysis (EE/CA) (USACE 2007). A removal action for Piles M and N will achieve the cleanup goals for lead and hexavalent chromium as defined in the EE/CA and established for OHARNG land use at CBP.

The CBP is not included as a Military Munitions Response Program (MMRP) Munitions Response Site (MRS) at RVAAP based on available historical and operational information; therefore, no removal actions or land use controls are currently planned with respect munitions and explosives of concern (MEC).

2.0 STATEMENT OF BASIS AND PURPOSE

The U. S. Department of Army (US Army) is the lead agency and has chosen the selected remedy for Piles M and N at CBP in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The removal of these piles will be performed as a non-time-critical removal action (non-TCRA). This decision is based on information contained in the Administrative Record file for CBP.

The Ohio Environmental Protection Agency (Ohio EPA), the lead regulatory agency, approved the Final Engineering Evaluation/Cost Analysis for the Central Burn Pits at the Ravenna Army Ammunition Plant (USACE 2007). The EE/CA evaluated two remedies and recommended Alternative 2, Excavation of Waste Piles with Off-site Treatment and Disposal. Ohio EPA concurs with the above recommendation. Excavation and offsite treatment and disposal Piles M and N at CBP satisfies the requirements of the Ohio EPA Director's Final Findings and Orders, dated June 10, 2004 (Ohio EPA 2004).

3.0 PROJECT JUSTIFICATION

The results of the Supplemental Phase II Remedial Investigation (USACE 2005) reveal that Pile M has a lead multi-increment (MI) concentration of 8,560 mg/kg and also a lead toxicity characteristic leaching procedure (TCLP) result of 15.4 mg/L. This TCLP result exceeds the

maximum concentration of lead (5.0 mg/L) for toxicity characteristics and the debris pile material potentially classifies as a characteristically hazardous waste. Also, the MI sample for Pile N had a detected value of 25 mg/kg of hexavalent chromium, which exceeds the National Guard Trainee risk-based cleanup goal for soil (16 mg/kg). The piles need to be managed and removed to prevent the contaminants from dispersing into the environment.

4.0 ALTERNATIVES CONSIDERED

The objective of the approved action is to reduce the potential hazards posed to the environment by the inorganic contaminants contained in Piles M and N. Based on AOC conditions, historical information, and environmental studies, two alternatives were defined and assessed using selected criteria to determine the recommended response action. The two alternatives are listed below.

4.1 ALTERNATIVE 1 - NO ACTION

This alternative is required under the National Contingency Plan as a no action baseline against which other alternatives are compared. Under this alternative, Piles M and N at CBP would remain in place with no treatment. Cleanup goals would not be met. The No Action Alternative is not considered to be an acceptable alternative because it would not provide for the overall protection of human health and the environment.

4.2 ALTERNATIVE 2 - EXCAVATION OF WASTE PILES WITH OFF-SITE TREATMENT AND DISPOSAL

Under this alternative, the contaminated soils in Piles M and N would be removed from the RVAAP facility, transported to a disposal facility, treated by the disposal facility as required to reduce or immobilize contaminants to meet criteria for Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions, and appropriately disposed. The removal areas would undergo confirmation sampling to ensure cleanup goals for lead (400 mg/kg) in Pile M and hexavalent chromium (16 mg/kg) in Pile N are achieved. The removal areas will be restored (re-graded, backfilled, and seeded) once these cleanup goals are achieved. The area would not require any long-term monitoring with respect to the removal of Piles M and N.

5.0 COMMUNITY PARTICIPATION

All public involvement requirements for the removal of Piles M and N at CBP have been met and updates to the public on activities will continue, as appropriate, throughout this non-time critical removal action process. The public notification period began on March 7, 2007 for this action and was completed on April 5, 2007. Paid advertisements providing notice of availability for public review of the EE/CA were published in the Youngstown Vindicator, Newton Falls

Villager, Ravenna Record Courier, Warren Tribune Chronicle, and the Akron Beacon Journal. The EE/CA is available for review at RVAAP information repositories in local public libraries in Newton Falls and Ravenna, Ohio. The EE/CA was also available for review through the RVAAP Installation Restoration Program public website and the administrative record, located at Building 1037 at RVAAP. The public was encouraged to review and provide comments on the EE/CA for the public record.

6.0 COORDINATION SUMMARY

This project has been coordinated with the US Army and Ohio EPA. Ohio EPA is the lead regulatory agency and the EE/CA was prepared in consultation with Ohio EPA. Ohio EPA has provided input during the ongoing investigation and report development process to ensure the action ultimately selected meets the needs of the State of Ohio and fulfills the requirements of the Director's Final Findings and Orders (Ohio EPA 2004).

7.0 SELECTION CRITERIA

The criteria used to evaluate the alternatives in Section 4.0 included effectiveness in overall protection of human health and the environment, implementability, and cost as described below. These criteria are discussed in detail in Section 4.0 of the EE/CA.

7.1 OVERALL EFFECTIVENESS IN PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Alternative 1 (No Action Alternative) would not provide for overall protection of human health and the environment. Cleanup goals would not be achieved and this alternative provides for no long-term effectiveness and permanence. There would be no reduction in toxicity, mobility, or volume. The potential for dispersal of contaminants from the piles to surrounding soil would remain.

Alternative 2 (Excavation of Waste Piles with Off-Site Treatment and Disposal) eliminate the potential dispersal of contaminants to surrounding soils once the piles are excavated. The mobility and toxicity of the contaminants through excavation and off-site treatment at a disposal facility. The dispersal of contaminants from the piles to surrounding soil would be eliminated once the piles are excavated. Cleanup goals for lead and hexavalent chromium would be achieved.

7.2 IMPLEMENTABILITY

Alternative 1 (No Action Alternative) requires no services or materials; therefore, this alternative is implementable.

Alternative 2 (Excavation of Waste Piles with Off-Site Treatment and Disposal) is implementable using available field practices and technology. Coordination with OHARNG would be required.

7.3 COST

The present cost to complete Alternative 1 (No Action Alternative) is zero. There are no capital costs associated with this alternative.

The present value cost to complete Alternative 2 (Excavation of Waste Piles with Off-Site Treatment and Disposal) is approximately \$91,366.

7.4 COMPLIANCE WITH APPLICABLE AND RELEVANT OR APPROPRIATE REQUIREMENTS

In accordance with the National Contingency Plan (NCP) [40 *Code of Federal Regulations (CFR)* 300.415(j)], on-site removal actions conducted under CERCLA are required to meet applicable and relevant or appropriate requirements (ARARs) “to the extent practicable, considering the exigencies of the situation.” Shipments, handling, and containerization of contaminated materials in Piles M and N will comply with federal, state, and local rules, laws and regulations. In addition to the identified ARARs for the selected action, the US Army will comply with requirements applicable to off-site actions, such as Resource Conservation and Recovery Act (RCRA) hazardous waste transportation requirements under Ohio Administrative Code (OAC) 3745-52-20 to OAC 3745-52-33, and offsite treatment prior to land disposal as required by the RCRA land disposal restrictions under OAC 3745-270, including alternative land disposal restriction treatment standards for contaminated soil under OAC 3745-270-49. The ARARs for the Piles M and N removal action are presented in Attachment B. The ARARs will be specified for use at CBP in the Removal Action Work Plan.

Alternative 1, as the No Action Alternative, does not require any removal actions, compliance with ARARs in Attachment B is not applicable. However, any removal actions taken under Alternative 2 will comply with these specified ARARs.

7.5 REGULATORY AND STATE ACCEPTANCE

Ohio EPA is the lead regulatory agency and the EE/CA was prepared in consultation with Ohio EPA. Alternative 1 (No Action) is not acceptable because the potential for contaminant dispersal from Piles M and N would not be remedied. Alternative 2 is acceptable because contaminated

materials would be removed from the AOC, treated as required to reduce mobility and toxicity, and properly disposed.

7.6 COMMUNITY ACCEPTANCE

Community participation in the remedy process included a 30-day public comment period from March 7, 2007 through April 5, 2007. The Responsiveness Summary, presented in Section 10.2 of this Action Memorandum, includes written comments received from the public and US Army responses to these comments (Attachment A). All comments received on the proposed remedy were considered during the development of this Action Memorandum.

8.0 DESCRIPTION OF SELECTED REMEDY

The selected remedy for Piles M and N at RVAAP is Alternative 2 - Excavation with Off-Site Treatment and Disposal. The alternative is selected based on results of the evaluation of options in the EE/CA where each alternative was examined using the specified criteria. Additionally, this remedy is selected based on consideration of public input on the EE/CA during the public notification and comment period. The following sections provide a description of the excavation and off-site treatment and disposal of Piles M and N.

8.1 PROPOSED ACTION DESCRIPTION

8.1.1 Removal Action Work Plan

A Removal Action Work Plan will be developed to detail preparation activities, the extent of the excavation, implementation and sequence of construction and treatment activities, decontamination, and segregation, transportation, and disposal of various waste streams. The Work Plan will be reviewed and approved by the Ohio EPA, OHARNG, and Army prior to implementation.

8.1.2 Excavation, Transportation, and Disposal

Pile removal will be accomplished using standard construction equipment such as excavators, bulldozers, front-end loaders, and scrapers. Movement of pile materials will be performed using dump trucks and conventional construction equipment. Erosion control materials such as silt fences and straw bales will be installed to minimize erosion. Excavation will take place in stages to limit impacts to current activities. Waste pile materials will be hauled to a disposal facility by trucks. Transportation activities will be performed in accordance with a site-specific transportation and emergency response plan (TERP) developed in the Removal Action Work Plan. Waste pile materials will be treated and disposed as required to attain RCRA land disposal criteria at an off-site facility licensed and permitted to accept the characterized waste stream.

8.1.3 Confirmation Sampling

Confirmation sampling will be conducted after excavation of each area. The post-excavation sampling will verify attainment of cleanup goals for lead (400 mg/kg) in Pile M and hexavalent chromium (16 mg/kg) in Pile N in the soil underlying the respective debris piles. MI samples will be collected from the base of the excavation and each sidewall, if applicable, to confirm if cleanup goals have been attained. If confirmation samples indicate the need for additional soil removal to attain cleanup goals, the excavation will be incrementally expanded and confirmation sampling repeated.

8.1.4 Restoration

Restoration will take place after confirmation sampling is complete. Excavated areas should not need to be backfilled with approved soil because removal of the piles only to surrounding ground surface elevation is anticipated. In the event that excavation below grade is required and fill is needed, it will be tested prior to placement to ensure compliance with acceptance criteria established in the design work plan. The excavated area will be re-vegetated using an OHARNG-approved native seed mixture and straw mulch.

8.1.5 Cost

The present value cost to complete Alternative 2 is approximately \$91,366. Costs include site work, implementation of the removal, transportation and disposal, confirmation sampling, restoration, plans and reports, overhead costs, and profit and contingency. These estimated costs are broken down in Table 1. Accumulatively, the contaminant soil excavation, disposal, and site restoration for Piles M and N will require at least 20 days to complete.

Table 1. Cost to Complete Removal Action of Piles M and N at the Central Burn Pits

Activity	Cost
Removal Action Work Plan and Reports	\$14,740
Soil Excavation, Transport, Treatment, and Disposal	\$39,618
Confirmation Sampling and Analysis	\$2,616
Restoration	\$2,203
Overhead	\$10,568
Profit and Contingency	\$21,621
<i>TOTAL</i>	<i>\$91,366</i>

8.1.6 Coordination of Response Action

Before the removal action field activities commence, the removal action planners will coordinate activities with RVAAP and OHARNG in order to minimize disruptions and/or impacts to ongoing US Army and OHARNG activities. The Removal Action Work Plan will not be implemented until Ohio EPA concurrence is met.

9.0 TRADE-OFF ANALYSIS

Excavation with off-site treatment and disposal was determined as the only acceptable response option for Piles M and N during the EE/CA process. Removal and disposal of Piles M and N will meet Cleanup goals for lead and hexavalent chromium and prevent the potential dispersal of inorganic contaminants into the environment. This response achieves overall protectiveness goals for human health and the environment.

10.0 DOCUMENT OF SIGNIFICANT CHANGES

10.1 IMPACT IF ACTION NOT TAKEN

Future land use of CBP includes dismounted training, which includes activities and vehicle traffic that could physically disperse contaminants should trainees inadvertently disturb the materials. No action upon Piles M and N can potentially cause vertical or horizontal dispersion of contaminants affecting local soils, groundwater, and surface water.

10.2 RESPONSIVENESS SUMMARY

A notice of document availability for the Final Engineering Evaluation and Cost Analysis for the Central Burn Pits (USACE 2007) was issued to various media outlets (i.e., newspapers, television stations, and radio stations) on March 7, 2007, initiating the 30-day public comment period ending on April 5, 2007. Written comments were received during the public comment period. A summary of the written comments and responses from the US Army are included in Attachment A of this Action Memorandum.

11.0 REFERENCES

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

United States Army Corps of Engineers (USACE) 2005. *Supplemental Phase II Remedial Investigation of Central Burn Pits, Fuze and Booster Quarry Landfill/Ponds, and Open Demolition Area #2 at Ravenna Army Ammunition Plant in Ravenna, Ohio.* June 2005.

USACE 2007. *Final Engineering Evaluation/Cost Analysis for the Central Burn Pits.* January 2007.

FIGURES

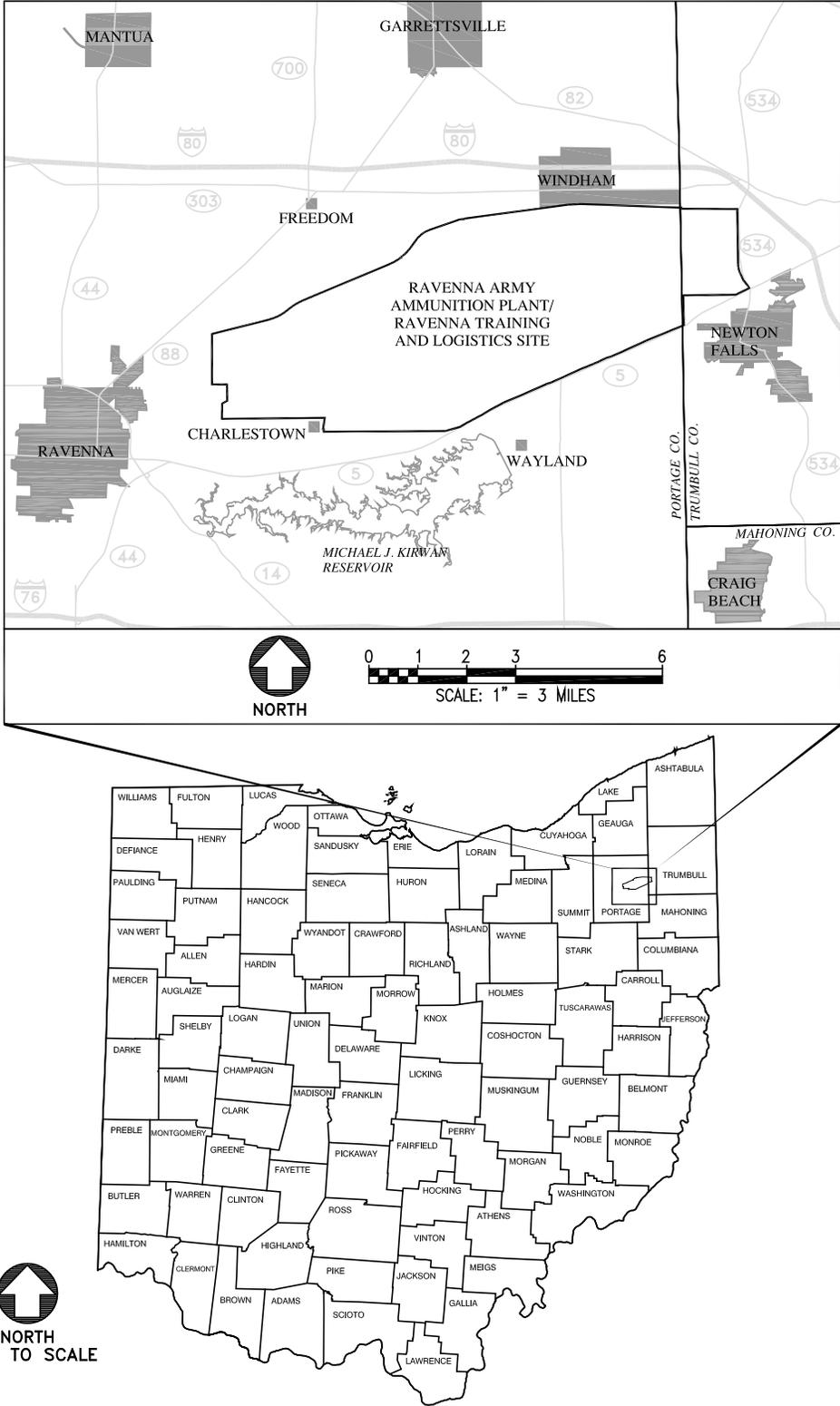
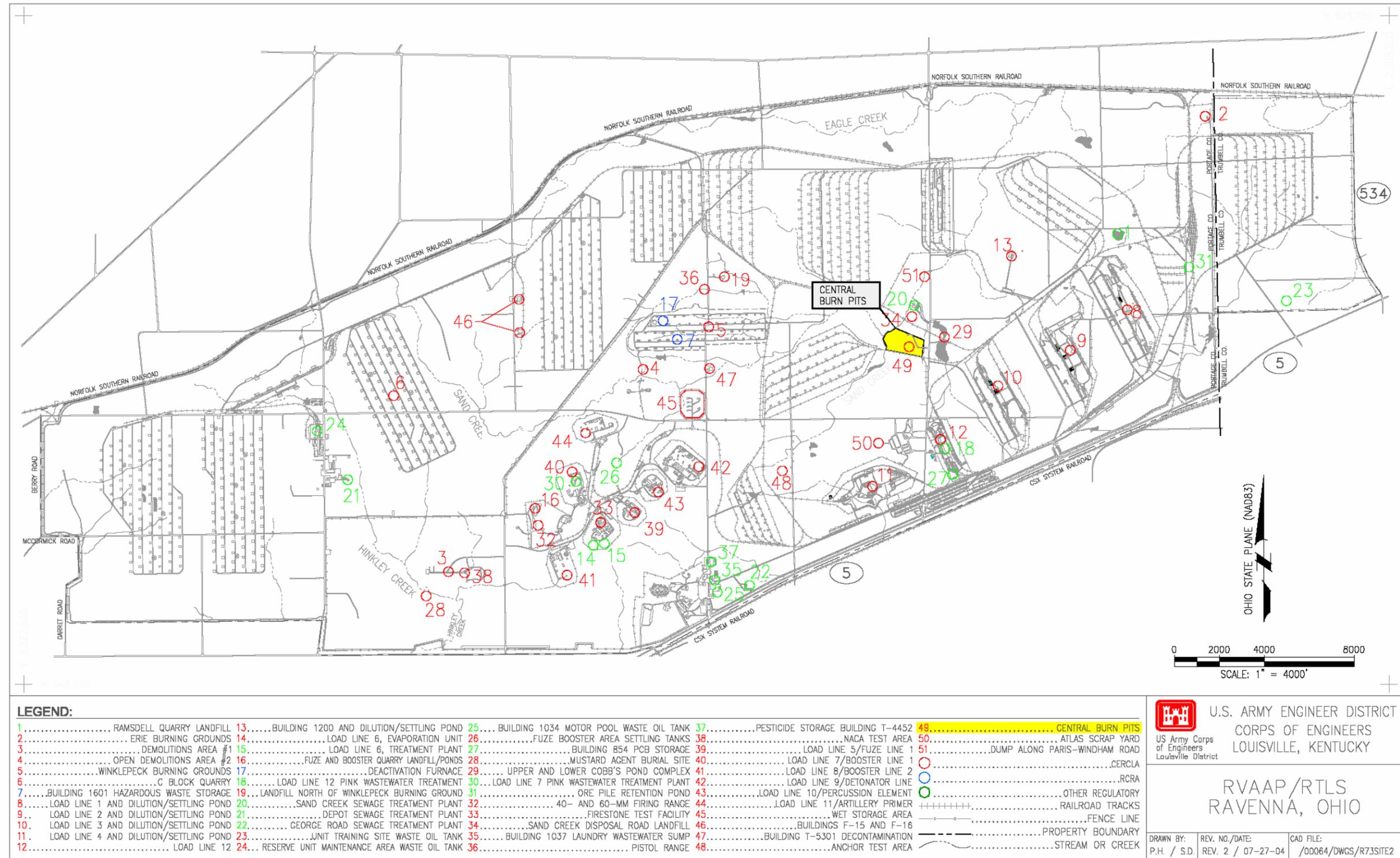


Figure 1. General Location and Orientation of RTLS/RVAAP



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Figure 2. RTLS/RVAAP Location Map

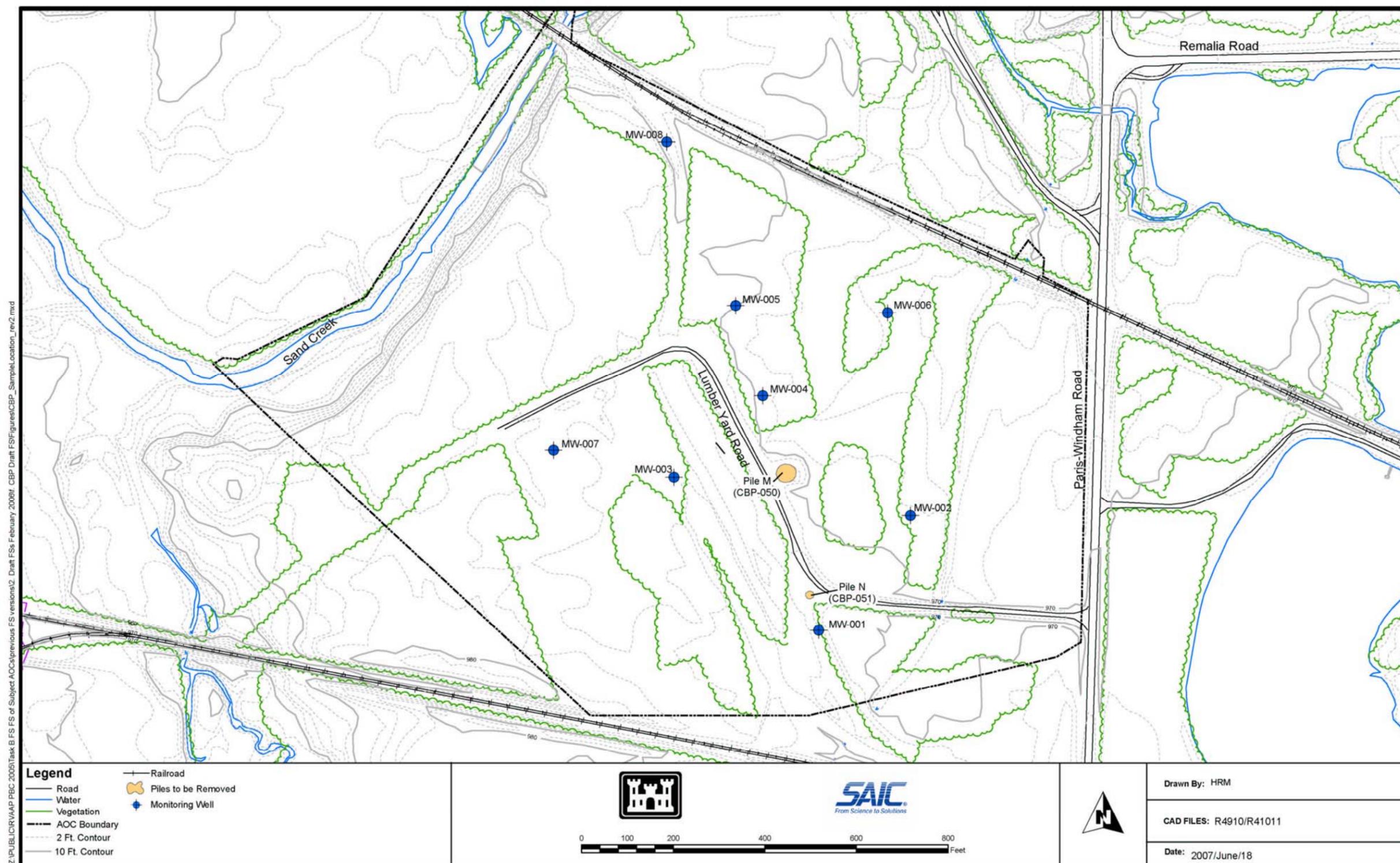


Figure 3. Central Burn Pits Location Map

**ATTACHMENT A
PUBLIC REVIEW COMMENTS**

Comments received for the *Final Engineering Evaluation and Cost Analysis for the Central Burn Pits* (USACE 2007):

Bernice Smith from Shalersville, Ohio

Ravenna Record Courier Letter to the Editor, March 31, 2007

The Ravenna Arsenal wants to take 700 truckloads of contaminated soil to another area and contaminate it. Why not take that money and plant cattails (or another plant that will decontaminate) in the swamp area. Plant corn and sugar beets in any area that can be planted and use these crops to make ethanol. Grind up the corn stalks and put back into the soil.

What have other arsenals done? Lordstown Arsenal became a car plant. There were five or more arsenals in this country during the war time. What did they do?

The water flows north to south in some areas of the arsenal and would end up in West Branch and yet we fish, swim and camp there. I have not heard of deformed kids or birds or animals, no have I heard of any particular disease rampant because of the arsenal.

Let's clean up our own mess and keep it here and not contaminate another area. Spending \$91,000.00 to haul 700 loads out and 700 back in is ridiculous.

Most, if not all, of the load lines are on the south side of the arsenal. Ravenna Arsenal was the largest in the US.

At one time, Morgan Adhesives wanted to build a huge international airport in this same area. However, local people did not want a huge airport in our rural area so the airport deal fell through.

Please respond to articles on the arsenal written in the RC with a request that we comment on this. Address correspondence to: Irv Venger, RVAAP, Acting Facility Manager, Bldg. 1037, 8451 State Route 5, Ravenna, Ohio 44266-9297.

April 15 is the last day they will accept comments. Ravenna's Reed Memorial Library has information on the arsenal.

Harold Klotze from Ravenna, Ohio

Letter to the Ravenna Army Ammunition Plant

I fully agree with Bernice Smith's letter to the Editor of the Record Courier dated 3/30/07, regarding the Ravenna Arsenal.

I would feel much better to plant cattails or any decontaminating plan such as corn and sugar beets to make ethanol. Then let nature take it's course.

This land has been idle for many years. Why waste the cost of trucking and dumping. Obviously these decisions were not made by a successful farmer.

Response from the US Army:

For clarification, the Final Engineering Evaluation and Cost Analysis for the Central Burn Pits (USACE 2007) currently estimates 134 cubic yards of material (ex-situ) in two debris piles will be removed from CBP. This volume includes the estimated volume of the debris piles, over-excavation of some additional surrounding soil and constructability to meet cleanup goals, and swelling of the material that occurs during excavation. Removal of this amount of soil will require approximately 15 truckloads, rather than 700 truckloads.

The EE/CA estimates a cost of \$91,000 to remove the debris piles. This cost includes the development of a removal design, transportation and disposal of the debris piles, actions and coordination to ensure the removal effort is done safely and in accordance with all quality assurance plans, confirmation sampling to ensure the contaminants are removed from the site, and restoration of the area.

The chemicals of concern for are lead and hexavalent chromium. Using planted crops for remediation (phytoremediation) is not applicable for these small debris piles because phytoremediation requires a large surface area. Also, these chemicals can be toxic to plants and the chemicals may be introduced into the food chain through bioaccumulation (ingestion of crops by wildlife). Lastly, the debris piles are not in a wetland area and vegetation, such as cattails could not be used for remediation. The anticipated future land use at CBP includes training by the Ohio Army National Guard. Considering these items, the Army recommends removing the piles to eliminate the possibility for spreading of contaminants and exposure of any future training personnel.

ATTACHMENT B
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THE
CENTRAL BURN PITS
RAVENNA ARMY AMMUNITION PLANT

Applicable or Relevant and Appropriate Requirements for Removal of Piles M and N, Central Burn Pits

Action	Requirements	Prerequisite	Citation
General Construction Standards – Site Preparation and Excavation			
Activities Resulting in the Emission of Particulate Matter, Dusts, Fumes, Gas, Mists, Smoke, etc. from a Hazardous Waste Facility	No owner/operator of a hazardous waste facility shall cause or allow the emission of any particulate matter, dusts, gas, fumes, mists, smoke, vapor, or odorous substances that interfere with the enjoyment of life or property by persons living or working in the vicinity of the facility. Any such action is considered a public nuisance.	Applicable to soil excavation activities at CBP	ORC 3734.02(I) OAC 3745-15-07(A)
Activities Causing Fugitive Dust Emissions	<p>Persons engaged in construction activities shall take reasonable precautions to prevent particulate matter from becoming airborne; reasonable precautions include, but are not limited to, the following:</p> <ul style="list-style-type: none"> ▪ the use of water or chemicals for control of dust during construction operations or clearing of land; and ▪ the application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces, which can create airborne dusts. <p>No person shall cause, or allow, fugitive dust to be emitted in such a manner that visible emissions are produced beyond the property line.</p>	Applicable to pre-construction clearing activities and excavation activities.	OAC 3745-17-08(B)

Applicable or Relevant and Appropriate Requirements for Removal of Piles M and N, Central Burn Pits

Removal of Contaminated Soils			
<i>Waste Generation, Characterization, Segregation, and Storage-Excavated Soils and Buried Wastes, Sludge, Surface Features, Debris, and Secondary Waste</i>			
Generation and Characterization of Solid Waste (all primary and secondary wastes)	<p>The generator must determine if the material is a solid waste, as defined in 40 <i>CFR</i> 261.2 and 40 <i>CFR</i> 261.4(a). If the material is a solid waste, the generator must determine if the solid waste is a hazardous waste by:</p> <ul style="list-style-type: none"> ▪ determining if the waste is listed under 40 <i>CFR</i> Part 261; or ▪ determining if the waste exhibits characteristics by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used; and ▪ determining if the waste is excluded under 40 <i>CFR</i> Parts 261, 262, 266, 268, and 273. 	<p>Applicable to generation of a solid waste as defined in 40 <i>CFR</i> 261.2 and that is not excluded under 40 <i>CFR</i> 261.4(a).</p> <p>Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation.</p> <p>Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Applicable to generation of decontamination wastewater.</p>	<p>40 <i>CFR</i> 262.11(a)(b)(c) OAC 3745-52-11(A)(B)(C)(D)</p> <p>40 <i>CFR</i> 262.11(a)(b)(c) OAC 3745-52-11(A)(B)(C)(D) 40 <i>CFR</i> 262.II(a)(b)(c) OAC 3745-52-11(A)(B)(C)(D)</p>
	<p>The generator must determine if the waste is restricted from land disposal under 40 <i>CFR</i> 268 <i>et seq.</i> by testing in accordance with prescribed methods or use of generator knowledge of waste.</p>	<p>Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Applicable to generation of decontamination wastewater.</p>	<p>40 <i>CFR</i> 268.7 OAC 3745-270-07</p>
	<p>The generator must determine each USEPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 <i>CFR</i> 268.40, Subpart D.</p>	<p>Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Applicable to generation of decontamination wastewater.</p>	<p>40 <i>CFR</i> 268.9(a) OAC 3745-270-07 OAC 3745-270-09</p>

Applicable or Relevant and Appropriate Requirements for Removal of Piles M and N, Central Burn Pits

	<p>The generator must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the waste.</p>	<p>Applicable to the generation and characterization of RCRA characteristic hazardous waste (except D00I non-wastewaters treated by combustion, recovery of organics, or polymerization. See 268.42, Table I) and to hazardous-contaminated soils for their subsequent storage, treatment, or disposal.</p>	<p>40 CFR 268.9(a) OAC 3745-270-09</p>
<p>Accumulation of Hazardous Debris from Excavation and Screening. It is Assumed that any Debris Resulting from Excavation and Screening will be Accumulated for < 90 Days</p>	<p>A generator may accumulate for up to 90 days or conduct treatment of hazardous wastes in containers without an Ohio EPA permit. Generators that accumulate for 90 days or conduct on-site treatment of hazardous waste in containers must comply with the personnel training, preparedness and prevention requirements, and contingency plan requirements of 40 <i>CFR</i> 265.16; 40 <i>CFR</i> 265, Subpart C; and 40 <i>CFR</i> 265, Subpart D, respectively.</p> <p>Personal training and contingency plan requirements would appear to be administrative in nature. Arguably some of the components/goals of the contingency plan such as: (1) to minimize the hazards to human health or environment from fire, explosion or sudden release of hazardous waste or hazardous constituents, or (2) presence of an emergency coordinator on site, could be viewed as substantive. If determined to be substantive, these provisions should be cited as ARAR; however, the plans, details or implementation steps should be included in the CERCLA documentation for the site (i.e., remedial design documents).</p>	<p>Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.</p>	<p>40 CFR 262.34(a)(4) OAC 3745-52-34(A)(4) OAC 3745-66-70 to 66-77</p>

Applicable or Relevant and Appropriate Requirements for Removal of Piles M and N, Central Burn Pits

	Containers must be marked with the date upon which period of accumulation began and with the words "Hazardous Waste."	Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.	40 CFR 262.34 (a)(2)(3) OAC 3745-52-34 (A)(2)(3)
	Containers holding hazardous wastes must be kept closed except to add or remove wastes and must not be managed in a manner that would cause them to leak.	Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.	40 CFR 264.171 40 CFR 264.172 40 CFR 264.173 40 CFR 264.176 40 CFR 264.17 OAC 3745-52-34(A)(1)
	Containers of hazardous waste must be maintained in good condition and compatible with the waste stored therein. Containers holding ignitable or reactive wastes must be separated from potential ignition sources and located 50 feet from the property boundary.		

Applicable or Relevant and Appropriate Requirements for Removal of Piles M and N, Central Burn Pits

<p>Placement of hazardous contaminated soil in a staging pile</p>	<p>In 1998, USEPA created a new unit for the temporary management of remediation wastes known as the staging pile. The staging pile is an accumulation of solid, non-flowing remediation wastes that may be used for storage of those wastes for two years.</p> <p>The requirements for staging piles include the performance criteria of 40 CFR 264.554(d). These standards require that:</p> <ul style="list-style-type: none"> ▪ the staging pile must be designed to prevent or minimize releases of hazardous waste or hazardous constituents into the environment, ▪ the staging pile must be designed to minimize cross-media transfer as necessary to protect human health and the environment (by using liners, run-off/run-on controls as appropriate) <p>The staging pile requirements also contain closure requirements (separate provisions for staging piles located in previously contaminated areas and those located in previously uncontaminated areas)</p>	<p>Applicable to storage of hazardous contaminated soils in staging piles. Potentially relevant and appropriate if excavated soils are determined to not contain listed wastes or exhibit toxicity characteristic soils.</p>	<p>40 CFR 264.554 OAC 3745-57-74</p>
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ARAR = applicable and relevant or appropriate requirements
 CBP = Central Burn Pits
 CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
 CFR = Code of Federal Regulations
 OAC = Ohio Administrative Code
 Ohio EPA = Ohio Environmental Protection Agency
 ORC = Ohio Revised Code
 RCRA = Resource Conservation and Recovery Act
 USEPA = U. S. Environmental Protection Agency