Draft

Record of Decision
for CC RVAAP-76 Depot Area

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-12-D-0002
Delivery Order: 0003

Prepared for:

U.S. Army Corps of Engineers
Louisville District

Prepared by:

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14. ABSTRACT
This ROD presents remedial alternatives and the preferred alternative for remedy of surface soil within CC RVAAP-76 Depot Area at Camp Ravenna. The AOC has PAH contamination in surface soils around Building U-4 and Building U-5. The preferred remedial alternative (Alternative 3: Excavation and Off-Site Disposal) involves excavating the contaminated surface soil and permanently disposing in a permitted landfill as non-hazardous waste to attain Unrestricted (Residential) Land Use for soil at CC RVAAP-76.

15. SUBJECT TERMS
ROD = Record of Decision, remedial alternatives, preferred alternative, AOC = Area of Concern, PAH = polycyclic aromatic hydrocarbon

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CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Parsons has completed the Draft Record of Decision for CC RVAAP-76 Depot Area at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers policy.

08/09/2018

Dan Griffiths, CPG
Independent Technical Reviewer

Date

08/09/2018

Edward Heyse, Ph.D., P.E.
Plan Preparer/Reviewer

Date

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ARNG = Army National Guard
DERR=Division of Emergency and Remedial Response
NEDO = Northeast District Office
OHARNG = Ohio Army National Guard.
Ohio EPA=Ohio Environmental Protection Agency
RVAAP=Ravenna Army Ammunition Plant
REIMS = Ravenna Environmental Information Management System.
SWDO = Southwest District Office
USACE = U.S. Army Corps of Engineers.

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ACRONYMS/ABBREVIATIONS

amsl	above mean sea level
AOC	area of concern
ARARs	Applicable or Relevant and Appropriate Requirements
Army	United States Department of the Army
ARNG	Army National Guard
AST	aboveground storage tank
bgs	below ground surface
Camp Ravenna	Camp Ravenna Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CFR	Code of Federal Regulations
CMCOPCs	Contaminant Migration Chemicals of Potential Concern
COCs	Chemicals of Concern
COPECs	Chemicals of Potential Ecological Concern
CUGs	cleanup goals
cy	cubic yards
DERR	Division of Emergency and Remedial Response
DU	decision unit
ERA	Ecological Risk Assessment
FGDC	Federal Geographic Data Committee
FWCUGs	Facility-Wide Cleanup Goals
GOCO	Government-owned and contractor-operated
HHRA	Human Health Risk Assessment
HQ	hazard quotient
HRR	Historical Records Review
IRP	Installation Restoration Program
ISM	incremental sampling method
LDRs	land disposal restrictions
LUCs	land use controls
MCLs	Maximum Contaminant Levels
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NR	Not Rated
O&M	operation and maintenance
OAC	Ohio Administrative Code
ODNR-DNAP	Ohio Department of Natural Resources–Division of Natural Areas and Preserves
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PAHs	polyaromatic hydrocarbons

ACRONYMS/ABBREVIATIONS (CONTINUED)

PCBs	polychlorinated biphenyls
POL	petroleum, oil, and lubricant
PPE	personal protective equipment
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
REIMS	Ravenna Environmental Information Management System
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSLs	Regional Screening Levels
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SRCs	Site-related Compounds
SVOCs	semivolatile organic compounds
TAL	target analyte list
TCLP	toxicity characteristic leaching procedure
TNT	2,4,6-Trinitrotoluene
UHC	Underlying Hazardous Constituent
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USP&FO	U.S. Property and Fiscal Officer
UST	underground storage tank
UTS	Universal Treatment Standard
VOCs	volatile organic compounds

PART I THE DECLARATION

A SITE NAME AND LOCATION

This Record of Decision (ROD) addresses soil, sediment, and surface water contamination at Compliance Restoration Site CC RVAAP-76 Depot Area within the former Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio (Figures 1 and 3).

The former RVAAP, now known as Camp Ravenna Joint Military Training Center (Camp Ravenna), is located in northeastern Ohio within Portage and Trumbull counties. Camp Ravenna is approximately 3 miles east/northeast of the city of Ravenna and approximately 1-mile northwest of the City of Newton Falls. As of September 2013, administrative accountability for the entire 21,683-acre facility has been transferred to the U.S. Property and Fiscal Officer (USP&FO) for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp Ravenna).

CC RVAAP-76 Depot Area is within the central portion of the former RVAAP, south of Newton Falls Road, and north of South Patrol Road. The area of concern (AOC) is an approximately 170-acre area bounded on the east by Hinkley Creek. The Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) identifier for RVAAP is OH5210020736.

B STATEMENT OF BASIS AND PURPOSE

The Army National Guard (ARNG) is the lead agency and has chosen the selected remedy for CC RVAAP-76 Depot Area in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record file for the AOC.

The Ohio Environmental Protection Agency (Ohio EPA), the support agency, concurred with the *Final Remedial Investigation/Feasibility Study (RI/FS) CC RVAAP-76 Depot Area* (U.S. Army Corps of Engineers [USACE] 2016) and *Proposed Plan for CC RVAAP-76 Depot Area*, (Parsons 2018). The RI/FS report (USACE 2016) evaluated soil, sediment, and surface water at CC RVAAP-76 Depot Area. Chemicals of Concern (COCs) were not identified in subsurface soil, sediment or surface water. Four polyaromatic hydrocarbons (PAHs) were detected at concentrations that pose a risk to residential receptors and were identified as COCs in surface soil at Building U-4 and Building U-5. The RI/FS report (USACE 2016) and the Proposed Plan (Parsons 2018) recommended removing an estimated 1,133 cubic yards (cy) of surface soil (0-1 feet below ground surface [bgs]) from Building U-4 and Building U-5 with off-site disposal to attain Unrestricted (Residential) Land Use. The Ohio EPA concurs with the selected remedy and that it satisfies the requirements of the Ohio EPA *Director's Final Findings and Orders*, dated June 10, 2004 (Ohio EPA 2004) in that the selected remedy is protective of human health and the environment and obviates the need for further corrective action under other applicable laws and regulations.

C ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect public health, welfare, and the environment from actual or potential releases of hazardous substances to the environment.

D DESCRIPTION OF THE SELECTED REMEDY

The future use for CC RVAAP-76 Depot Area is Military Training Land Use. National Guard Trainee is the Representative Receptor. The risk assessment also included an evaluation of a Resident Receptor which represents an Unrestricted (Residential) Land Use scenario. No COCs were identified for the National Guard Trainee; therefore, exposure to soil and wet sediment do not pose exposure risks to the National Guard Trainee at the AOC. However, risks were identified for the Resident Receptor from PAHs in surface soil at Building U-4 and Building U-5. Dibenzo(a,h)anthracene, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene were identified as COCs in surface soil for the Resident Receptor. Surface soil around these two buildings will need to be addressed to attain Unrestricted (Residential) Land Use. No action is required for sediment, surface water or subsurface soil at this AOC. No ecological risks were identified in the risk assessment.

The following remedial Alternatives for the unrestricted Land Use scenario for the Resident Receptor were evaluated for remediating contaminated soil at CC RVAAP-76 Depot Area:

1. No Action
2. Land Use Controls
3. Excavation and Off-Site Disposal

Alternative 1: No Action is required under the NCP and is included only as a point of comparison with other Alternatives. Under this Alternative, no action is taken to clean up existing soil contamination, prevent Land Use or restrict access, or limit contaminant movement. No action would be taken to reduce the hazards present at CC RVAAP-76 Depot Area to potential human receptors. Alternative 2: Land Use Controls include access and land-use restrictions, with long-term monitoring, to reduce the potential for exposure to contaminated soil at CC RVAAP-76 Depot Area. Under Alternative 2 contaminated soil would remain in place.

The selected remedy for CC RVAAP-76 Depot Area is Alternative 3: Excavation and Off-Site Disposal, which involves removing surface soil (0-1 feet bgs) from around Building U-4 and Building U-5 with off-site disposal (Figure 3). The selected remedy was chosen because it is protective for the Resident Receptor, is cost effective, and can be performed in a timely manner. The following is a brief list of activities associated with Alternative 3:

- Excavate contaminated surface soil (0 to 1 feet bgs) from around Building U-4 and Building U-5.
- Dispose of an estimated 1,133 cy of excavated soil at an off-site facility licensed and permitted to accept these wastes.
- Conduct confirmation sampling to determine whether cleanup goals (CUGs) have been attained.
- Backfill successfully remediated areas with clean soil, grade and seed.

The selected remedy will achieve a requisite level of protectiveness for the AOC. The cost for the selected remedy is estimated to be $215,000. The Army will not be required to develop and implement land use controls (LUCs) and Five-year Reviews, as this remedy attains Unrestricted (Residential) Land Use.

E STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost effective, and uses permanent solutions to the maximum extent practicable. The remedy does not satisfy the statutory preference for treatment as a principal element of the remedy because off-site disposal was determined to be effective and protective, and treatment options were not considered to be technically implementable at the time of the FS. Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure at CC RVAAP-76 Depot Area, a Five-year Review will not be required for this remedial action.

F RECORD OF DECISION DATA CERTIFICATION CHECKLIST

Table 1 provides the location of key remedy selection information contained in Part II, Decision Summary. Additional information can be found in the Administrative Record file for CC RVAAP-76 Depot Area.

Table 1. ROD Data Certification Checklist

ROD Data Checklist Item	ROD Section	Pages
COCs and their respective concentrations	II.G	17
Baseline risk represented by the COCs	II.G	15-17
CUGs established for COCs and the basis for these goals	II.G	17
How source materials constituting principal threats are addressed	II.K	24
Current and reasonably anticipated future Land Use assumptions used in the baseline risk assessment and ROD	II.F	15
Suitable potential Land Use, following the selected remedy	II.L.4	26
Estimated capital and the total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	II.J.7 II.L.3	23 26
Key factor(s) that led to selecting the remedy	II.L.1	24-25

CUGs = cleanup goals; COCs = Chemicals of Concern; ROD = Record of Decision

G AUTHORIZING SIGNATURE

Approved

William M. Myer
COL, GS
Chief, Installation and Environment (I&E)

Date

PART II DECISION SUMMARY

A SITE NAME, LOCATION, AND DESCRIPTION

When the RVAAP Installation Restoration Program (IRP) began in 1989, RVAAP (CERCLIS Identification Number OH5210020736) was identified as a 21,419-acre installation. In 2002 and 2003, OHARNG surveyed the property and the total acreage of the property was found to be 21,683 acres. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683-acre former RVAAP.

As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the USP&FO for Ohio and subsequently licensed to OHARNG for use as a military training site (Camp Ravenna). The Army National Guard is the lead agency for any remediation, decisions, and applicable cleanup at CC RVAAP-76 Depot Area. These activities are being funded and conducted under the IRP. Ohio EPA is the support agency.

Camp Ravenna is in northeastern Ohio within Portage and Trumbull counties, approximately 3 miles east-northeast of the City of Ravenna and approximately 1-mile northwest of the City of Newton Falls (Figure 1). References in this document to the former RVAAP relate to previous activities at the facility as related to former munitions production activities or to activities being conducted under the restoration/cleanup program.

Camp Ravenna is a parcel of property approximately 11 miles long and 3.5 miles wide, bounded by State Route 5 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). Camp Ravenna is surrounded by several communities: Windham 7 miles to the north, Garrettsville 6 miles to the north, Newton Falls 1 mile to the southeast, Charlestown 5.7 miles to the southwest, and Wayland 3 miles to the south (Figure 1).

The CC RVAAP-76 Depot Area is an approximately 170-acre area of the RVAAP facility that consists primarily of mowed grass, shrubland, and forest edge habitats. The grassy areas tend to occur around buildings and are routinely mowed. CC RVAAP-76 Depot Area is in the western portion of the facility mainly along Route 80, south of Newton Falls Road, and north of South Patrol Road. Hinkley Creek is east of CC RVAAP-76 Depot Area (Figure 2).

B SITE HISTORY AND ENFORCEMENT ACTIVITIES

The RVAAP was constructed in 1940 and 1941 for assembly/loading and depot storage of ammunition. While serving as an ammunition plant, the RVAAP was a U.S. Government-owned and contractor-operated (GOCO) industrial facility. The ammunition plant consisted of 12 munitions assembly facilities, referred to as "load lines." Load Lines 1 through 4 were used to melt and load 2,4,6-Trinitrotoluene (TNT) and Composition B (a mixture of TNT and Research Department Explosive) into large-caliber shells and bombs.

Operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Periodically, the floors and walls were cleaned with water and steam. After cleaning, the "pink water" wastewater, which contained TNT and Composition B, was

collected in concrete holding tanks, filtered, and pumped into unlined ditches for transport to earthen settling ponds. Load Lines 5 through 11 manufactured fuzes, primers, and boosters. From 1946 to 1949, Load Line 12 produced ammonium nitrate for explosives and fertilizers; subsequently, it was used as a weapons demilitarization facility.

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

In addition to production and demilitarization activities at the load lines, other activities conducted at the RVAAP included the burning, demolition, and testing of munitions. The locations used as burning and demolition grounds consisted of large, open areas and abandoned quarries. Other AOCs associated with the RVAAP include landfills, an aircraft fuel tank testing area, and various industrial support and maintenance facilities.

Various support buildings existed at CC RVAAP-76 Depot Area. Those buildings associated with this AOC include the following (Figure 3), and are referred to in reports as the areas of interest and exposure units:

- Building A-2 – Motor Repair Building
- Building A-3 – Service Garage/Tool Crib
- Building U-4 – Material Handling Equipment Repair Shop
- Building U-5 – Equipment Repair Building
- Building U-10 – Box Repair Shop
- Building U-20 – Incinerator
- Building EE-102 – Bolton Barn

CC RVAAP-76 Depot Area was constructed as part of the original RVAAP facility. Prior to the purchase of the property in August 1940, CC RVAAP-76 Depot Area consisted of the Bolton Farm. The Army continued to use some of the buildings from the Bolton Farm. Railroad tracks (spurs) formerly serviced CC RVAAP-76 Depot Area from the north, terminating south of Building U-10, Building 1W-1, and Building U-14. The Depot Administration Area Telephone Building is the last remaining building of the former Bolton Farm that existed before construction of RVAAP. Operations at CC RVAAP-76 Depot Area began during World War II (circa 1941) and continued through the Vietnam War era. The area is currently used by the OHARNG for storage and military training purposes.

Based on the *Historical Records Review (HRR) Report for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern)* (Science Applications International Corporation [SAIC] 2011) and the Final RI/FS report (USACE 2016), some of the historical operations conducted at CC RVAAP-76 Depot Area included fueling operations, locomotive repair, petroleum, oil, and lubricant (POL) storage, solid waste incinerator activities, and vehicle repair and maintenance. The following activities occurred at the AOC:

- Demilitarization activities at Building U-10 reportedly consisted of reconditioning fin assemblies, the AN-M106A1 track vehicle, and the F/250-pound bomb. Building U-10 was also used for debanding of 8-inch high explosive projectiles and storing M103 tank maintenance parts assemblies (SAIC 2011).
- A spill report was found documenting the discovery of 12 "paint cans" (estimated 5-gallon cans) during the search for an underground storage tank (UST) near the former Bolton Mansion (EE-102). The cans were removed in June 1991. A log book entry documented that the paint cans contained a dry silicone-type substance. Samples were taken from the material and analyzed for toxicity characteristic leaching procedure (TCLP) metals, volatile organic compounds (VOCs) and flashpoint; the results were below regulatory levels. No documentation of soil sampling from the excavation area was found (SAIC 2011).
- Various maintenance activities occurred at multiple locations and buildings throughout CC RVAAP-76 Depot Area; however, no documentation on any specific spills or releases was found during the HRR (SAIC 2011).
- Eleven USTs were known to have been located within the site boundaries but are being evaluated separately as part of CC RVAAP-72 (SAIC 2011).
- Building U-5, the equipment repair shop, was a facility used to repair locomotives, and typical chemicals/products used during locomotive maintenance activities may have included engine washing chemicals, valve oil, electrolytes (battery maintenance), locomotive black paint, solvents for parts degreasing, lubrication oil, metal preservatives, carbolineum, creosote, and cold patch asphalt (SAIC 2011).

C COMMUNITY PARTICIPATION

Using the RVAAP community relations program, the Army and Ohio EPA have interacted with the public via news releases, public meetings, reading materials, direct mailings, an internet website, and receiving and responding to public comments. Specific items in the community relations program include the following:

Restoration Advisory Board: The Army established a Restoration Advisory Board in 1996 to promote community involvement in U.S. Department of Defense environmental cleanup activities and allow the public to review and discuss the progress with decision makers. Board meetings are generally held twice a year and are open to the public.

Community Relations Plan: The *Community Relations Plan* (Vista 2017) was prepared to establish processes to keep the public informed of activities at RVAAP. The plan is available in the administrative record at Camp Ravenna.

Internet Website: The Army established an internet website in 2004 for RVAAP. It is accessible to the public at www.rvaap.org.

In accordance with CERCLA Section 117(a) and NCP Section 300.430(f)(2), the Army released the *Proposed Plan for CC RVAAP-76 Depot Area* (Parsons 2018) to the public on February 16, 2018. The Proposed Plan and other project-related documents were made available to the public in the Administrative Record maintained at Camp Ravenna and in the Information Repositories at Reed Memorial Library in Ravenna, Ohio, and Newton Falls Public Library in Newton Falls, Ohio. A notice of availability for the Proposed Plan was published in local newspapers

(*Record-Courier* and *Tribune Chronicle*), as specified in the *Community Relations Plan* (Vista 2017). The notice of availability initiated the 30-day public comment period beginning February 16, 2018 and ending March 17, 2018.

The Army held a public meeting on February 28, 2018, at the Ravenna High School Community Room, 6589 North Chestnut Street, Ravenna, Ohio 44266 to present the Proposed Plan. At this meeting, representatives of the Army provided information and were available to answer any questions. A transcript of the public meeting is available to the public and has been included in the Administrative Record. Responses to any verbal comments received at this meeting and written comments received during the public comment period are included in the Responsiveness Summary, which is Part III of this ROD. The Army considered public input from the public meeting on the Proposed Plan when selecting the remedy.

D SCOPE AND ROLE OF RESPONSE ACTIONS

The overall program goal of the RVAAP Restoration Program at the former RVAAP is to clean up previously contaminated lands to reduce contamination to concentrations that are not anticipated to cause risks to human health or the environment. No prior remedial actions have been performed at the AOC.

This ROD addresses soil, sediment, and surface water. The intended future Land Use for CC RVAAP-76 Depot Area is Military Training Land Use, which is consistent with the intended future Land Use for Camp Ravenna. Unrestricted (Residential) Land Use for the Residential Receptor is included to evaluate COCs, as required by the CERCLA process. The contamination present at CC RVAAP-76 Depot Area poses a potential risk to human health because COC concentrations exceeded the CUGs for the Resident Receptor for Unrestricted (Residential) Land Use. Implementing the remedy described in this ROD will address potential risk though removal and off-site disposal of contaminated soil. The selected remedy described in the ROD is consistent with, and protective for, Unrestricted (Residential) Land Use at the AOC. Other media (e.g., groundwater) and AOCs at Camp Ravenna will be managed as separate actions or decisions by the Army and will be considered under separate RODs.

E SITE CHARACTERISTICS

Site characteristics, nature and extent of contamination, and the conceptual site model for CC RVAAP-76 Depot Area are based on investigations conducted from 1996 through 2016 and are summarized in the *Final Remedial Investigation/Feasibility Study, CC RVAAP-76 Depot Area, Former Ravenna Army Ammunition Plant* (USACE 2016).

E.1 Physical Characteristics

This section describes the topography/physiology, geology, hydrogeology, and surface water features of Camp Ravenna and CC RVAAP-76 Depot Area that were key factors in identifying the potential contaminant transport pathways, receptor populations, and exposure scenarios to evaluate human health and ecological risks.

E.1.1 Topography/Physiography

The topography of CC RVAAP-76 Depot Area is generally sloping from west to east toward Hinkley Creek, which lies along the east boundary of CC RVAAP-76 Depot Area. The western side of CC RVAAP-76 Depot Area is topographically high at an elevation of approximately 1,130 feet, relative to the east site at an elevation of 1,100 feet. Overall surface water drainage patterns are toward Hinkley Creek along constructed ditches, natural conveyances, and through the existing storm sewer network.

E.1.2 Geology

The regional geology at the facility consists of horizontal to gently dipping bedrock strata of Mississippian and Pennsylvanian age overlain by varying thicknesses of unconsolidated glacial deposits. The Sharon Member of the Pennsylvanian Pottsville formation is the primary bedrock underlying RVAAP. In the western portion of the facility, the upper members of the Pottsville Formation, include the Massillon sandstone, Mercer shale, and uppermost Homewood sandstone.

The soil type present at CC RVAAP-76 Depot Area (Figure 4) consists of Wadsworth silt loams, occurring at 0 to 2 percent (%) slopes on the eastern portion of the site, and 2 to 6% slopes in the western portion of the site. Wadsworth silt loams are poorly drained with rapid surface runoff and low to high permeability (United States Department of Agriculture [USDA] 1978, 2010).

E.1.3 Hydrogeology

There are two facility-wide wells located within the CC RVAAP-76 Depot Area boundary: FWGmw-008 located to the southeast and FWGmw-009 located to the east. Well gauging data collected at these wells during the September 2016 facility-wide sampling event indicated groundwater elevations of 1103 and 1098 feet above mean sea level (amsl) (TEC-Weston 2017). Depth to groundwater is approximately 10 to 20 feet bgs. Groundwater flows west to east (Figure 5).

Surface water at CC RVAAP-76 Depot Area occurs intermittently as storm water runoff within ditches or conveyances and in several wetlands areas on the AOC. Wetland areas are present to the east of CC RVAAP-76 Depot Area adjacent to the Hinkley Creek floodplain, to the west of Building U-7, and south of CC RVAAP-76 Depot Area. Railroad tracks (spurs) formerly serviced CC RVAAP-76 Depot Area from the north, terminating south of Building U-10, Building 1W-1, and Building U-14. Site features are depicted on Figure 3.

E.1.4 Ecology

Numerous plant community and wildlife studies have been conducted at the facility going back to 1993 (OHARNG 2014). Plant communities have been mapped for the entire facility including CC RVAAP-76 Depot Area, using two classification systems:

- Anderson's Classification Scheme (Anderson 1982) in 1993 (ODNR-DNAP 1993); and
- The Federal Geographic Data Committee (FGDC) Vegetation Classification Standard (National Spatial Data Infrastructure 1997) in 1999 (SAIC 1999).

The FGDC Vegetation Classification Standard is the approved standard for vegetation classification on federal land. Using the FGDC Vegetation Classification Standard plant communities in and around CC RVAAP-76 were mapped as:

- Dry mid-successional cold-deciduous shrubland;
- Green ash (*Fraxinus pensilvanica*), American elm (*Ulmus Americana*) and Common hackberry (*Celtis occidentalis*) and Southern hackberry (*Celtis laevigata*) temporarily flooded forest;
- Red maple (*Acer rubrum*) successional forest;
- Mixed cold-deciduous successional forest;
- Mixed needle-leaved evergreen cold deciduous forest; and
- Dry early successional herbaceous shrubland.

Wildlife studies have not been conducted specifically for CC RVAAP-76 Depot Area. However, with its mix of scrubland and forest edge habitats, CC RVAAP-76 provides habitat for a variety of wildlife species. CC RVAAP-76 provides foraging and protected nesting habitat for birds. CC RVAAP-76 also provides habitat for small mammals including, mice and voles, shrews, and moles. Larger mammals occurring on the facility including white-tailed deer, raccoons, woodchucks, and eastern fox squirrels may also use CC RVAAP-76 habitats but only transiently.

CC RVAAP-76 Depot Area contains wetlands, wooded areas, and scrub-shrub habitat. The CC RVAAP-76 AOC consists primarily of scrubland and forest edge habitats that may support a variety of species including State-listed species that have been observed at the facility. The federally threatened Northern Long Eared Bat is also present at Camp Ravenna. A site-specific ecological study has not been performed within CC RVAAP-76 Depot Area. CC RVAAP-76 Depot Area is near Hinkley Creek (approximately 1,200 feet to the east).

E.2 Site Investigations

The following environmental investigations have been completed for the CC RVAAP-76 Depot Area:

- *Preliminary Assessment for the Characterization of Areas of Contamination (USACE 1996).*
- *2010 Soil Sampling at Building U-10 (USACE 2009)*
- *Historical Records Review Report for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern), Ravenna Army Ammunition Plant, Ravenna, Ohio. (SAIC 2011).*
- *Final Remedial Investigation/Feasibility Study CC RVAAP-76 Depot Area (USACE 2016).*

E.2.1 Historical Records Review

A summary of the findings detailed in the *Historical Records Review Report for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern)* (SAIC 2011) for this AOC is provided below.

Building A-2 - Building A-2 was a former motor repair facility. No documented releases were found; however, potential impacts may have occurred near floor pits, floor drains, etc. No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building A-2 due to the potential contamination from a former motor repair facility. The target analytes recommended were target analyte list (TAL) metals, semivolatile organic compounds (SVOCs), and VOCs for surface soil in vicinity of service bay entrances and for subsurface soil/dry sediment in any adjacent ditches.

Building A-3 - Building A-3 was used as a service garage/tool crib. No documented releases were found during the HRR (SAIC 2011). No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building A-3 due to the potential contamination from a former service garage. The target analytes recommended were TAL metals, SVOCs, and VOCs for surface soil in vicinity of service bay entrances and for subsurface soil/dry sediment in any adjacent ditches.

Building U-4 - Interviewees noted a rail car/heavy equipment repair facility located near Building U-4. Building U-4 was also noted as a former POL storage area, which included a waste oil aboveground storage tank (AST). The RVAAP-24 Waste Oil Tank was an AST used to store waste oil from the vehicle maintenance operations of a RVAAP tenant organization location in the Depot Area. This tank may have been referred to by interviewees as a "buffalo" tank. The tank was located next to the motor oil storage shed. Tank was used from 1983 to 1993, after which it was emptied. No documented releases were found for this AOC during the HRR (SAIC 2011). Possible spills at waste oil tank may have occurred. No documented releases were found during the HRR (SAIC 2011). No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building U-4 due to the potential for contamination associated with former activities including rail car/heavy equipment repair and POL storage. The target analytes recommended were TAL metals, SVOCs, and VOCs for surface soil in vicinity of storage areas and waste oil AST and for surface soil/dry sediment in adjacent drainage ditches.

Building U-5 – Building U-5 was used as a locomotive repair shop. The center of the building appeared to have been equipped with a floor pit. No documented releases were found during the HRR (SAIC 2011). No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building U-5 due to the potential for contamination associated with former activities including locomotive repair activities. The target analytes recommended were TAL metals, SVOCs, VOCs, and polychlorinated biphenyls (PCBs) for surface soil in vicinity of service bay entrances and for surface soil/dry sediment in any adjacent drainage ditches.

Building U-10 - USACE conducted soil sampling immediately adjacent to former Building U-10. Samples were collected around the building slab near floor drain outfalls. Soil samples were analyzed for explosives, propellants, SVOCs, PCBs, pesticides, VOCs, and TAL metals, including

mercury and hexavalent chromium. Detections of all chemicals were found; however, evaluation of nature and extent and risk was not performed. The unvalidated data was compared to background levels and the unvalidated data indicates exceedances for inorganic chemicals (arsenic, chromium, and cobalt) and one SVOC [benzo(a)pyrene]. No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building U-10 due to the potential for contamination from former demilitarization operations. The target analytes recommended were TAL metals, explosives, and propellants for surface/subsurface soil in the vicinity of Building U-10.

Building U-20 - An incinerator (former Building U-20) said to burn solid waste was located in this area. No information was discovered for this facility during the HRR (SAIC 2011). No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at Building U-5 due to the potential for contamination associated with former activities at the site including a former incinerator. The target analytes recommended were TAL metals, SVOCs, explosives, propellants, and PCBs for surface soil/dry sediment in Building U-20 vicinity and in any adjacent drainage ditches and for surface water and wet sediment (if present).

Building EE-102 Bolton Barn - Tank maintenance activities occurred at the Old Bolton Barn. No documented evidence of spills or releases was found during the HRR (SAIC 2011). No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at the Bolton Barn due to the potential contamination from former tank maintenance activities. The target analytes recommended were TAL metals, SVOCs, and VOCs for surface soil in vicinity of entrances and for subsurface soil/dry sediment in any adjacent ditches.

Paint Can Area - A spill report was found documenting the discovery of 12 “paint cans” (est. 5-gallon cans) during an attempt to locate a UST near the Bolton Mansion (EE-102). A log book entry documented that the paint cans contained a dry silicone-type substance. No documentation of UST location, removal, or samples upon supposed removal from EE-102 was found. Samples were taken of the paint can material and analyzed for TCLP metals, VOCs, and flash point. The results were below regulatory levels. No visual evidence of impacts (e.g., stained soil, stressed vegetation) was observed during the property visit.

Further investigation was recommended at the Bolton Barn due to the potential contamination from former buried paint cans. The target analytes recommended were TAL metals, explosives, propellants, SVOCs, VOCs, and PCBs for surface soil and subsurface soil.

E.2.2 Remedial Investigation/Feasibility Study

The RI/FS report (USACE 2016) conducted for this AOC was based primarily on findings of the HRR Report (SAIC 2011) and review of previous investigations. The RI/FS report (USACE 2016) included sampling 10 surface soil samples using incremental sampling method (ISM), 63 subsurface soil ISM samples, 1 composite soil sample, 4 wet sediment samples, and 2 surface water samples from the areas requiring further evaluation. Samples were analyzed for metals

including hexavalent chromium and mercury, pesticides, PCBs, VOCs, SVOCs, and explosives/propellants. The RI/FS report (USACE 2016) concluded that Buildings A-2, A-3, U-4, U-5, U-10, U-20, Bolton Barn, and the Paint Can area have been adequately characterized and no additional investigation is warranted. The sampling and results are discussed further in Section E.3.

E.3 Nature and Extent of Contamination

The media sampled as part of the RI/FS report (USACE 2016) included surface soil (0–1 ft bgs), subsurface soil (1–13 ft bgs), wet sediment, and surface water. Sample results were used to define the nature and extent of contamination, conduct fate and transport soil screening analyses, and support a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA). Investigative samples were collected using ISM and discrete methods. One composite soil sample was collected. All samples were analyzed for one or more of the following analytes: TAL metals, SVOCs, PCBs, explosives/propellants. In addition, one surface soil and nine subsurface soil samples also were analyzed for the full suite of analytes [i.e., TAL metals, SVOCs, PCBs, organochlorine pesticides, VOCs, and explosives/propellants].

Site-related Compounds (SRCs) were identified in all media evaluated at CC RVAAP-76 Depot Area except surface water. SRCs were identified in surface soil, subsurface soil, and wet sediment. Most SRCs were inorganics and SVOCs which occurred around Building A-2, Building A-3, Building A-4, and Building A-5. Building A-2 and Building A-3 have been demolished, and rubble left in place includes asphalt which likely represents a non-AOC source contribution of SVOCs. Railroad tracks formerly existed on both sides of Building U-4 and Building U-5 and likely represent a non-AOC source of SVOCs.

Forty-four (44) SRCs were identified in surface soils, more than half of which were SVOCs. Eleven inorganics, four VOCs, one PCB, three pesticides, and one explosive comprised the rest of the SRCs in surface soil (USACE 2016).

Forty-two (42) SRCs were identified in subsurface soils, half of which were SVOCs. Nine inorganics, nine VOCs, one pesticide, and one explosive comprised the remaining SRCs.

Thirty-seven (37) SRCs were identified in wet sediment, many which were SVOCs. The only detection of nitrocellulose was found in a wet sediment sample collected from north of Building U-20. Two explosives were also detected in wet sediment samples. No SRCs were identified from the two surface water samples collected from a drainage ditch north of Building U-20 (USACE 2016).

E.4 Conceptual Site Model

Conceptual site model elements are discussed in this section, including primary and secondary sources and release mechanisms, contaminant migration pathways and discharge or exit points, and potential human and ecological receptors.

E.4.1 Primary and Secondary Contaminant Sources and Release Mechanisms

No primary contaminant sources (e.g. operational facilities) remain at CC RVAAP-76 Depot Area. USTs have been removed, operations have ceased (except for OHARNG training activities at building U-10), and many buildings have been demolished with only foundations left in place and there are no known ongoing releases. Residual surface soil contamination is considered a secondary source of contamination by leaching of contaminants to groundwater or by impacting surface water that discharges into Hinkley Creek or nearby wetlands. Leaching of SRCs to groundwater represents a potential contaminant release mechanism and migration pathway. Sampling was conducted during the RI to define the nature and extent of any potential contamination.

E.4.2 Contaminant Migration Pathways and Exit Points

The potential for soil and sediment contaminants to impact groundwater was evaluated in a fate and transport evaluation presented in the RI/FS report (USACE 2016). Inorganic and organic SRCs in surface and subsurface soil were further evaluated to determine if residual concentrations in soil pose a risk to groundwater. The fate and transport evaluation included modeling and comparing the model results to Facility-Wide Cleanup Goals (FWCUGs, SAIC 2010), background concentrations, and Maximum Contaminant Levels (MCLs) / United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs). A multi-step analysis included the following steps:

- Identifying SRCs.
- Comparing the maximum SCR concentrations with Generic Soil Screening Levels to develop the initial Contaminant Migration Chemicals of Potential Concern (CMCOPC).
- Comparing the maximum initial CMCOPC concentrations with a dilution-attenuation factor-based soil screening level to refine the initial CMCOPCs.
- Estimating the contaminant vertical migration travel time to reach the water table and eliminating those that take more than 1,000 years to migration from the source area to the water table.

The fate and transport modeling using refined CMCOPCs showed that the vertical leachate travel time exceeded 1,000 years. Therefore, no additional leaching modeling was necessary. The conclusions of the fate and transport modeling were that all SRCs in soil were eliminated as potential risks to groundwater (Parsons 2018, USACE 2016). Therefore, it was concluded that all SRCs in soil should be eliminated as potential risks to groundwater.

E.4.3 Potential Human Receptors and Ecological Resources

In February 2014, the Army and Ohio EPA amended the risk assessment process to address changes in the IRP. The *Final Technical Memorandum: Land Uses and Revised Risk Assessment Process for the RVAAP Installation Restoration Program* (ARNG 2014) identified the following three Categorical Land Uses and Representative Receptors to be considered during the RI phase of the CERCLA process.

1. Unrestricted (Residential) Land Use – Resident Receptor (Adult and Child) (formerly called Resident Farmer).
2. Military Training Land Use – National Guard Trainee.
3. Commercial/Industrial Land Use – Industrial Receptor (USEPA Composite Worker).

The OHARNG Land Use for CC RVAAP-76 Depot Area is military training. The representative receptor is the National Guard Trainee. Unrestricted (Residential) Land Use for the Residential Receptor is also included to evaluate COCs, as required by the CERCLA process. An evaluation using Resident Receptor (Adult and Child) FWCUGs (SAIC 2010) was used to provide an Unrestricted (Residential) Land Use evaluation. Unrestricted (Residential) Land Use is considered protective for all categories of Land Use at Camp Ravenna. The receptor is assumed to be exposed to surface soil from 0–1 feet bgs and subsurface soil from 1–13 feet bgs. Exposure to soil contaminants, if identified at the AOC, could occur with active use of the AOC (e.g. training activities).

The HHRA performed for site CC RVAAP-76 Depot Area was an evaluation to determine if there was potential risk posed to the National Guard Trainee and Resident Receptors. No COCs were retained for the National Guard Trainee, and there is no exposure risk for National Guard Trainees. Four COCs were identified in surface soil as requiring remediation to be protective for the Resident Receptor for Unrestricted (Residential) Land Use. The risk evaluation identified risks to the resident receptor from PAHs in surface soil at Building U-4 and Building U-5. No other COCs were identified in any other media at the other exposure units assessed for this AOC. Therefore, surface soils around these two buildings should be addressed to mitigate exposure risk to the resident receptor.

Groundwater is being evaluated on a facility-wide basis under the CERCLA process, and results will be presented in a separate report. No groundwater receptors have been identified for this AOC. Groundwater in CC RVAAP-76 Depot Area is not currently used for potable purposes. The nearest groundwater supply wells utilized by the OHARNG at the facility are in the Administration Area approximately 4 miles to the east of CC RVAAP-76 Depot Area.

CC RVAAP-76 Depot Area contains shrubland and forest-edge habitat. No detailed ecological study has been performed within CC RVAAP-76 Depot Area. Wildlife inhabiting CC RVAAP-76 Depot Area would be potential receptors to contamination in soil, sediments and/or surface water. The AOC is near Hinkley Creek (approximately 1,200 feet away). If contaminants from the AOC reach Hinkley Creek either through runoff or from the groundwater, then the ecological receptors could be potentially impacted.

F CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

The area is currently used by the OHARNG for storage and military training. The future use of CC RVAAP-76 Depot Area is for storage and military training. In accordance with CERCLA, the Resident Receptor was evaluated in the HHRA to assess an Unrestricted (Residential) Land Use scenario.

G SUMMARY OF SITE RISKS

The HHRA and ERA estimated risks to human receptors and ecological resources; identified exposure pathways; identified COCs and Chemicals of Potential Ecological Concern (COPECs), if any; and provided a basis for remedial decisions. This section of the ROD summarizes the results of the HHRA and ERA, which are presented in detail in the RI/FS report (USACE 2016) and Proposed Plan (Parsons 2018) in the Administrative Record and Information Repositories.

G.1 Human Health Risk Assessment

A HHRA was performed during the RI to identify COCs and provide a risk management evaluation to determine if remediation is required under CERCLA based on potential risks to human receptors. The HHRA evaluated potential risk that the SRCs present in surface soil, subsurface soil, sediment, and surface water posed to the National Guard Trainee. In addition, risk was estimated for the Resident Receptor to evaluate a potential Unrestricted (Residential) Land Use as a comparative baseline, in accordance with CERCLA.

No COCs were identified for six of the areas investigated at CC RVAAP-76 Depot Area (Building A-2, Building A-3, Building U-10, Building U-20; Bolton Barn, or the Paint Can Area). No COCs were identified in surface or subsurface soils for Military Training Land Use.

The risk evaluation process identified risks to a potential Unrestricted (Residential) Land Use Receptor from carcinogenic PAHs in surface soils at Building U-4 and Building U-5. The COCs for these two buildings include dibenzo(a,h)anthracene, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene (Table 2). The total risk range from the PAHs in surface soils is 2×10^{-4} at Building U-4 and 3×10^{-4} at Building U-5. Therefore, surface soils around these two buildings were addressed during the FS to develop and screen remedial action alternatives to address PAHs and obtain Unrestricted (Residential) Land Use. No other COCs were identified in any of the media at the other exposure units assessed for this AOC.

Table 2. Summary of COCs and CUGs in Surface Soil (0–1 feet bgs) for Unrestricted (Residential) Land Use at Building U-4 and Building U-5

COCs	Maximum Detected Concentration (mg/kg)	Resident Receptor CUGs (HQ=1.0, TR=10^{-5}) (mg/kg)
Benzo(a)pyrene	Building U-4: 29 Building U-5: 51	1.1
Benzo(a)anthracene	Building U-4: 34 Building U-5: 58	11
Benzo(b)fluoranthene	Building U-4: 43 Building U-5: 80	11
Dibenzo(a,h)anthracene	Building U-4: 5.2 Building U-5: 7.2	1.1

bgs = below ground surface. COCs = Chemicals of Concern. CUGs = cleanup goals. HQ = hazard quotient. mg/kg = milligram(s) per kilogram. TR = target risk.

G.2 Ecological Risk Assessment

The ERA was conducted to evaluate the potential for chemicals detected in surface soil, sediment, and surface water to adversely affect ecological receptors. Maximum concentrations of analytes detected in surface soil, sediment, and surface water were compared to site-specific background screening values and to conservative ecological screening benchmarks for generic receptors to identify COPECs. Analytes retained for further evaluation were subsequently assessed using more realistic assumptions in a refining step. Considering site-specific factors, and considering mitigating uncertainties, it is unlikely that exposure to soil, sediment, or surface water would adversely affect communities or populations of common ecological receptors or individuals of State-listed species in CC RVAAP-76 Depot Area.

No COPECs were identified. No further investigation (e.g., Level III Baseline ERA) or removal action is considered necessary at CC RVAAP-76 Depot Area for the protection of ecological receptors.

G.3 Basis for Action Statement

Results of the HHRA for the AOC indicate that exposure to surface soil for a potential future Unrestricted (Residential) Land Use Receptor may result in unacceptable risks to human receptors unless remediation is undertaken. The response action selected in this ROD is necessary to protect public health and welfare or the environment from actual or threatened releases of hazardous substances.

H REMEDIAL ACTION OBJECTIVES

The remedial action objective (RAO) references CUGs and target risk levels that are considered protective of human health under future use scenarios. The RAO for CC RVAAP-76 Depot Area is to prevent Resident Receptor exposure to COCs above CUGs in soil. Table 2 presents the media-specific COCs, CUGs, and depth requiring remediation. The USEPA updated the estimated toxicity of several PAHs in 2017. The CUGs for PAHs in soil are based on USEPA May 2018 Regional Screening Levels for the Residential Receptor adjusted for 10^{-5} cancer risk.

I DESCRIPTION OF ALTERNATIVES

The RI/FS report (USACE 2016) developed and evaluated remedial alternatives for surface soil at CC RVAAP-76 Depot Area. The remedial alternatives are listed below:

- Alternative 1: No Action,
- Alternative 2: Land Use Controls, and
- Alternative 3: Excavation and Off-Site Disposal.

This section includes a description of various components of the remedial alternatives identified in the RI/FS report (USACE 2016), including soil removal, disposal, and handling.

I.1 Alternative 1 – No Action

Alternative 1 provides no remedial action and is required under NCP as a baseline for comparison with other remedial alternatives. Alternative 1 provides no additional protection to human health and the environment. Any current legal and administrative LUC mechanisms at the AOC will be discontinued. No future legal, administrative, or physical LUC mechanisms will be employed at the AOC. Environmental monitoring would not be performed, and Five-year Reviews would not be conducted in accordance with CERCLA 121(c). In addition, no restrictions on land use will be pursued.

I.2 Alternative 2 – Land Use Controls

LUCs include access and land-use restrictions, with long-term monitoring, which would reduce the potential for exposure to contaminated soil at CC RVAAP-76 Depot Area. Under this Alternative, contaminated soil would remain in place. Land-use controls would include the prohibition of residential use of the property and invasive (digging) activities. These restrictions would be incorporated into the Property Management Plan. Restrictions would be incorporated into any real property documents should the property be transferred. Any restrictions or LUCs would need to be properly managed including compliance documentation through inspections and an annual reporting to the Ohio EPA.

It is important to note that SVOCs in the surface soil at Building U-4 and Building U-5 are greater than Resident Receptor criteria but less than the risk criteria for the National Guard Trainee Receptor. In addition, there is currently no risk to ecological receptors. Because contamination is left in-place, this Alternative does not allow for unrestricted site use and unlimited exposure. Therefore, under this alternative, CERCLA Five-year Reviews would be required to determine if this remedy remains protective. This Alternative includes the following components:

- Regulation of intrusive activities in areas containing potentially contaminated soil,
- Implementation of land use restrictions for the Resident Receptor (Adult and Child) including annual inspections and reporting, and
- Five-year Reviews.

I.3 Alternative 3 – Excavation and Off-Site Disposal

Alternative 3 involves removing and transporting chemical contaminants in soil that pose a risk to the Resident Receptor for Unrestricted (Residential) Land Use. Contaminated surface soil up to 1-foot bgs from around Building U-4 and Building U-5 would be excavated and permanently disposed in a Resource Conservation and Recovery Act (RCRA)-permitted landfill as a non-hazardous waste. The areas to be excavated within CC RVAAP-76 Depot Area are shown in Figure 3. The total volume of contaminated soil is estimated to be 1,133 cy. Off-site disposal of contaminated soils will require coordination with facilities accepting the material to ensure that proper documentation is prepared. Confirmation sampling will be conducted to ensure CUGs are attained. Areas undergoing soil removal will be re-graded and backfilled with clean soil. Alternative 3 does not include LUCs or CERCLA Five-year Reviews as Unrestricted (Residential) Land Use will be attained through remedial actions conducted under this remedial alternative.

J SUMMARY OF COMPARATIVE ANALYSIS OF 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.

Table 3. CERCLA Evaluation Criteria

Threshold Criteria – must be met for the Alternative to be eligible for selection as a remedial option.

1. **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.
2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** – considers how a remedy will meet all the ARARs and other federal and state environmental statutes and/or provide grounds for invoking a waiver.

Balancing Criteria – are rated high, medium, or low and are used to weigh major trade-offs among Alternatives.

3. **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.
4. **Reduction of Toxicity, Mobility, or Volume Through Treatment** – considers the anticipated performance of the treatment technologies that may be employed in a remedy.
5. **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.
6. **Implementability** – considers the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.
7. **Cost** – considers capital costs and operation and maintenance (O&M) costs associated with the implementation of the Alternative.

Modifying Criteria – may be considered to the extent that information is available during development of the feasibility study but can be fully considered only after public comment on the Proposed Plan.

8. **State Acceptance** – indicates whether the state concurs with, opposes, or has no comment on the preferred Alternative.
9. **Community Acceptance** – will be addressed in the Record of Decision (ROD) following a review of the public comments received on the Remedial Investigation/Feasibility Study (RI/FS) and Proposed Plan.

A summary of the comparative analysis is presented in Table 4.

Table 4. Summary of Comparative Analysis

Criteria	Alternative		
	1 No Action	2 Land Use Controls	3 Excavation and Off-Site Disposal
Threshold Criteria			
Overall Protection of Human Health and the Environment	No	No	Yes
Compliance with ARARs	Not Applicable	Not Applicable	Yes
Balancing Criteria			
Long-Term Effectiveness and Permanence	○	○	●
Reduction of Toxicity, Mobility, or Volume by Treatment	○	○	◑
Short-Term Effectiveness	Not Applicable	●	●
Implementability	Not Applicable	●	●
Cost ($)	0	69,400	215,000
Modifying Criteria			
State Acceptance	NR	NR	NR
Community Acceptance	NR	NR	NR
Relative Chance of Meeting Criteria: ○ Low ◑ Moderate ● High NR = Not Rated			

J.1 Overall Protection of Human Health and the Environment

Alternative 1, No Action, is not protective of human health, as COCs for the Resident Receptor remain on site. This criterion must be met for an Alternative to be considered for final selection. Alternative 1, No Action, will not reduce the short- or long-term risks from potential exposure to COCs, and is thus not protective. Alternative 2, Land Use Controls, would prevent or limit exposure to hazardous chemicals left in place at the site to humans through ingestion, inhalation, or contact with exposed COC-impacted soils but does not provide long-term protection of human health and the environment. Alternative 3, Excavation and Off-Site Disposal, provides overall protection of human health and the environment by removing soils containing contaminants at concentrations above remediation goals at the site. Alternative 3 allows for Unrestricted Land Use for the Resident Receptor. No risks were identified for ecological receptors. Therefore, the Alternatives do not include remedial actions to address ecological receptors.

J.2 Compliance with Applicable or Relevant and Appropriate Requirements

CERCLA Section 121 specifies that remedial actions must comply with requirements or standards under federal or more stringent state environmental laws that are "applicable or relevant and appropriate to the hazardous substances or particular circumstances at the site." These enforceable standards protect future users of the AOC. Location- and potential action-specific Applicable or Relevant and Appropriate Requirements (ARARs) are identified in Attachments 1 and 2, respectively. No location- or potential action ARARs would apply to Alternative 1, No Action, or Alternative 2, Land Use Controls. Alternative 3, Excavation and Off-Site Disposal, would comply with location and potential action-specific ARARs.

J.3 Long-Term Effectiveness and Permanence

Alternative 1, No Action, is neither effective nor permanent long term. Alternative 1 will not involve any remedial action or LUCs for potential future exposure. Alternative 2, Land Use Controls, does not involve active treatment and will not yield treatment residuals or require long-term management. However, in the absence of an active remedy or significant natural attenuation processes, contaminated soils will remain in place at CC RVAAP-76 Depot Area and will continue to pose a long-term risk to human health and the environment. Inspections will be conducted to assess whether CC RVAAP-76 Depot Area conditions are adequately protective of human health and the environment. Alternative 3, Excavation and Off-Site Disposal, is rated high because the remedy is considered permanent and effective long term since soil is removed that presents a risk to the Resident Receptor. Alternative 3 attains Unrestricted (Residential) Land Use; therefore, no LUCs or Five-year Reviews are required.

J.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1, No Action, and Alternative 2, Land Use Controls, will not involve active treatment, containment, removal, or disposal. Because no treatment would be implemented, there would be no reduction in toxicity, mobility, or volume. It is not likely that the COCs would naturally attenuate to levels protective of human health and the environment within an acceptable timeframe. Therefore, Alternative 1 and Alternative 2 will not result in the significant reduction in the mass

or volume of the COC. In the absence of active treatment and degradation processes, the contaminants will continue to be toxic to humans and terrestrial organisms.

Although Alternative 3, Excavation and Off-Site Disposal, will not treat or destroy the contaminated material, it is rated moderate because the remedy will significantly reduce the total mass of the COCs at CC RVAAP-76 Depot Area by removing impacted soils. This process permanently reduces the toxicity, mobility, and volume of COC-impacted soil at CC RVAAP-76 Depot Area by transferring the material to a proper off-site disposal facility. This process is permanent and irreversible for CC RVAAP-76 Depot Area. Alternative 3 will not yield any toxic residuals once the excavated materials have been removed. Process residuals may include wash water from equipment decontamination, accumulated storm water, and disposable personal protective equipment (PPE).

J.5 Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and environment during construction and operation of the remedy until CUGs are achieved.

No short-term human health risks are associated with Alternative 1, No Action, beyond baseline conditions because no actions will be implemented that have impacts on soil, air quality, water resources, or biotic resources. The environment will not face additional adverse impact due to construction activities such as erosion, sedimentation, or vegetative damage.

Alternative 2, Land Use Controls, is rated high for short-term effectiveness because short-term risks to site workers and the environment would be minimal during implementation of the remedy. The environment would not face additional adverse impact due to construction activities such as erosion, sedimentation, or vegetative damage.

Potential short-term risks to site workers during the implementation of Alternative 3, Excavation and Off-Site Disposal, would be mitigated by protection procedures specified in the health and safety plan and through engineering controls. It is expected that remediation goals will be achieved in approximately three weeks. Until remediation goals are met, there exists a potential risk of exposure for the community to the COC through ingestion, inhalation, and contact with COC-impacted soils. It is expected that there will be an increase in traffic, noise, and dust pollution associated with the removal and transport of the soils and the import and placement of clean fill in the excavated areas. The use and maintenance of temporary construction fencing and warning signs during remediation will mitigate the short-term risk to human receptors. Dust controls will be implemented to reduce risk to the community during excavation. During remedial activities, health risk to people working on CC RVAAP-76 Depot Area will increase but be minimal from potential contact to COC-impacted soils. Air quality could be affected by the release of particulates during soil excavation. Engineering controls would be implemented to ensure emissions do not exceed levels that could pose a risk to human health. The use of heavy construction equipment and vehicles for excavation and disposal activities poses potential risks of physical injuries. The potential risks to CC RVAAP-76 Depot Area workers will be managed by ensuring Occupational Safety and Health Administration (OSHA) certification and using safe working practices and PPE, consistent with the project health and safety plan. Alternative 3 will impact the surrounding

vegetation and habitat during remedial activities. Best management practices will be used to minimize surface water-run off, dust, and deposition of excavated material on potential environmental receptors. Therefore, short-term effectiveness is rated high for Alternative 3.

J.6 Implementability

No actions are proposed for Alternative 1, therefore implementability is not applicable. Implementability is rated high for Alternative 2 because it is readily and quickly implementable. Alternative 3 can be readily implemented after the remedial design is developed and all appropriate coordination with local, state, and federal agencies is completed. Excavating surface soil, constructing temporary roads, and waste handling are conventional, straightforward construction techniques and methods. Multiple off-site disposal facilities are available to accept generated waste. Resources (e.g., equipment, material, trained personnel) to implement Alternative 3 are readily available. Therefore, implementability is rated high for Alternative 3.

J.7 Cost

The present value cost to complete Alternative 1, No Action, is $0. No capital costs are associated with Alternative 1. The total capital cost of Alternative 2, Land Use Controls, is estimated at $16,500 while the total annual O&M costs are estimated at $52,910 for a total present worth cost of $69,410. The combined -30%+ 50% total capital and annual O&M costs for Alternative 2 are expected to be between $48,600 - $104,1100 over 30 years. The total capital cost of Alternative 3, Excavation and Off-Site Disposal, is estimated at $215,000. There are no annual O&M costs with Alternative 3. The -30%/+50% total capital cost for Alternative 3 is expected to be between $150,500 - $322,000 over 30 years.

J.8 State Acceptance

State acceptance was evaluated formally after the public comment period on the Proposed Plan. Ohio EPA concurs that Alternative 1, No Action, and Alternative 2, Land Use Controls, do not provide adequate protection of human health and the environment. Therefore, Ohio EPA has expressed its support for Alternative 3, Excavation and Off-Site Disposal.

J.9 Community Acceptance

Community acceptance was evaluated formally after the Proposed Plan public comment period. During the public meeting, the community voiced no objections to Alternative 3, Excavation and Off-Site Disposal, as indicated in Part III of this ROD, the Responsiveness Summary.

K PRINCIPAL THREAT WASTES

Principal threat wastes, as defined by the USEPA in *A Guide to Principal Threat and Low-Level Threat Wastes* (USEPA 1991), are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. Wastes that generally are considered to constitute principal threats include, but are not limited to:

- Liquids – wastes contained in drums, lagoons or tanks, free product floating on or under groundwater.
- Mobile source material – surface soil or subsurface soil containing high concentrations of chemicals that are mobile due to wind entrainment, volatilization, surface runoff, or subsurface transport.
- Highly toxic source material – buried drummed non-liquid wastes, buried tanks containing non-liquid wastes, or soils containing significant concentrations of highly toxic materials.

USEPA guidance indicates where mobility and toxicity of source material combine to pose a potential risk of 10^{-3} or greater, generally treatment alternatives should be considered. CC RVAAP-76 Depot Area does not contain source materials that are considered principal threat wastes, as described above, and no chemicals pose a risk of 10^{-3} or greater. As such, no remedies are required to address principal threat wastes at this AOC.

L THE SELECTED REMEDY

Alternative 3, Excavation and Off-Site Disposal, is selected for implementation at CC RVAAP-76 Depot Area. This alternative also attains the requisite level of cleanup for Unrestricted (Residential) Land Use.

L.1 Rationale for the Selected Remedy

The selected remedy meets the threshold criteria and provides the best overall balance of trade-offs in terms of the five balancing criteria:

- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume;
- Short-term effectiveness;
- Implementability; and
- Cost.

The selected remedy is protective for the future use, is cost effective, and can be performed in a timely manner. Based on the available risk assessment information, the selected remedy will achieve the RAO, which prevents Resident Receptor exposure to COCs above CUGs in soil. Using engineering controls, PPE, erosion and sediment controls, proper waste handling practices, and monitoring will mitigate short-term effects during construction. The selected remedy addresses state and community concerns by removing contaminated soil from CC RVAAP-76 Depot Area.

L.2 Description of the Selected Remedy

Alternative 3 consists of excavating contaminated surface soil to attain Unrestricted (Residential) Land Use at CC RVAAP-76 Depot Area. This alternative requires soil removal at Building U-4 and Building U-5. The estimated total disposal volume (i.e., *ex situ*) is approximately 1,133 cy. Excavated soil will be transported by truck to an off-site disposal facility. This remedial alternative requires coordinating remediation activities with Ohio EPA, OHARNG, and the Army. Coordinating with stakeholders during implementation of the excavation minimizes health and safety risks to on-site personnel and potential disruptions of Camp Ravenna activities. The time

period to complete this remedial action is relatively short and does not include an O&M period to assess impacts from soil. Components of this remedial Alternative include:

- Remedial Design;
- Waste characterization Sampling;
- Site setup, soil excavation, and waste disposal;
- Confirmatory sampling; and
- Restoration

Remedial Design. A Remedial Design plan will be developed prior to initiating remedial actions. This plan will outline construction permitting requirements; site preparation activities (e.g., staging and equipment storage areas, truck routes, storm water controls); the extent of the excavation; sequence of construction activities; decontamination; and segregation, transportation, and disposal of various waste streams. Engineering and administrative controls (e.g., erosion controls, health and safety controls) will be developed during the active construction period to ensure remediation workers and the environment are protected.

Waste Characterization Sampling. Waste characterization samples will be collected from the area requiring removal. The waste characterization samples are collected as ISM samples from the area(s) undergoing this remedy to provide the disposal facility data to properly profile the waste and determine if it is characteristically non-hazardous or hazardous. Each ISM sample analysis can include (but is not limited to) TCLP metals, TCLP VOCs, TCLP SVOCs, TCLP Pesticides, TCLP Herbicides, Reactive Cyanide, Reactive Sulfide, and PCBs.

Site Setup, Soil Excavation, and Waste Disposal. Erosion control material such as silt fences and straw bales will be installed to minimize sediment runoff prior to any ground disturbance. Dust generation will be minimized during excavation activities by keeping equipment movement areas and excavation areas misted with water. The health and safety of remediation workers, on-site Camp Ravenna employees, and the general public will be covered in a site-specific health and safety plan.

To achieve a scenario in which Unrestricted (Residential) Land Use is attained for the AOC, soil will be removed from Building U-4 and Building U-5 from 0 to 1 feet bgs. Soil removal will be accomplished using conventional construction equipment such as backhoes, bulldozers, front-end loaders, and scrapers. Oversize debris will be crushed or otherwise processed to meet disposal facility requirements. Excavated soil will be hauled off-site by truck to a licensed disposal facility permitted to accept the characterized waste stream.

Confirmatory Sampling. At the end of the soil excavation, confirmatory samples will be collected. The confirmatory samples will be sent to an off-site laboratory to be analyzed for COC concentrations. If the analyses indicate the COC concentration in soil exceeds the CUGs, further excavation will be conducted. If confirmation sample results are less than CUGs, further soil removal will not be required, and the area can be restored.

Restoration. Once it is determined additional excavation will not be required, all disturbed and excavated areas will be backfilled with clean soil, as needed, and graded to meet neighboring contours. The backfill will come from a source that was previously sampled and approved for use

by Ohio EPA. After the area is backfilled and graded, workers will apply a seed mixture (as approved by the OHARNG) and mulch. Restored areas will be inspected and monitored as required in the Storm Water Pollution Prevention Plan.

L.3 Summary of the Estimated Remedy Cost

The total capital cost to complete Alternative 3 is approximately $215,000. There are no annual O&M costs with this Alternative. This cost estimate is based on the best available information regarding the anticipated scope of the selected remedy. This is an order of magnitude engineering cost estimate that is expected to be within –30 to +50% of the actual project cost in accordance with USEPA guidance (USEPA 1988). The -30%/+50% total capital cost is expected to be between $150,500 - $322,000 over 30 years. No O&M is required; therefore, no O&M costs are associated with this Alternative.

L.4 Expected Outcomes of the Selected Remedy

Table 2 provides a summary of the CUGs to be achieved for soil at CC RVAAP-76 Depot Area after the construction phase. Residual risks after implementing the selected remedy will be within the acceptable risk range for the future use. Removing contaminated soil will reduce the likelihood of contaminant migration to other environmental media, such as surface water or groundwater. Removing soil to attain human health CUGs will also reduce risks to ecological receptors.

No negative socioeconomic and community revitalization impacts are expected from this remedial action. Positive socioeconomic impacts are expected from excavating and removing soil exceeding the CUGs because additional resources will available for use by the OHARNG training mission. Alternative 3 attains Unrestricted (Residential) Land Use therefore the site will be suitable for military training or other uses.

M STATUTORY DETERMINATIONS

The selected remedy satisfies the statutory requirements of CERCLA Section 121 and the NCP, as described below.

M.1 Protection of Human Health and the Environment

Human exposure to COCs will be eliminated to levels that are protective through excavation and off-site disposal of soil at CC RVAAP-76 Depot Area. The selected remedy also protects environmental receptors from potential exposure to COC-contaminated media. The selected remedy will attain the CUGs listed in Table 2.

M.2 Compliance with ARARs

The selected remedy will comply with the chemical-, location-, and action-specific ARARs listed in Attachments 1, 2, and 3, respectively.

M.3 Cost-Effectiveness

The selected remedy meets the statutory requirement for a cost-effective remedy. Cost effectiveness is concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its costs compared to other available options.

M.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The selected remedy represents the maximum extent to which permanent solutions are practicable for soil at the AOC. The selected remedy represents the best balance of trade-offs between the alternatives because it provides a permanent solution for contaminated media, is cost-effective, and eliminates the need for long-term LUCs respective to chemical contaminants in soil.

M.5 Preference for Treatment as a Principal Element

The selected remedy uses permanent solutions to the maximum extent practicable. The remedy does not satisfy the statutory preference for treatment. The treatment technologies were evaluated in the RI/FS report (USACE 2016) but were eliminated during the screening process. Most technologies were determined to be technically infeasible for implementation at CC RVAAP-76 Depot Area. Solidification/stabilization was considered feasible but was cost prohibitive.

M.6 Five-Year Review Requirements

Five-year Reviews in compliance with CERCLA Section 121(c) and NCP Section 300.430(f) (4) (ii) will not be required.

N DOCUMENTATION OF SIGNIFICANT CHANGES

The *Final Proposed Plan for CC RVAAP-76 Depot Area* (Parsons 2018) was released for public comment on February 16, 2018. The Proposed Plan identified Alternative 3, Excavation and Off-site Disposal, at CC RVAAP-76 Depot Area as the recommended Alternative. No significant changes were necessary or appropriate following conclusion of the public comment period.

PART III RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE U.S. ARMY PROPOSED PLAN FOR CC RVAAP-76 DEPOT AREA

A OVERVIEW

On February 16, 2018, the Army released the *Final Proposed Plan for CC RVAAP-76 Depot Area* (Parsons 2018) for public comment. A 30-day public comment period was held from February 16, 2018, to March 17, 2018. Notifications of the public comment period were published in local newspapers (Attachments 3, 4, and 5) and on the RVAAP Restoration Program website (www.rvaap.org). The Army hosted a public meeting on February 28, 2018, at the Ravenna High School Community Room, 6589 North Chestnut Street, Ravenna, Ohio 44266 to present the Proposed Plan and take questions and comments from the public for the record.

The Proposed Plan recommended Excavation and Off-Site Disposal for CC RVAAP-76 Depot Area. During the public meeting, Ohio EPA concurred with the recommendation. No verbal comments were received at the public meeting, and the community voiced no objections to excavation and off-site disposal for CC RVAAP-76 Depot Area during the public comment period.

B SUMMARY OF STAKEHOLDER ISSUES AND LEAD AGENCY RESPONSES

No comments were received verbally during the public meeting, and no written comments were received during the 30-day public comment period.

C TECHNICAL AND LEGAL ISSUES

There were no technical or legal issues raised during the public comment period.

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FIGURES

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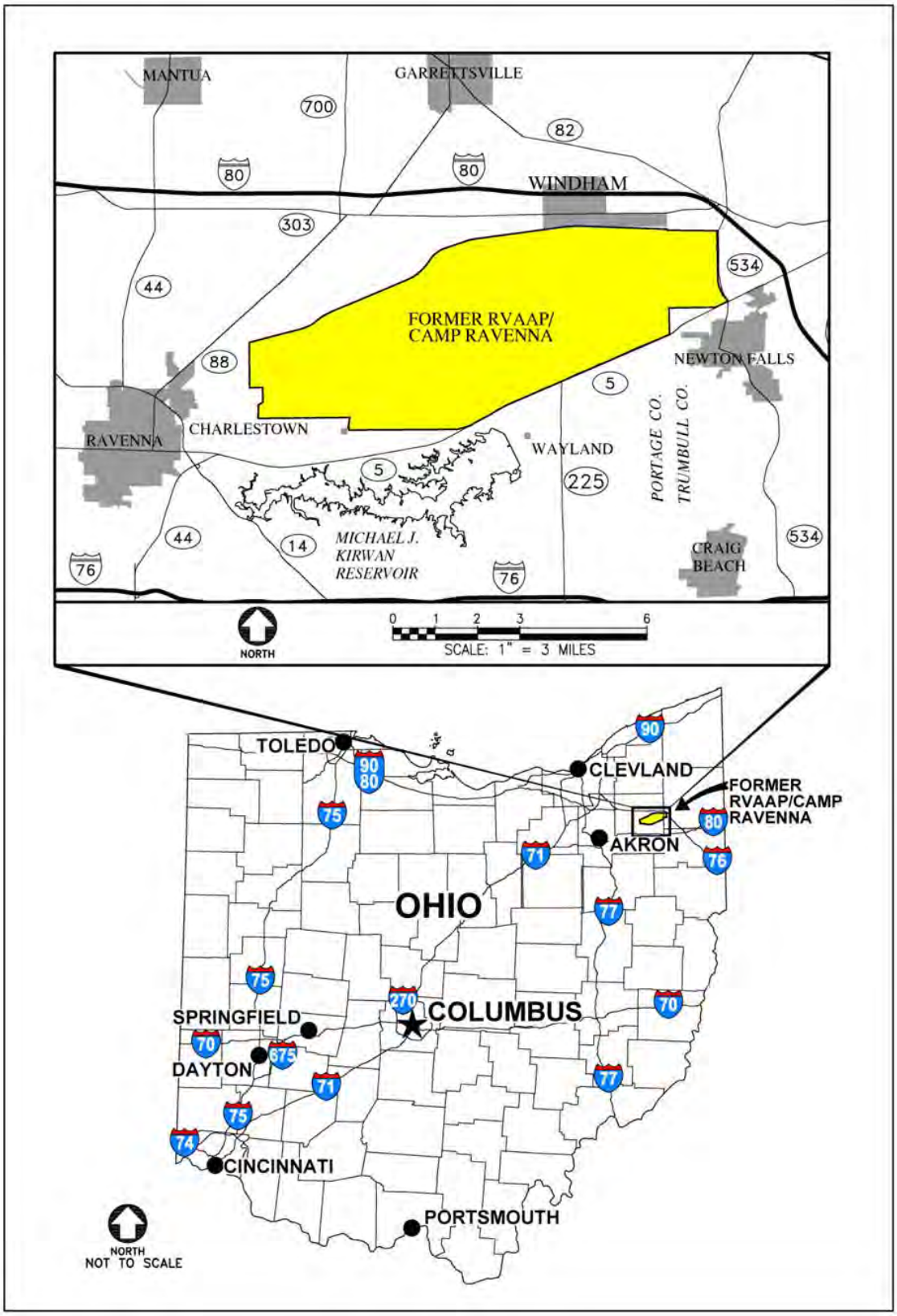

Figure 1. General Location and Orientation of RVAAP/Camp Ravenna

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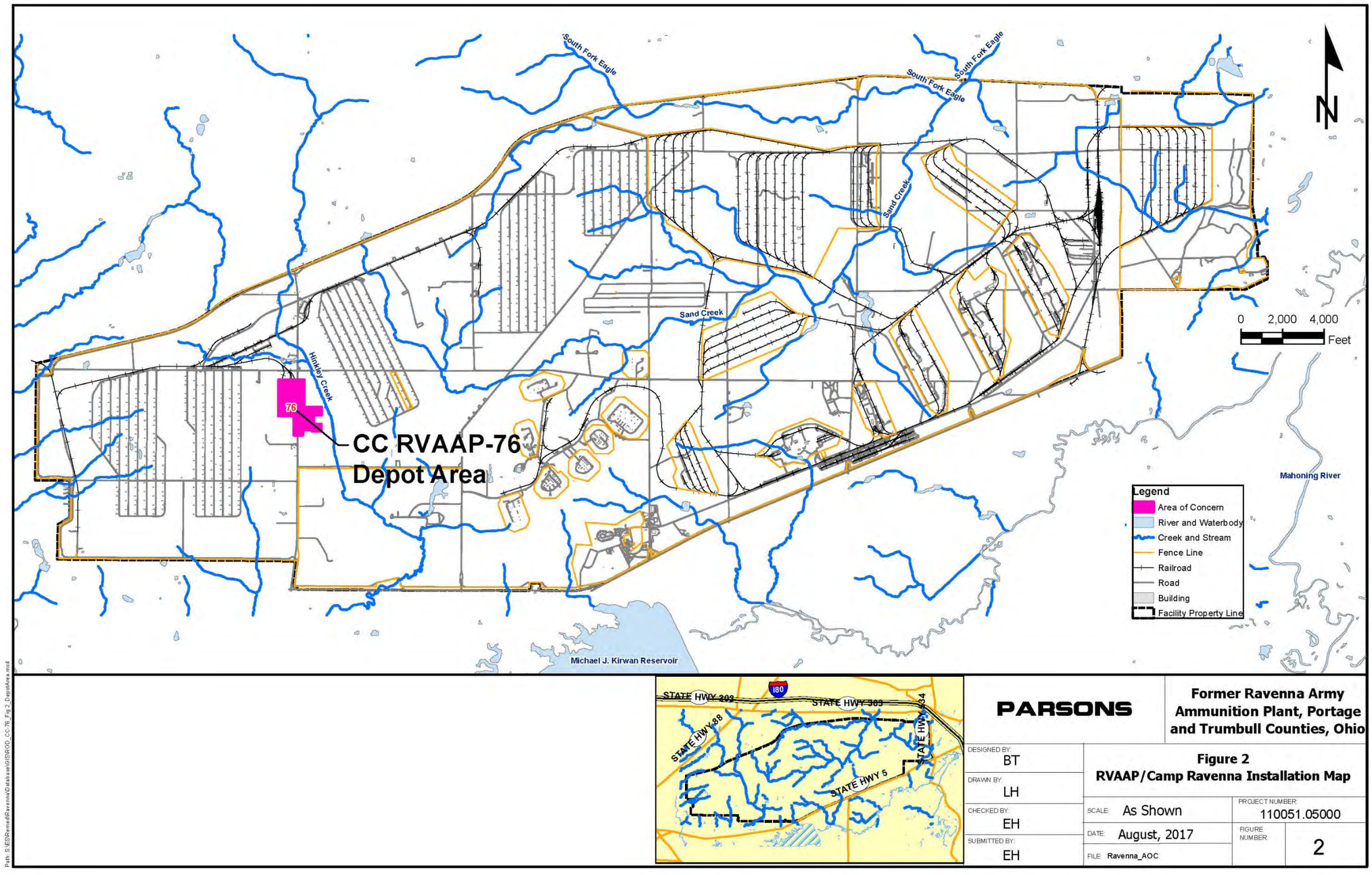

Figure 2. RVAAP/Camp Ravenna Installation Map

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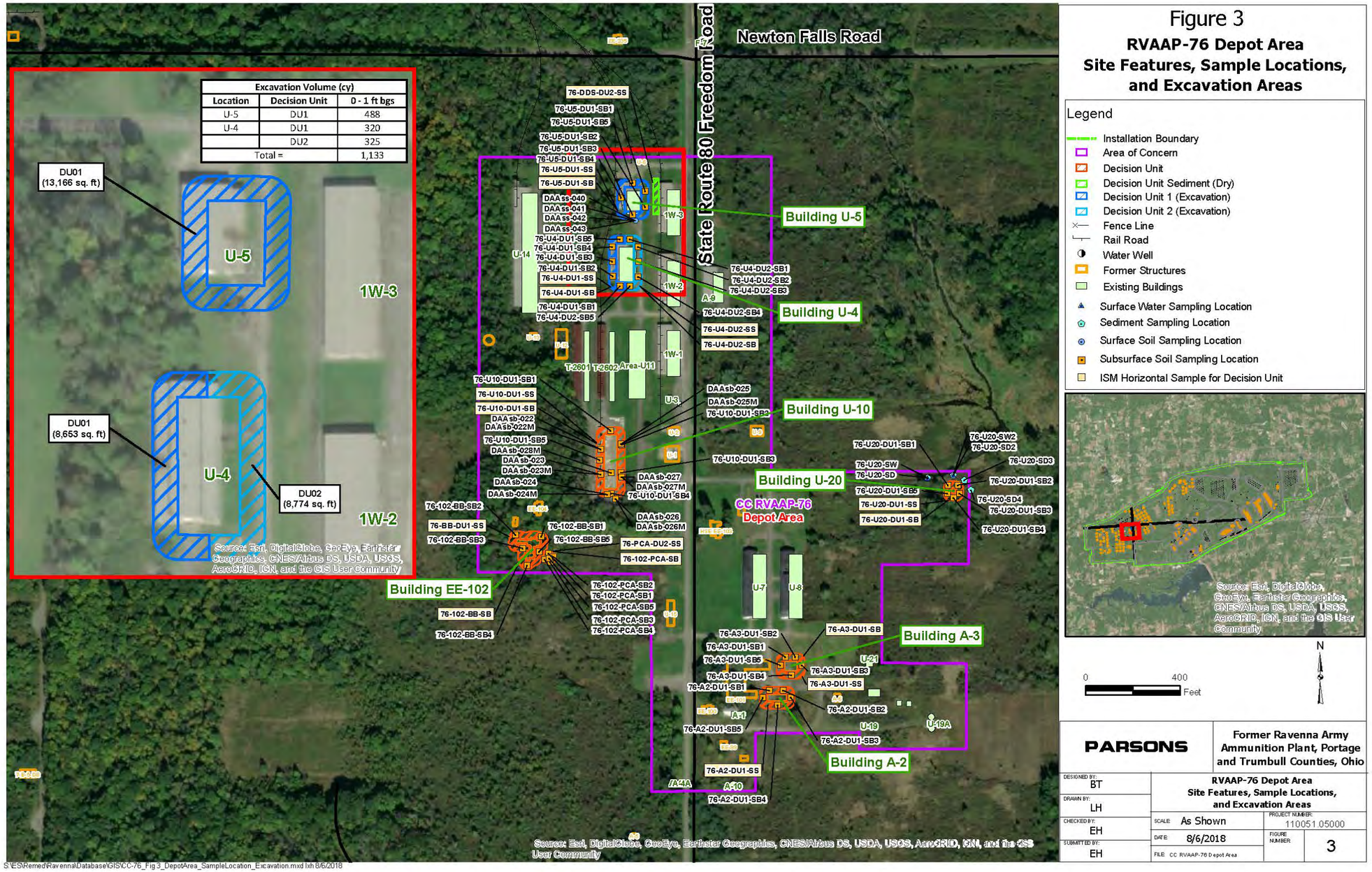

Figure 3. CC RVAAP-76 Depot Area Site Features, Sample Locations, and Excavation Volumes

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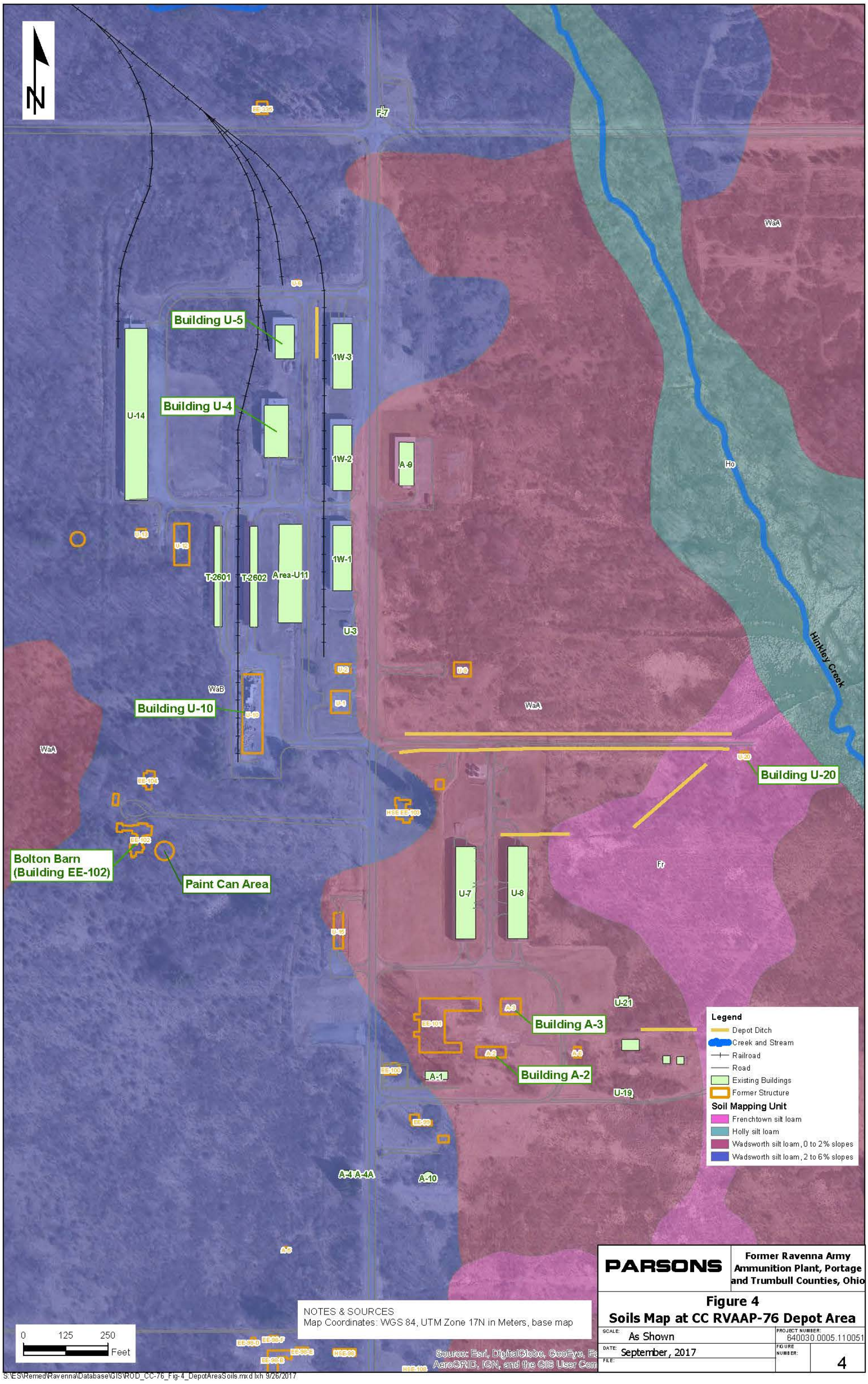

Figure 4. Soils Map at CC RVAAP-76 Depot Area

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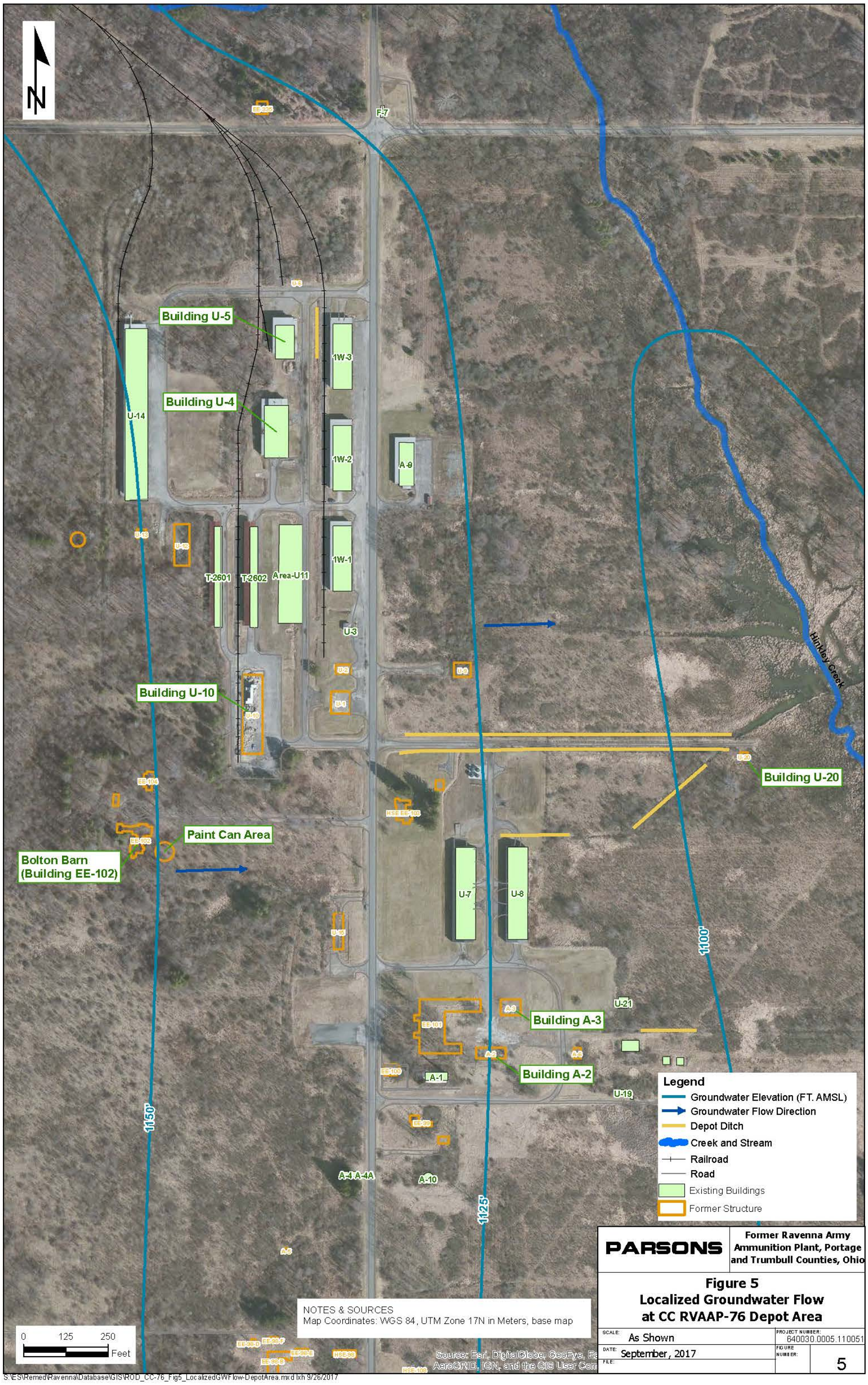

Figure 5. Localized Groundwater Flow at CC RVAAP-76 Depot Area

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ATTACHMENTS

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Attachment 1. Location-Specific ARARS for Soil

REGULATORY AUTHORITY	NATURAL FEATURE/ SENSITIVE AREA	REQUIREMENT	STATUS	SYNOPSIS OF REQUIREMENT	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Wetlands	Presence of wetlands as defined in 10 CFR 1022.4(v).	Potentially Applicable	Establishes the requirements to evaluate any action taken within a wetland to ensure that impacts are minimized or averted as required in 10 CFR 1022.3 (a) – (d). Substantive provisions are potentially applicable for activities that result in the impact of a wetland as defined, nearest wetlands 1,220 feet downgradient.	Avoid to the extent possible the long- and short-term adverse effects associated with destruction, occupancy, and modification of wetlands. Measures to mitigate adverse effects of actions in a wetland include, but are not limited to, minimum grading requirements, runoff controls, design and construction constraints, and protection of ecologically-sensitive areas in 10 CFR 1022.12(a)(3). Take action to the extent practicable to minimize destruction, loss, or degradation of wetlands and to preserve, restore, and enhance the nature and beneficial value of wetlands. Potential effects of any new construction in wetlands that are not in a floodplain shall be evaluated to identify and, as appropriate, implement alternative actions that may avoid or mitigate adverse impacts on wetlands.

ARARs – Applicable or Relevant and Appropriate Requirements; CFR – Code of Federal Regulations

Attachment 2. Potential Action-Specific ARARs

REGULATORY AUTHORITY	ACTION	REQUIREMENT	STATUS	SYNOPSIS OF REQUIREMENT	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Soil	Resource Conservation and Recovery Act (RCRA), Subtitle C (40 CFR 260-268)	Applicable	Defines RCRA hazardous waste. A solid waste is characterized as toxic, based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Substantive provisions are potentially applicable for actions that generate waste that may be hazardous.
State	On-site waste generation	Prohibition of air pollution nuisances (e.g., fugitive dust) OAC Section 374515-07	Applicable	These rules prohibit a release of nuisance air pollution that endangers health, safety, or welfare of the public or causes personal injury or property damage. Applicable to any activity that could result in the release of a nuisance air pollutant. This would include dust from excavation or soil management processes.	Any person undertaking an activity is prohibited from emitting nuisance air pollution.
		Generation of contaminated soil or debris OAC Section 3745-52-11	Applicable	These rules require that a generator determines whether a material generated is a hazardous waste. Applies to any material that is or contains a solid waste. Must be characterized to determine whether the material is or contains a hazardous waste.	Any person that generates a waste as defined must use prescribed methods to determine if waste is considered characteristically hazardous.

Attachment 2. Potential Action-Specific ARARs (Continued)

REGULATORY AUTHORITY	ACTION	REQUIREMENT	STATUS	SYNOPSIS OF REQUIREMENT	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Hazardous waste accumulation	Management of contaminated soil or debris that is or contains a hazardous waste OAC Sections 3745-52-30 through -34	Applicable	These rules require that hazardous waste be properly packaged, labeled, marked, and accumulated onsite pending on-site or off-site disposal. Applies to any hazardous waste or media containing a hazardous waste that is generated from on-site activities.	All hazardous waste must be accumulated in a compliant manner that includes proper marking, labeling, and packaging of such waste in accordance with the specified regulations. This includes inspection of containers or container areas where hazardous waste is accumulated on-site.
	Off-site shipment of hazardous waste	Acquisition and use of manifests for hazardous waste shipments to off-site treatment, storage, or disposal facilities OAC Sections 3745-52-20 through -23	Applicable	These rules require that a Uniform Hazardous Waste Manifest be used for any off-site shipment of hazardous waste. Applies to any shipment of hazardous waste to an off-site facility for treatment, storage, or disposal.	Requires a generator who transports or offers for transportation hazardous waste for off-site treatment, storage, or disposal to prepare a uniform hazardous waste manifest.

Attachment 2. Potential Action-Specific ARARs (Continued)

REGULATORY AUTHORITY	ACTION	REQUIREMENT	STATUS	SYNOPSIS OF REQUIREMENT	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Waste Treatment	Soil contaminated with RCRA hazardous waste OAC Section 3745-400-49 OAC Section 3745-400-48 UTS	Applicable	These rules prohibit land disposal of RCRA hazardous waste subject to them unless the waste is treated to meet certain standards that are protective of human health and the environment. Standards for treatment of hazardous waste-contaminated soil prior to disposal are set forth in the two cited rules. Use of the greater of either technology-based standards or Universal Treatment Standard (UTS) is prescribed. Land disposal restrictions (LDRs) apply only to RCRA hazardous waste. This rule is considered for ARAR status only upon generation of a RCRA hazardous waste. If any soil is determined to be RCRA hazardous, and if they will be disposed of on-site, this rule is potentially applicable to disposal of the soil.	All soil subject to treatment must be treated as follows: 1) For non-metals, treatment must achieve 90% reduction in total constituent concentration [primary constituent for which the waste is characteristically hazardous as well as for any organic or inorganic Underlying Hazardous Constituent (UHC)], subject to 3 below. 2) For metals and carbon disulfide, cyclohexanone, and methanol, treatment must achieve 90% reduction in constituent concentrations as measured in leachate from the treated media (tested according to the TCLP) or 90% reduction in total constituent concentrations (when a metal removal treatment technology is used), subject to 3 below. 3) When treatment of any constituent subject to treatment to a 90% reduction standard would result in a concentration less than 10 times the UTS for that constituent, treatment to achieve constituent concentrations less than 10 times the UTS is not required. This is commonly referred to as "90% capped by 10x UTS."

Attachment 2. Potential Action-Specific ARARs (Continued)

REGULATORY AUTHORITY	ACTION	REQUIREMENT	STATUS	SYNOPSIS OF REQUIREMENT	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Disposal	Debris Contaminated with RCRA Hazardous Waste OAC Section 3745-400-49 OAC Section 3745-400-47	Applicable	These rules prescribe conditions and standards for land disposal of debris contaminated with RCRA hazardous waste. Debris subject to this requirement for characteristic RCRA contamination that no longer exhibits the hazardous characteristic after treatment does not need to be disposed of as a hazardous waste. Debris contaminated with listed RCRA contamination remains subject to hazardous waste disposal requirements. If RCRA hazardous debris is disposed of on-site, these rules are potentially applicable to disposal of the debris.	Standards are extraction or destruction methods prescribed in OAC Section 3745-400-47. Treatment residues continue to be subject to RCRA hazardous waste requirements.
		Soil/Debris Contaminated with RCRA Hazardous Waste – Variance OAC Section 3745-400-44	Applicable	Potentially applicable to RCRA hazardous soil or debris that is generated and placed back into a unit and that will be land disposed of on-site. The Director will recognize a variance approved by the USEPA from the alternative treatment standards for hazardous contaminated soil or for hazardous debris.	A site-specific variance from the soil treatment standards can be used when treatment to concentrations of hazardous constituents greater (i.e., higher) than those specified in the soil treatment standards minimizes short- and long-term threats to human health and the environment. In this way, on a case-by-case basis, risk-based LDR treatment standards approved through a variance process could supersede the soil treatment standards.

AOC – Area of Concern; ARAR – Applicable or Relevant and Appropriate Requirements; CFR – Code of Federal Regulations; LDRs—land disposal restrictions; OAC – Ohio Administrative Code; RCRA – Resource Conservation and Recovery Act; UHC—Underlying Hazardous Constituent; UTS—Universal Treatment Standard

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Attachment 3. Public Notice

PUBLIC NOTICE

Camp Ravenna Joint Military Training Center
Camp Ravenna Environmental Office
1438 State Route 534 SW-Newton Falls, Ohio 44444
614-336-6136

Public Meeting to be held 28 February 2018 for Army National Guard Release of Proposed Plans for two sites:
Facility-Wide Coal Storage
Depot Area

Ravenna- The Army National Guard, in consultation with the Ohio Environmental Protection Agency, submits for review and comment two (2) Proposed Plans for sites at the Ravenna Army Ammunition Plant (RVAAP) in Portage and Trumbull counties, Ohio.

The Facility-Wide Coal Storage and Depot Area are within the former RVAAP (now known as Camp Ravenna) in Portage and Trumbull Counties, Ohio. These sites are being addressed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Proposed Plans present the current status and information regarding the sites. The Proposed Plans detail the recommendations for each site and provide the rationale for these recommendations. On 28 February 2018, a public meeting will be held at the Ravenna High School Community Room, 6589 North Chestnut Street, Ravenna Ohio beginning at 6:00 p.m. with an informal open house when technical staff will be available to answer questions. At 6:30 pm, the Army National Guard will briefly describe the site assessments, present the recommendations for each site, and then request verbal comments from the public. Written comments regarding the recommendations may be submitted to the Army National Guard during the 30-day comment period from 16 February 2018 to 17 March 2018. All written comments should be addressed to Camp Ravenna Environmental Office; 1438 State Route 534 SW, Newton Falls, Ohio, 44444 or sent via email to Kathryn.s.tait.nfg@mail.mil.

In accordance with CERCLA, the recommendation presented in the Proposed Plans is also presented in earlier remedial investigation reports. All reports are available for public review at the RVAAP Restoration Program Information Repository at the Reed Memorial Library (167 East Main Street, Ravenna) and the Newton Falls Public Library (204 South Canal Street, Newton Falls). The reports are also available online at www.rvaap.org.

The final remedy for each site will be selected based, in part, on public comments. In coordination with the Ohio Environmental Protection Agency, the Army National Guard will select a final remedy after reviewing and considering all public comments received during the 30-day public comment period from 16 February 2018 to 17 March 2018. The Army National Guard encourages the public to review and comment on the recommendations presented in the Proposed Plans.

For more information or to participate in the review, please visit the RVAAP Restoration website (www.rvaap.org) or call Katie Tait at 614-336-6136.

1284 **Attachment 4. Affidavit from Kent Record Courier Newspaper**
1285

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

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

30 Record-Courier a newspaper printed and published in the city of Kent, and of General circul
County of Portage, State of Ohio, and personal knowledge of the facts herein stated and that the no
annexed was Published in said newspapers for 2 insertions on the same day of the week from and a
day of February, 2018 and that the fees charged are legal.

Name of Account: Parsons
Ad Number: 12415272
No. of Lines: 78

Day(s) Published: 02/11, 02/18.
Printers Fee: $126.55

Sworn to and subscribed before this 20th day of March, 2018.

Elizabeth McDaniel
Notary Public
Commission Expires June 19, 2021

PUBLIC NOTICE
Camp Ravenna Joint Military Training Center
Camp Ravenna
Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444
614-336-6136
Public Meeting to be held
28 February 2018 for
Army National Guard Release
of Proposed Plans for two sites:
Facility-Wide Coal Storage
Depot Area

Ravenna- The Army National Guard, in consultation with the Ohio Environmental Protection Agency, submits for review and comment two (2) Proposed Plans for sites at the Ravenna Army Ammunition Plant (RVAAP) in Portage and Trumbull counties, Ohio.

The Facility-Wide Coal Storage and Depot Area are within the former RVAAP (now known as Camp Ravenna) in Portage and Trumbull Counties, Ohio. These sites are being addressed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Proposed Plans present the current status and information regarding the sites. The Proposed Plans detail the recommendations for each site and provide the rationale for these recommendations. On 28 February 2018, a public meeting will be held at the Ravenna High School Community Room, 6589 North Chestnut Street, Ravenna Ohio beginning at 6:00 p.m. with an informal open house when technical staff will be available to answer questions. At 6:30 pm, the Army National Guard will briefly describe the site assessments, present the recommendations for each site, and then request verbal comments from the public. Written comments regarding the recommendations may be submitted to the Army National Guard during the 30-day comment period from 16 February 2018 to 17 March 2018. All written comments should be addressed to Camp Ravenna Environmental Office; 1438 State Route 534 SW, Newton Falls, Ohio, 44444 or sent via email to Kathryn.s.tait.nfg@mail.mil.

In accordance with CERCLA, the recommendation presented in the Proposed Plans is also presented in earlier remedial investigation reports. All reports are available for public review at the RVAAP Restoration Program Information Repository at the Reed Memorial Library (167 East Main Street, Ravenna) and the Newton Falls Public Library (204 South Canal Street, Newton Falls). The reports are also available online at www.rvaap.org.

The final remedy for each site will be selected based, in part, on public comments. In coordination with the Ohio Environmental Protection Agency, the Army National Guard will select a final remedy after reviewing and considering all public comments received during the 30-day public comment period from 16 February 2018 to 17 March 2018. The Army National Guard encourages the public to review and comment on the recommendations presented in the Proposed Plans.

For more information or to participate in the review, please visit the RVAAP Restoration website (www.rvaap.org) or call Katie Tait at 614-336-6136.

RC, Feb 11, 18, 2018, 12415272

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Attachment 5. Affidavit from Warren Tribune Newspaper

PUBLIC NOTICE
Camp Ravenna Joint Military Training Center
Camp Ravenna Environmental Office
1438 State Route 534 SW-
Newton Falls, Ohio 44444
614-336-6136
Public Meeting to be held 28 February 2018 for Army National Guard Release of Proposed Plans for two sites:
Facility-Wide Coal Storage
Depot Area

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#323-2T-February 11 & 18, 2018 #3503

PROOF OF PUBLICATION

STATE OF OHIO
TRUMBULL COUNTY SS: PAMELA EAZOR

BEING DULY SWORN, UPON OATH, STATES THAT SHE IS AN AUTHORIZED REPRESENTATIVE OF THE TRIBUNE CHRONICLE, (A DIVISION OF EASTERN OHIO NEWSPAPERS INC) A DAILY NEWSPAPER PRINTED IN THE CITY OF WARREN, COUNTY OF TRUMBULL, STATE OF OHIO AND OF GENERAL CIRCULATION IN THE CITY OF WARREN, TRUMBULL COUNTY, OHIO AND IS INDEPENDENT IN POLITICS.

THAT THE ATTACHED ADVERTISEMENT WAS PUBLISHED IN THE TRIBUNE CHRONICLE EVERY: SUNDAY FOR (2) TWO CONSECUTIVE WEEKS AND THAT THE FIRST INSERTION WAS ON SUNDAY THE 11th DAY OF FEBRUARY 2018.

Pamela Eazor

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS 23RD DAY OF FEBRUARY 2018

NOTARY PUBLIC

CONSTANCE A. PACEK
Notary Public, State of Ohio
My Commission Expires
March 7, 2021

ADVERTISING COST $ 871.00

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