Draft

Proposed Plan
for Soil, Sediment, and Surface Water
at RVAAP-51 Dump Along Paris-Windham Road

Ravenna Army Ammunition Plant
Ravenna, Ohio

Contract No. W912QR-08-D-0008
Delivery Order No. 0021

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

SAIC Engineering of Ohio
8866 Commons Boulevard
Twinsburg, Ohio 44087

June 25, 2013

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14. ABSTRACT

This Proposed Plan presents remedial alternatives and the preferred alternative for remedy of soil, sediment, and surface water within the Dump Along Paris-Windham AOC. The AOC has residual asbestos-containing material and PAH contamination beneath a placed soil cap. The preferred remedial alternative (Alternative 2: Land Use Controls) includes administrative and physical land use controls (e.g., signs) to restrict use of the site to Military Training.

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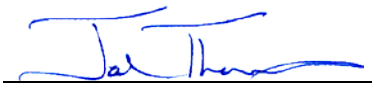
CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-51 Dump Along Paris-Windham Road at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.



6/25/13

Jed Thomas, PE
Study/Design Team Leader

Date

6/25/13

W. Kevin Jago
Independent Technical Review Team Leader

Date

Significant concerns and the explanation of the resolution are as follows:

Internal SAIC Independent Technical Review was conducted on the Preliminary Draft version of this document. Subsequent versions of this document (e.g., Draft and Final) incorporated changes based on the technical reviews of USACE, the Ohio Army National Guard, and the Ohio Environmental Protection Agency. Internal SAIC Independent Technical Review comments are recorded on a Document Review Record per SAIC quality assurance procedure QAAP 3.1. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader.

As noted above, all concerns resulting from independent technical review of the project have been considered.

6/25/13

Lisa Jones-Bateman
Principal w/ A-E firm

Date

PLACEHOLDER FOR:

Documentation of Ohio EPA Approval of Final Document

(Documentation to be provided once approval is issued.)

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ARNG = Army National Guard
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Ohio EPA = Ohio Environmental Protection Agency
REIMS = Ravenna Environmental Information Management System
RVAAP = Ravenna Army Ammunition Plant
SAIC = Science Applications International Corporation
USACE = United States Army Corps of Engineers

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LIST OF ACRONYMS

ACM	Asbestos-containing Material
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical of Concern
COPEC	Chemical of Potential Ecological Concern
ERA	Ecological Risk Assessment
EU	Exposure Unit
FFS	Focused Feasibility Study
FS	Feasibility Study
FWCUG	Facility-wide Cleanup Goal
HHRA	Human Health Risk Assessment
ISM	Incremental Sampling Method
LUC	Land Use Control
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
O&M	Operation and Maintenance
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PMP	Property Management Plan
PP	Proposed Plan
RAFLU	Reasonable and Anticipated Future Land Use
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
ROD	Record of Decision
RVAAP	Ravenna Army Ammunition Plant

SC	Site Characterization
SR	State Route
SRC	Site-related Contaminant
SSL	Soil Screening Level
SVOC	Semi-volatile Organic Compound
TNT	2,4,6-Trinitrotoluene
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This Proposed Plan (PP) presents the preferred alternative to achieve a remedy for soil within the Dump Along Paris-Windham Road at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio (Figure 1). The Dump Along Paris-Windham Road is designated as RVAAP-51. This PP presents remedial alternatives developed in the *Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road* (USACE 2012) and provides rationale for selecting the preferred alternative. Permanent surface water and sediment are not present at the area of concern (AOC); therefore, no further action (NFA) is necessary for these media and remedial alternatives only address soil (inclusive of dry sediment). Intermittent surface water was evaluated in the Site Characterization and Focused Feasibility Study (SC/FFS), and no human health chemicals of concern (COCs) were identified for surface water. Further, the ecological risk assessment (ERA) recommended NFA with respect to ecological receptors. Groundwater will be addressed in a separate decision under the RVAAP Facility-Wide Groundwater AOC (RVAAP-66).

The U.S. Army, in coordination with the Ohio Environmental Protection Agency (Ohio EPA), issues this PP, which provides the public with information to comment upon the selection of an appropriate response action. The remedy will be selected for the AOC after review and consideration of all comments submitted during the 30-day public comment period. Therefore, the public is encouraged to review and comment on all alternatives presented in this PP.

The U.S. Army is issuing this PP as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the [40 *Code of Federal Regulations* 300]

Public Comment Period:
Month DD, YYYY to Month DD, YYYY

Public Meeting:
The U.S. Army will hold an open house and public meeting to present the preferred alternative and additional details presented in the *Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road* (USACE 2012). Oral and written comments will also be accepted at the meeting. The open house and public meeting are scheduled for ____PM, Month DD, YYYY, at the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio 44444.

Information Repositories:
Information used in selecting the preferred alternative 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:
9AM – 9PM Monday – Thursday
9AM – 6PM Friday
9AM – 5PM Saturday
1PM – 5PM Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
10AM – 8PM Tuesday – Friday
9AM – 5PM Friday and Saturday

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

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314
Note: Access is restricted to Camp Ravenna, but the file can be obtained or viewed with prior notice to Camp Ravenna.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Selection and implementation of a remedy will also be consistent with the requirements of the Ohio EPA *Director's Final Findings and Orders*, dated June 10, 2004 (Ohio EPA 2004).

This PP summarizes information that can be found in greater detail in the SC/FFS report (USACE 2012) and other documents contained in the Administrative Record file for the AOC. The U.S. 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.

2.0 RVAAP DESCRIPTION AND BACKGROUND

The current RVAAP consists of 1,260 acres scattered throughout the Ohio Army National Guard (OHARNG) Camp Ravenna Joint Military Training Center, hereafter referred to as Camp Ravenna. Camp Ravenna is federally owned and licensed to the OHARNG for use as a military training site. Camp Ravenna is in northeastern Ohio within Portage and Trumbull Counties, approximately 3 miles (4.8 km) east–northeast of the city of Ravenna and approximately 1 mile (1.6 km) northwest of the city of Newton Falls (Figure 1). The RVAAP portions of the property are located solely within Portage County. RVAAP and Camp Ravenna occupy a parcel of property approximately 11 miles (17.7 km) long and 3.5 miles (5.6 km) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garrett, 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). Camp Ravenna is surrounded by several communities: Windham on the north, Garrettsville 6 miles (9.6 km) to the northwest, Newton Falls 1 mile (1.6 km) to the southeast, Charlestown to the southwest, and Wayland 3 miles (4.8 km) to the south.

When RVAAP was operational, Camp Ravenna did not exist and the entire 21,683-acre parcel was a federal government-owned, contractor-operated, industrial facility. The RVAAP Installation Restoration Program encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document indicate the historical extent of RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP, unless otherwise specifically stated.

Former industrial operations at RVAAP consisted of 12 munitions-assembly facilities referred to as "load lines." Load Lines 1 through 4 were used to melt and load 2,4,6-trinitrotoluene (TNT) and Composition B into large-caliber shells and bombs. The operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Periodically, the floors and walls were cleaned with water and steam. Following cleaning, the wastewater, containing TNT and Composition B, was known as "pink water" for its characteristic color. Pink water was collected in concrete holding tanks, filtered, and pumped into unlined ditches for transport to earthen settling ponds. Load Lines 5 through 11 were used to manufacture fuzes, primers, and boosters. Potential contaminants in these load lines include lead compounds, mercury compounds, and explosives. From 1946 to 1949, Load Line 12 was used to produce ammonium nitrate for explosives and fertilizers prior to use as a weapons demilitarization facility.

In 1950, the facility was placed on standby status and operations were limited to renovation, demilitarization, and normal maintenance of equipment, along with storage of munitions. Production activities were resumed from July 1954 to October 1957 and again from May 1968 to August 1972. In addition to production missions, various demilitarization activities were conducted at facilities constructed at Load Lines 1, 2, 3, and 12. Demilitarization activities included disassembly of munitions and explosives melt-out and recovery operations using hot water and steam processes. Periodic demilitarization of various munitions continued through 1992.

3.0 DUMP ALONG PARIS-WINDHAM ROAD DESCRIPTION AND BACKGROUND

The Dump Along Paris-Windham Road is located in the east-central portion of RVAAP, along a steep embankment on the west side of Paris-Windham Road between the bridge over Sand Creek and the intersection of Paris-Windham Road with Remalia Road (Figure 2). The AOC was used as an open dump for a variety of miscellaneous construction and demolition material, including asbestos-containing material (ACM) which included transite roofing and siding, laboratory bottles and drums, concrete, brick, glass, scrap metal, fencing, and wood debris. There are no records indicating the quantities of material dumped at the AOC or the dates of operation.

The following environmental reports documenting investigations and removal action history for the AOC have been completed for the AOC:

- *Relative Risk Site Evaluation for Newly Added Sites* (USACHPPM 1998);
- *Decision Document for a Removal Action at Paris-Windham Road Dumpsite (RVAAP-51)* [USACE 2003];
- *Final Report for Remedial Design/ Remedial Action Plan at Paris-Windham Road Dump* (MKM 2004); and
- *Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road* (USACE 2012).

4.0 AREA OF CONCERN CHARACTERISTICS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on the various investigations conducted from 1998 through 2003.

The former dump was approximately 400 ft long by 30 ft wide and slopes east to west, away from Paris-Windham Road. The slope face ranges 40 to 60 degrees from horizontal. No permanent surface water features are present at the AOC. Surface water occurs only intermittently as storm water runoff in the drainage swale located at the base of the slope face of the dump during and after rainfall events and periods of snow melt. Surface water runoff follows the topography and flows in a westerly direction through a drainage swale at the base of the dump slope, entering Sand Creek. Sand Creek is located to the west and north at distances ranging from approximately 30 ft (north end of the AOC) to 170 ft (south-central portion of the AOC). The Sand Creek floodplain occupies the land between the dump and Sand Creek. No groundwater monitoring wells are present in the AOC. Figure 3 presents features of the AOC.

5.0 LIMITED REMEDIAL DESIGN/REMEDIAL ACTION

In 2003, USACE, Louisville District prepared a Decision Document identifying semi-volatile organic compounds (SVOCs) as principle contaminants with potential impact to human health and cadmium, polychlorinated biphenyls (PCBs), SVOCs with potential impact to ecological receptors (USACE 2003). The Decision Document outlined four potential remedial alternatives to address these contaminants, and the U.S. Army conducted a public meeting and 30-day open comment period resulting in the selection of Alternative 4 for implementation of a removal action under a limited "Remedial Design/Remedial Action (RD/RA)."

The limited "RD/RA" was initiated in April 2003 and was conducted in accordance with CERCLA to mitigate risks related to potential contact with exposed waste material. The limited "RD/RA" consisted of removal and offsite disposal of surface debris, subsurface debris, and visible transite without undermining and compromising the integrity of Paris-Windham Road (MKM 2004).

The majority of the subsurface transite removed during the limited "RD/RA" was concentrated at the southern end of the AOC; one small pocket of transite debris was located near the central portion of the AOC. Test pits were excavated in 10-ft intervals along the extent of the AOC to ensure all subsurface transite was located.

Upon completion of the debris removal operations, the dump area was divided into 10 equally sized grids to collect discrete and Incremental Sampling Method (ISM) soil samples for confirmation. During confirmatory sampling activities, additional transite debris was found in the excavated areas on the southern portion of the AOC. These small fragments had not been visible during the removal action but were exposed following a heavy rain event. RVAAP stakeholders and the Akron Regional Air Quality Management District agreed to proceed with AOC restoration activities because further excavation had the potential to undermine and compromise the integrity of Paris-Windham Road (MKM 2004). The transite material was subsequently covered in place during AOC restoration activities. The excavation area was restored to grade in November 2003.

There were no detections of asbestos in soil, dry sediment, or surface water confirmation samples. However, the results of confirmation sampling verified the presence of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd) pyrene, and dibenzo(a,h)anthracene in soil prior to the placement of the soil cover. It was recommended to conduct further evaluation of risk through the SC/FFS at the AOC, followed by regulatory AOC closure or additional remedial efforts, as necessary.

6.0 NATURE AND EXTENT OF CONTAMINATION

As presented in the SC/FFS, site-related contaminants (SRCs) in soil (inclusive of dry sediment) at the AOC were determined by comparing chemical concentrations to facility-wide background concentrations and eliminating essential nutrients. No frequency-of-detection screening was performed in the SC/FFS because fewer than 20 discrete samples were available. The prevalent SRCs detected in surface soil were 11 inorganic chemicals and 23 SVOCs. The highest concentrations of inorganic chemicals were generally observed within the drainage swale. Results of the contingency ISM sample collected from Grids 1 through 10 during the limited "RD/RA" indicate detectable SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs), were present in soil throughout the AOC prior to placement of the soil cover. Nitrocellulose, acetone, and PCB-1254 were also identified as SRCs in surface soil.

Samples collected from intermittent surface water contained substantially fewer detected SRCs than surface soil. Seven inorganic chemicals were identified as SRCs. No volatile organic compounds, SVOCs, pesticides, or PCBs were detected in surface water. However, nitrocellulose was detected; therefore, it was identified as a surface water SRC. Asbestos was not detected in any of the surface water samples.

Groundwater will be assessed in a future report as part of the RVAAP Facility-Wide Groundwater AOC (RVAAP-66). A qualitative assessment of the potential for soil contaminants to migrate to groundwater was presented in the SC/FFS report (USACE 2012). The April 2003 dataset was compared to soil screening levels (SSLs) for protection of groundwater from the USEPA Regional Screening Level table (USEPA 2010). Concentrations of six SVOCs, four inorganic chemicals, and one PCB in soil exceeded their respective screening levels. Barium, lead, and manganese had the highest frequency of SSL exceedances; however, the SSLs for these three inorganic chemicals are less than their respective RVAAP surface soil background concentrations.

Sand Creek, which lies approximately 30 ft to the north of the AOC on the northern end to about 170 ft west of the AOC on the southern end, is assumed to be the downgradient receptor for groundwater discharge. Therefore, Sand Creek water quality data were evaluated to identify any potential evidence for contaminant migration from the AOC in surface water and groundwater. Results from the RVAAP facility-wide biological and water quality study Sand Creek sampling station S9 were used for the evaluation (USACE 2005a). This monitoring station is located at river mile 1.9 at the southwest corner of the Paris-Windham Road bridge over Sand Creek and is immediately downstream of the AOC. Results of chemical and biological samples collected during the facility-wide surface water study at this sampling station showed that no surface water chemical concentrations exceeded Ohio Water Quality Standards aquatic life maximum or average water quality criteria. No chemicals exceeded criteria protective of the Warm Water Habitat aquatic life use (USACE 2005). Overall, the sediment quality and water quality was rated "excellent" and the fish community was rated "good." The macroinvertebrate community was rated "exceptional." The evaluation did not show evidence of a decline in water quality in Sand Creek immediately downstream of the AOC.

7.0 SCOPE AND ROLE OF RESPONSE ACTION

The Reasonable and Anticipated Future Land Use (RAFLU) for the Dump Along Paris-Windham Road is Military Training. The representative receptor is the Range Maintenance Soldier. This RAFLU, in conjunction with the evaluation of agricultural-residential land uses and associated receptors, forms the basis for identifying COCs in the SC/FFS. The National Guard Trainee is not considered an appropriate receptor because the AOC is a small area, on a steep road berm, and is not suitable for use by this receptor. Because the AOC is located immediately adjacent to a primary road, trespassers may potentially visit the AOC; therefore, Adult and Juvenile Trespassers were also considered.

The exposure assumptions for the Range Maintenance Soldier are also protective of the Adult and Child Trespasser.

The response action evaluated alternatives to attain this RAFLU for soil, including dry sediment. Although not anticipated at RVAAP or this AOC, the response action also evaluated a Residential Land Use. The Resident Farmer (Adult and Child) receptors were evaluated; however, the topography of the area (i.e., steep slope and floodplain) precludes Residential Land Use.

Groundwater will be addressed under the RVAAP Facility-Wide Groundwater AOC as a separate decision. However, the selected remedy for soil at the Dump Along Paris-Windham Road must also be protective of groundwater.

8.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

A human health risk assessment (HHRA) was performed to identify COCs and provide a risk management evaluation to determine COCs in surface soil, subsurface soil, and surface water requiring remediation based on potential risks to human receptors (Range Maintenance Soldier, Trespasser, and Resident Farmer).

Three soil exposure units (EUs) were evaluated in the HHRA and are presented in Table 1.

Table 1. Exposure Units at the Dump Along Paris-Windham Road

Fill Area EU - The middle of the dump was excavated and covered with at least 2 ft of clean fill. These samples were collected from 0-1 ft below ground surface (bgs) prior to restoration. This EU is currently under at least 2 ft of clean fill; therefore, it represents subsurface soil.

Surface Area EU – The northern and southern ends of the dump area and the drainage swale lie outside the limited RD/RA excavation area. Limited, if any, backfill/cover soil was placed in these areas. Samples collected from 0-1 ft bgs in this area represent surface soil.

AOC-Wide EU – One ISM sample was collected across the entire soil grid (i.e., all 10 grid areas). This sample was collected following excavation and prior to restoration to grade. Portions of the sampled area were subsequently filled. Therefore, this EU represents a combination of surface and subsurface conditions at the AOC.

Permanent surface water and sediment are not present at the AOC; however, intermittent surface water was evaluated as a single EU (also referred to as the Surface Water EU). COCs were determined for each human receptor scenario and applicable EU based on guidance established in *Facility-Wide Human Health Cleanup Goals* (USACE 2010), herein referred to as the FWCUG Report.

The Range Maintenance Soldier is assumed to contact soil from 0 to 4 ft bgs as specified in the *Facility-Wide Human Health Risk Assessor's Manual* (USACE 2005). Samples collected from within the 0 to 4 ft bgs exposure depth included those from shallow surface soil (0-1 ft bgs) in the Surface Area EU and from subsurface soil > 2 ft bgs in the Fill Area EU. As discussed in Section 5.0, clean soil backfill was placed in the Fill Area EU; therefore, samples collected prior to placement of the fill are considered to represent subsurface soil exposure. The Range Maintenance Soldier is not expected to contact surface water. No COCs were identified in the Surface Area EU, Fill Area EU, or AOC-Wide EU.

Trespassers are assumed to contact shallow surface soil (0-1 ft bgs) and surface water in the drainage conveyance at the base of the slope of the former dump. No COCs were identified for the Trespasser in the Surface Area or AOC-wide EUs. Additionally, no surface water COCs were identified for the Trespasser.

The Resident Farmer is assumed to contact shallow surface soil (0-1 ft bgs) and surface water. Exposure to subsurface soil is not included because the foundation of a house would have to be located outside the AOC due to steep terrain within the dump. Benzo(a)pyrene was identified as a COC for the Resident Farmer in the Surface Area EU. The exposure point concentration (0.33 mg/kg) exceeds the facility-wide cleanup goal (FWCUG) for the Resident Farmer Adult (0.221 mg/kg). Benzo(a)pyrene and dibenzo(a,h)anthracene were identified as COCs in the AOC-Wide EU. The detected concentrations of benzo(a)pyrene and dibenzo(a,h)anthracene were 1.4 and 0.36 mg/kg, respectively. The FWCUG for the Resident Farmer Adult is 0.221 mg/kg for both of these chemicals. No surface water COCs were identified for the Resident Farmer.

No COCs were identified in surface water for any receptor scenario. No COCs were identified in soil for the Range Maintenance Soldier or Adult and Juvenile Trespassers. Two PAHs were identified as COCs in soil for the Resident Farmer. Due to benzo(a)pyrene and dibenzo(a,h)anthracene being identified as a risk to the Resident Farmer at this AOC, evaluation of remedial alternatives was recommended in the Feasibility Study (FS).

The Dump Along Paris-Windham Road is approximately 30 ft wide by 400 ft long or about 0.25 acres in size. Two wetlands have been identified on the AOC. The primary habitat is forest and is not large enough to completely support cover and food for small birds and mammals that typically require approximately 1 acre (USEPA 1993).

Currently, there are no federally listed species or critical habitats on Camp Ravenna. The Dump Along Paris-Windham Road has not been specifically surveyed for state-listed or federally listed species; however, there have been no documented sightings of rare species at the AOC.

A Level I ERA was conducted to evaluate if the AOC had past releases or the potential for current contamination, and if important ecological resources exist on or near the AOC. The ERA identified three surface soil chemicals of potential ecological concern (COPECs) at the Fill Area EU, eight surface soil COPECs at the Surface Area EU, and four surface water COPECs at the Surface Water EU. Although an important resource, wetlands are not a significant resource at the AOC because dry sediment and surface water sampling results do not indicate chemicals are present at concentrations of concern for ecological receptors in the wetlands/drainage swale. The closest Sand Creek biological and water quality sampling station downstream of the AOC showed no impairment, suggesting contaminants are not migrating from the landfill to the stream. Vegetation types located on and near the AOC are found elsewhere at RVAAP and in the ecoregion.

The ERA concluded there are no significant ecological resources at the Dump Along Paris-Windham Road, and the recommendation was NFA for protection of ecological resources.

9.0 REMEDIAL ACTION OBJECTIVE

The remedial action objective (RAO) references FWCUGs that are considered protective of human health and the environment under current land use and RAFLU. The RAO for this remedy is to prevent exposure of the Resident Farmer to shallow surface soil (0-1 ft bgs) with COC levels exceeding the target risk of 1E-05 and a hazard quotient of 1.0. Two PAHs benzo(a)pyrene and dibenzo(a,h)anthracene were identified as COCs in soil for the Resident Farmer. An FWCUG of 0.221 mg/kg for both PAHs achieves the target risk and hazard index levels for the Range Maintenance Soldier, Trespasser, and is also protective for the Resident Farmer.

The response action addresses benzo(a)pyrene and dibenzo(a,h)anthracene in shallow surface soil (0-1 ft bgs). There are no COCs in surface water. Sediments are not present at the AOC. Remediation of soil to protect ecological and groundwater resources is not necessary. Table 2 presents the COCs and FWCUGs for soil under this remedy.

Table 2. COCs and FWCUG for Residential Land Use at the Dump Along Paris-Windham Road

Media	Chemicals of Concern (Maximum Concentration)	FWCUG (mg/kg)
Shallow Surface Soil (0-1 ft bgs)	Benzo(a)pyrene (1.4 mg/kg) Dibenzo(a,h)anthracene (0.36 mg/kg)	0.211 0.211
Subsurface Soil (1-13 ft bgs)	Not evaluated	Not applicable
Wet Sediment	None[a]	None
Surface Water	None	None

[a] Wet sediment does not exist within the boundaries of the area of concern. Dry sediment is addressed the same as surface soil in terms of contaminant nature and extent, fate and transport, and risk exposure models and is consistent with the FWCUG Report (USACE 2010).
bgs = Below Ground Surface.
COC = Chemical of Concern.
FWCUG = Facility-wide Cleanup Goal.

10.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES

The following general response actions were considered in the FFS for remediation of contaminated soil at the Dump Along Paris-Windham Road:

- No action, and
- Land use controls (LUCs).

Costs were estimated for each alternative.

10.1 Alternative 1 – No Action

Cost: $0

This remedial alternative provides no further RA and is required under the NCP as a baseline for comparison with other remedial alternatives. This alternative is not protective of human health for Residential Land Use. Under this alternative, there is no reduction in toxicity, mobility, or volume of contaminated soil. Access restrictions and environmental monitoring would be discontinued. The Dump Along Paris-Windham Road would have no legal, physical, or administrative LUCs. Environmental monitoring would not be performed. Because this is the No Action alternative, five-year reviews are not required under CERCLA 121(c).

10.2 Alternative 2 – Land Use Controls

Cost: $93,384

This alternative utilizes LUCs to prevent exposure of the Resident Farmer to COCs in shallow surface soil and prevent exposure to residual asbestos. Concentrations of benzo(a)pyrene and dibenzo(a,h)anthracene in shallow surface soil exceed FWCUGs for the Resident Farmer. No COCs were identified for the Range Maintenance Soldier (the representative receptor at the AOC as determined by the RAFLU) or the possible Adult and Juvenile Trespassers. Disturbance and potential exposure to residual ACM must also be controlled.

Alternative 2 would leave impacted soil in place and implement no active remedial measures. LUCs may include a digging restriction, signage, restriction on residential use, and briefing prior to access to the AOC. Prior to implementing Alternative 2, an RD detailing the five-year review requirements and LUCs would be developed. Pursuant to CERCLA, a review would be conducted every five years, as COCs would remain on site above FWCUGs for the Resident Farmer (representative receptor for Residential Land Use). Five-year reviews permit evaluation of all remedy components, including LUCs, to assess the presence and behavior of the remaining COCs. Continued surveillance through the five year review ensures that the remedy is protective. Subsequent to the RD, the Property Management Plan (PMP) would capture all LUCs prescribed by the approved RD and serve as a formal tool to help manage and set forth procedures for the established LUCs.

11.0 EVALUATION OF FOCUSED FEASIBILITY STUDY ALTERNATIVES

The alternatives were evaluated with respect to the nine comparative analysis criteria, as outlined by CERCLA (Table 3). The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. These criteria are as follows.

<u>Threshold Criteria</u> – must be met for the alternative to be eligible for selection as a remedial option.

1. Overall protection of human health and the environment.
2. Compliance with applicable or relevant and appropriate requirements (ARARs).

Table 3. CERCLA Evaluation Criteria

Overall Protection of Human Health and the Environment – considers whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) – considers how a remedy will meet all the applicable or relevant and appropriate requirements of other federal and state environmental statutes and/or provide grounds for invoking a waiver.

Long-term Effectiveness and Permanence – considers the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once facility wide-cleanup goals (FWCUGs) have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment – considers the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-term Effectiveness – considers the speed with which the remedy achieves protection, as well as the potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability – considers the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost – considers capital costs and operation and maintenance (O&M) costs associated with the implementation of the alternative.

State Acceptance – indicates whether the state concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance – will be addressed in the Record of Decision (ROD) following a review of the public comments received on the site characterization (SC) report, focused feasibility study (FFS), and Proposed Plan (PP).

Balancing Criteria – used to weigh major trade-offs among alternatives.

3. Long-term effectiveness and permanence.
4. Reduction of toxicity, mobility, or volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.

Modifying Criteria – may be considered to the extent that information is available during development of the FFS but can be fully considered only after public comment on this PP.

8. State acceptance.
9. Community acceptance.

The comparative analysis evaluates the relative performance of Alternatives 1 and 2 with respect to each of the nine criteria. Identifying the advantages and disadvantages of each alternative, with respect to each other, helps identify relative strengths of the preferred alternative. These strengths, combined with risk management decisions made by the U.S. Army and Ohio EPA, as well as input from the community, will serve as the basis for selecting the remedy.

Criterion 1 (Overall Protectiveness of Human Health and the Environment) is rated either "protective" or "not protective." Criterion 2 (Compliance with ARARs) is rated either "compliant" or "not compliant." The remaining seven criteria are rated as "high," "medium," or "low." A rating of "high" indicates the alternative performs the best, and a rating of "low" indicates the alternative performs the worst. For example, an alternative with a high cost will be scored "low" under Criterion 7 (Cost).

Alternative 1 (No Action) is not protective of human health or the environment from the AOC contaminants beyond current conditions. No effort will be taken to prevent or minimize human or ecological exposure to contaminated soil. Concentrations of contaminants could pose a risk to future receptors (e.g., Resident Farmer) in a Residential Land Use scenario.

Alternative 2 is considered protective regarding Overall Protectiveness of Human Health and the Environment and is compliant with ARARs. The Long-term Effectiveness and Permanence is "high." The Reduction of Toxicity, Mobility, or Volume through Treatment is considered "low," as there are no RAs with this alternative. The Short-term Effectiveness is considered "medium," as no additional short-term health risks to the community would occur because no RAs would be implemented. Implementability is considered "medium," as Alternative 2 can be readily and quickly implemented. The estimated cost of $93,384 is ranked "medium," O&M and monitoring costs are estimated for a 30-year period. The development of an RD, including LUCs and CERCLA five-year reviews, is included in this cost.

12.0 PREFERRED FEASIBILITY STUDY ALTERNATIVE

The U.S. Army, in coordination with Ohio EPA, is recommending Alternative 2 (LUCs) be implemented as the RA for soil at the Dump Along Paris-Windham Road. Alternative 1 (No Action) was also evaluated. However, Alternative 1 was eliminated from consideration since it is not protective of human health and not compliant with ARARs.

COCs do not exist for the representative receptor for the RAFLU (Range Maintenance Soldier) and Adult and Juvenile Trespassers. However, COCs exist within shallow surface soil for the Resident Farmer; therefore, LUCs are required to ensure protection of this receptor. ACM is also known to be present within the subsurface. Alternative 2 fully complies with ARARs by including signs alerting persons of the presence of ACM and offers long-term effectiveness and permanence when implemented and maintained. Alternative 2 is easily implementable in a relatively short time frame and is expected to have a discounted cost of approximately $93,384. Based on the available risk assessment information, the preferred alternative will achieve the RAO.

This recommendation is not a final decision. The U.S. Army, in coordination with Ohio EPA, will select the remedy for the Dump Along Paris-Windham Road after reviewing and considering all comments submitted during the 30-day public comment period.

13.0 COMMUNITY PARTICIPATION

13.1 Community Participation

Public participation is an important component of the remedy selection. The U.S. Army, in coordination with Ohio EPA, is soliciting input from the community on the preferred alternative. The comment period extends from ____, 2013, to ____, 2013. This period includes a public meeting at which the U.S. Army will present this PP. The U.S. Army will accept both oral and written comments at this meeting.

POINT OF CONTACT FOR WRITTEN COMMENTS

Mailing Address:
Camp Ravenna Environmental Office
Attn: Kathryn Tait
1438 State Route 534 SW
Newton Falls, OH 44444

E-mail Address:
kathryn.s.tait@us.army.mil

13.2 Public Comment Period

The 30-day comment period is from ____, 2013, to ____, 2013, and provides an opportunity for public involvement in the decision-making process for the proposed action. The public is encouraged to review and comment on this PP.

All public comments will be considered by the U.S. Army and Ohio EPA before selecting a remedy. During the comment period, the public is encouraged to review documents pertinent to the Dump Along Paris-Windham Road.

This information is available at the Information Repository and online at www.rvaap.org. To obtain further information, contact Kathryn Tait of the Camp Ravenna Environmental Office at (614) 336-6136 or kathryn.s.tait@us.army.mil.

13.3 Written Comments

If the public would like to comment in writing on this PP or other relevant issues, please deliver comments to the U.S. Army at the public meeting or mail written comments (postmarked no later than _____, 2013).

13.4 Public Meeting

The U.S. Army will hold an open house and public meeting on this PP on ____, 2013, at ___PM, in the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio, 44444 to accept comments.

INFORMATION REPOSITORIES

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

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
10AM – 8PM Tuesday – Friday
9AM – 5PM Friday and Saturday

This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

13.5 U.S. Army Review of Public Comments

The U.S. Army will review the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken.

The Responsiveness Summary, a document that summarizes the U.S. Army's responses to comments received during the public comment period, will be included in the Record of Decision (ROD). The U.S. 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.

ADMINISTRATIVE RECORD FILE

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314
Note: Access is restricted to Camp Ravenna, but the file can be obtained or viewed with prior notice to Camp Ravenna.

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 Camp Ravenna, 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.

Chemical of Concern (COC): chemical substances specific to an area of concern that potentially pose significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Ecological Receptor: a plant, animal, or habitat exposed to an adverse condition.

Exposure Unit (EU): a location or area where a receptor may move at random and come into contact with an environmental medium (e.g., soil, surface water, and/or sediment).

Feasibility Study (FS): a CERCLA document that reviews and evaluates multiple remedial technologies under consideration at a site. It also identifies the preferred remedial action alternative.

Five-Year Review: a review conducted to determine whether each AOC remedy remains protective of human health and the environment and functions as intended based on the decision documents (USEPA 2001).

Human Receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, a Range Maintenance Soldier is considered to be the most sensitive human receptor under future restricted land use in this Proposed Plan (PP).

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

Property Management Plan (PMP): a management document to help manage land use controls established to protect human health and the environment at areas of concern and management response sites. A PMP presents defined land uses and land use restrictions to ensure the property assumptions are appropriate or will remain appropriate through restrictions in the future.

Reasonable and Anticipated Future Land Use (RAFLU): the U.S. Army projected land use for an AOC that steers identification of potential future receptors, human health risk assessments for those future receptors, and remedial decisions to be protective of those future receptors.

Record of Decision (ROD): a legal record signed by the U.S. Army following coordination and concurrence with the Ohio EPA as per a June 10, 2004, agreement between the two parties. 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 applicable or relevant and appropriate requirements, 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 U.S. Army documents and responds to written and oral comments received from the public about the PP.

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.

Target Risk: the Ohio Environmental Protection Agency (2009) identifies 1E-05 as a target for cancer risk for carcinogens and an acceptable target hazard index of 1.0 for non-carcinogens.

REFERENCES

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

Ohio EPA 2009. *Technical Decision Compendium: Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for DERR Remedial Response Program.* August 2009.

USACE (United States Army Corps of Engineers) 2003. *Decision Document for a Removal Action at Paris-Windham Road Dumpsite (RVAAP 51).* USACE, Louisville District, KY. 2003.

USACE 2005. *RVAAP Facility-Wide Human Health Risk Assessors Manual, Amendment 1*. December 2005.

USACE 2010. *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, RVAAP, Ravenna, Ohio*. March 2010.

USACE 2012. *Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road, Ravenna Army Ammunition Plant, Ravenna, Ohio*. 2012.

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USEPA (United States Environmental Protection Agency) 1993. *Wildlife Exposure Factors Handbook*. EPA/600/R-93/187a. Office of Research and Development, Washington, D.C. Volume 1 of 2. December 1993.

USEPA 2001. *Comprehensive Five-Year Review Guidance*. OSWER No. 9355.7-03B-P. June 2001.

USEPA 2010. *EPA Regional Screening Level (RSL)*. Website: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. November 2010.

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FIGURES

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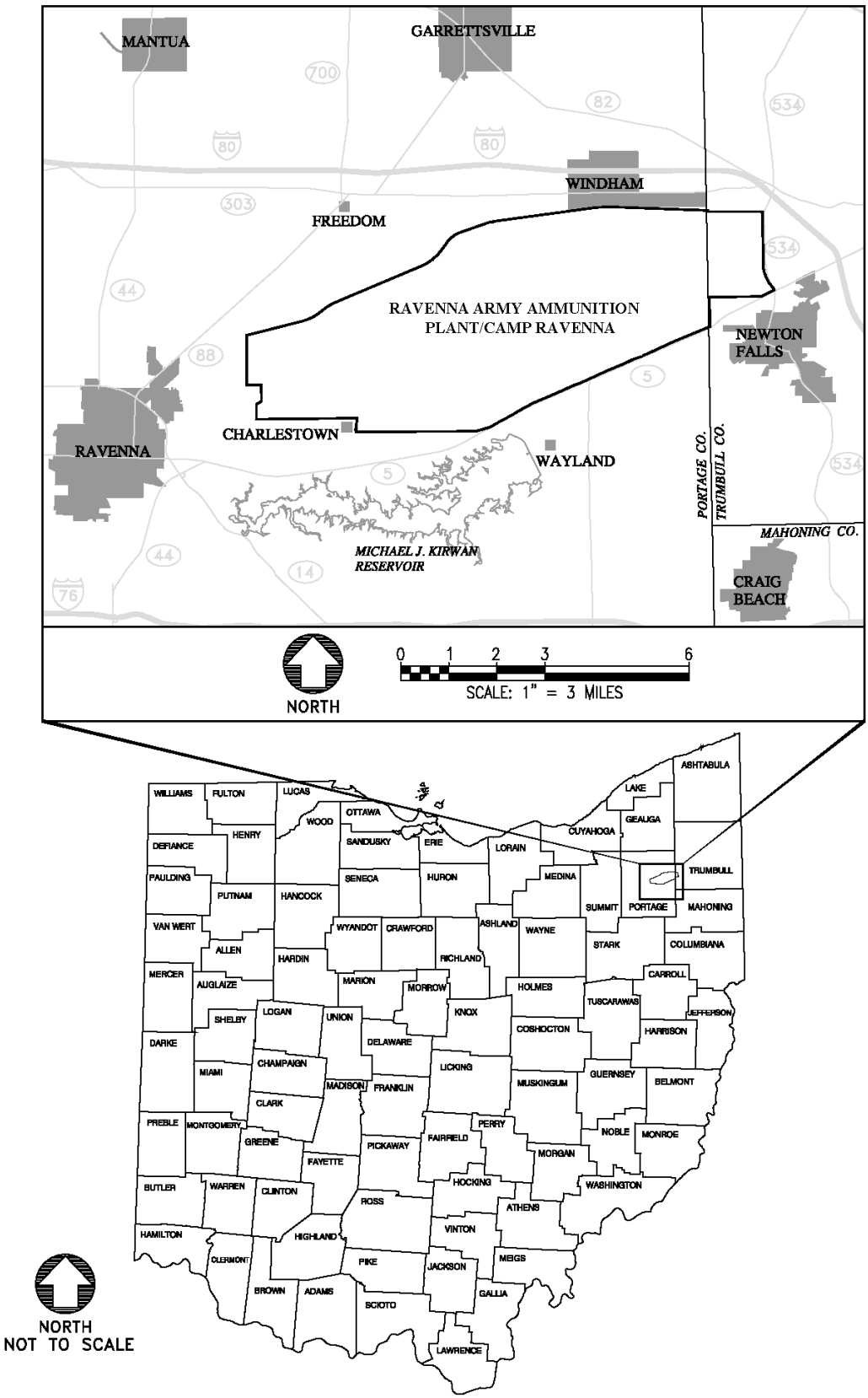

Figure 1. General Location and Orientation of RVAAP/Camp Ravenna

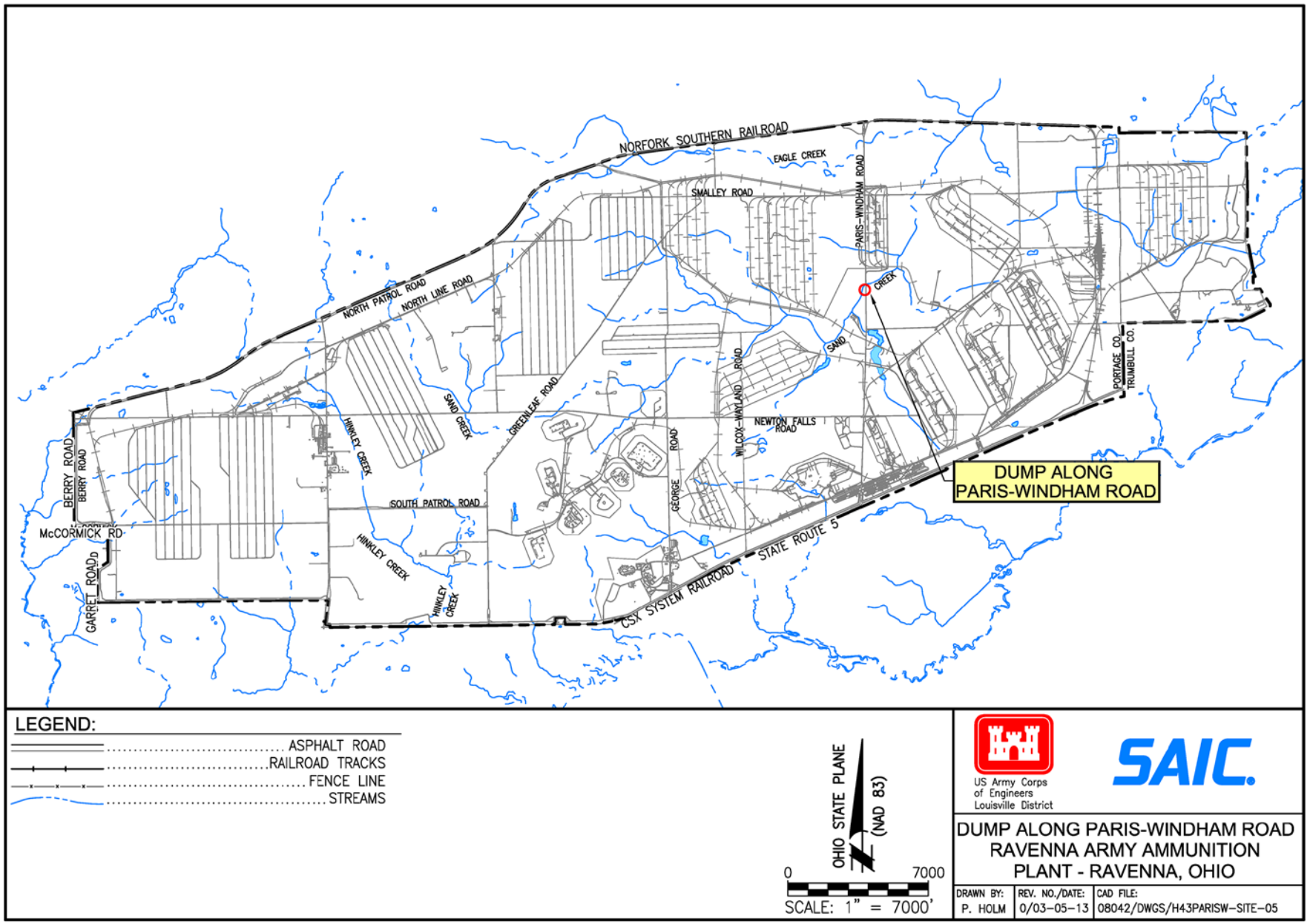

Figure 2. RVAAP/Camp Ravenna Installation Map

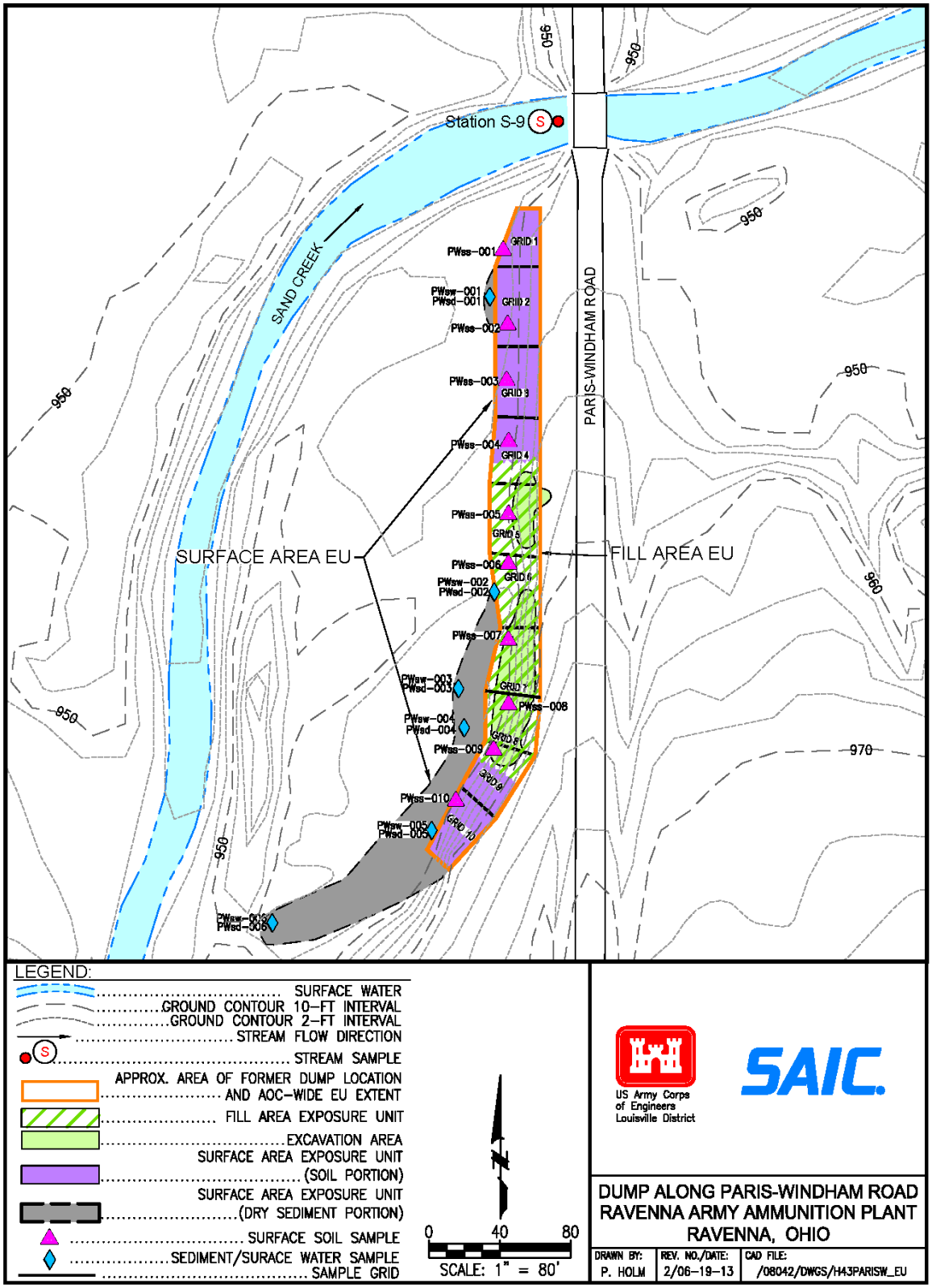

Figure 3. Dump Along Paris-Windham Road Site Features

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