FINAL

THIRD FIVE-YEAR REVIEW REPORT

CAMP JAMES A. GARFIELD
JOINT MILITARY TRAINING CENTER
PORTAGE AND TRUMBULL COUNTIES, OHIO

Prepared for:

United States Army Environmental Command
Fort Sam Houston, Texas

Ohio Army National Guard
Camp James A. Garfield Joint Military Training Center
Portage and Trumbull Counties, Ohio

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14. ABSTRACT

Third Five-Year Review includes eight IRP sites: RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 Load Line 1, RVAAP-09 Load Line 2, RVAAP-10 Load Line 3, RVAAP-11 Load Line 4, RVAAP-12 Load Line 12, and RVAAP-51 Dump Along Paris-Windham Road.

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

November 17, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak
RVAAP Restoration Program Manager
ARNG-Directorate
Camp James A. Garfield JTC
1438 State Route 534
Newton Falls, OH 44444

RE: US Army Ravenna Ammunition Plt
RVAAP
Remediation Response
Project records
Federal Facilities
Five-Year Review
Portage County
267000859274

Subject: Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio - Final Third Five-Year Review Report
Ohio EPA Concurrence

Dear Mr. Sedlak:

On October 11, 2022, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) received the "Final Third Five-Year Review Report" for the Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio.

Ohio EPA has no comments on the Final Third Five-Year Review (FYR) Report. Based on the information contained in the Final FYR Report, and other investigation documents and reports; Ohio EPA concurs with the findings of the Final Third FYR Report.

This letter is an official response from Ohio EPA that will be maintained as a public record. If you have any questions concerning this letter or report, please contact me at (330) 963-1235 or nicholas.roope@epa.ohio.gov.

Sincerely,

Nicholas Roope, Environmental Specialist
Division of Environmental Response and Revitalization

NR/cm

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THIRD FIVE-YEAR REVIEW REPORT

CAMP JAMES A. GARFIELD
JOINT MILITARY TRAINING CENTER
PORTAGE AND TRUMBULL COUNTIES, OHIO

Approved By:

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Date: 2022.08.10 08:06:09 -04'00'

William E. Meade
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Date

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Final Third Five-Year Review Report

Camp James A. Garfield Military Training Center

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= Ohio Army National Guard
OEPA-NEDO = Ohio Environmental Protection Agency-Northeast District Office
USACE = U.S. Army Corps of Engineers, Technical Manager
USAEC = United States Army Environmental Command

FINAL

THIRD FIVE-YEAR REVIEW REPORT

CAMP JAMES A. GARFIELD
JOINT MILITARY TRAINING CENTER
PORTAGE AND TRUMBULL COUNTIES, OHIO

Prepared By:

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EXECUTIVE SUMMARY

Camp James A. Garfield Joint Military Training Center, formerly Ravenna Army Ammunition Plant, consists of 21,683 acres in northeastern Ohio within Portage County and Trumbull County, approximately three miles east-northeast of the city of Ravenna and one-mile northwest of the city of Newton Falls (**Figure 1**). Ravenna Army Ammunition Plant was constructed in 1940 and 1941 primarily for depot storage and ammunition loading. The facility was also used for open burning/detonation, landfill operations, and research and development. Demilitarization of various munitions took place at Ravenna Army Ammunition Plant between 1972 and 1992. The facility was renamed Camp James A. Garfield Joint Military Training Center in 2018 and is now a training center for the Army and other Department of Defense units.

This statutory Five-Year Review was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, Section 121, consistent with the National Contingency Plan. The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is protective of human health and the environment. Five-Year Reviews also identify issues and provide recommendations to address them. This Five-Year Review has been prepared because hazardous substances, pollutants, or contaminants remain at the site at levels that do not allow for unlimited use and unrestricted exposure. This is the Third Five-Year Review for Camp James A. Garfield Joint Military Training Center and includes the eight Installation Restoration Program sites listed in the table below.

Camp James A. Garfield Joint Military Training Center
Five-Year Review Operable Units Crosswalk

AEDB-R ID	Site Description	HQAES ID
RVAAP-01	Ramsdell Quarry Landfill	39747.1001
RVAAP-05	Winklepeck Burning Grounds	39747.1005
RVAAP-08	Load Line 1	39747.1066
RVAAP-09	Load Line 2	39747.1009
RVAAP-10	Load Line 3	39747.1010
RVAAP-11	Load Line 4	39747.1011
RVAAP-12	Load Line 12	39747.1012
RVAAP-51	Dump Along Paris-Windham Road	39747.1051

AEDB-R = Army Environmental Database-Restoration
HQAES = Headquarters Army Environmental System
ID = Identification
RVAAP = Ravenna Army Ammunition Plant

Ravenna Army Ammunition Plant (RVAAP)-01. RVAAP-01 consists of the Ramsdell Quarry Landfill.

The remedy for Ramsdell Quarry Landfill, as defined in the 2009 Record of Decision, is *Excavation and Offsite Disposal*. This remedy *involves the removal of soil and dry sediment at Ramsdell Quarry Landfill with concentrations of chemicals of concern that exceed the clean-up goals for the Security Guard/Maintenance Worker* (U.S. Army Corps of Engineers [USACE], 2009b).

The remedy for Ramsdell Quarry Landfill as defined in the 2013 Record of Decision Amendment is *Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use. This remedy includes 1) installation of a fence at the perimeter of [Ramsdell Quarry Landfill to encompass the closed landfill, quarry bottom, and wetlands; and 2) implementing a BMP [best management practice] to remove surficial ACM [asbestos-containing materials] through non-intrusive/no-digging methods* (USACE, 2013a).

The remedy for Ramsdell Quarry Landfill, as defined in the 2020 Record of Decision for Sediment and Surface Water, is as follows (USACE, 2020b):

No further action is necessary for sediment and surface water at the sites in this [Record of Decision] for Unrestricted (Residential) Land Use. Consequently, no further action is necessary for the future use of the sites (Military Training). Groundwater will be addressed under future [Comprehensive Environmental Response, Compensation, and Liability Act] decisions. Land use controls will not be implemented as part of this decision, as no [Comprehensive Environmental Response, Compensation, and Liability Act]-related chemicals of concern (COCs) were identified in sediment or surface water for the Resident Receptor (Adult and Child) and the ecological risk assessment (ERA) recommended no further action.

The remedy for Ramsdell Quarry Landfill is protective of human health and the environment.

All surficial asbestos-containing material was removed via non-intrusive/no-digging methods. Fencing is in place at the perimeter of Ramsdell Quarry Landfill to encompass the closed landfill, quarry bottom, and wetlands. Land use controls (digging restrictions, fencing and signage, briefings of asbestos hazards, and annual inspections) are in place to protect future receptors from remaining chemicals of concern in soil above clean-up goals and residual asbestos by restricting access to the area of concern. Annual land use control inspections occurred between 2016 and 2020 without lapse. All land use control inspections concluded that fences and signage were in good condition and signage was spaced at approximately 300-foot intervals.

RVAAP-05. RVAAP-05 consists of the Winklepeck Burning Grounds.

The remedy for Winklepeck Burning Grounds, as defined in the 2008 Record of Decision, is *Chemical Contamination Removal Concurrent with MEC Removal Action – Excavation, Screen for Potential MEC* [munitions and explosives of concern]*, Composite Sampling, and Disposal* and consists of the following (USACE, 2008):

The selected remedy for chemically contaminated soil and dry sediment consists of excavation and disposal of contaminated soil identified at three locations at [Winklepeck Burning Grounds]: Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. In addition, soil containing friable asbestos will be excavated and disposed from a fourth location (Pad 70). Munitions and explosives of concern exist at [Winklepeck Burning Grounds]; therefore, munitions and explosives of concern survey and clearance procedures are incorporated into all excavation activities at [Winklepeck Burning Grounds]. Following excavation, residual contamination at depth will remain at [Winklepeck Burning Grounds]; therefore, land use controls will be implemented and enforced to deter unauthorized access and limit exposure.

The 2015 Explanation of Significant Differences documented the following changes to the remedy selected in the 2008 Record of Decision (National Guard Bureau, 2015):

Land Use: *The [Reasonably Anticipated Future Land Use] has changed to Commercial/Industrial for potential full-time use.*

Additional Soil Removal: *Five areas of additional soil removal needed to achieve the Commercial/Industrial Land Use and allow development of the [Multi-Purpose Machine Gun] Range with fewer restrictions.*

Revised Restrictions/Land Use Controls: *Implementation of this [Explanation of Significant Differences] will effectively terminate the previously established [Land Use Controls] and restrictions identified in the [Record of Decision], the original [Remedial Design], and the [Property Management Plan]. Based on the results of the additional evaluation and risk assessment presented in the [Remedial Investigation]/[Feasibility Study] Supplement, two new [Land Use Controls] will be established*:

- *The [Area of Concern] cannot be used for Unrestricted (Residential) Land Use unless or until additional evaluation shows that risk levels resulting from residual contamination have been reduced to levels acceptable for Residential Land Use and any residual [munitions and explosives of concern] hazards have been removed and*
- *Groundwater use or extraction of groundwater located at or underlying the Winklepeck Burning Grounds Area of Concern or any portion thereof is prohibited, except for the following:*
    - *The installation, development, purging, and sampling of new or existing monitoring wells in accordance with the most recent Facility-Wide Sampling and Analysis Plan as part of the Area of Concern-specific [Installation Restoration Program], the Facility-Wide Ground Water Monitoring Program Plan, or the Facility-Wide Groundwater Remedial Investigation.*
    - *The modification of existing monitoring wells, if necessary, to allow for construction on the range.*

- *The abandonment and replacement of monitoring wells damaged by activities or removed for construction, and abandonment of wells no longer utilized as part of [Installation Restoration Program] or [Facility-Wide Ground Water Monitoring Program Plan] activities, in accordance with Ohio [Environmental Protection Agency] guidance, the most recent [Facility-Wide Sampling and Analysis Plan], and applicable Ohio Administrative Code requirements.*

Implementation Actions for Revised Restrictions/Land Use Controls: *The Army, through a Land Use Control Implementation Plan or similar document, shall restrict the use of the Winklepeck Burning Grounds area of concern to non-Residential usage and shall restrict use of groundwater on the area of concern to non-potable uses.*

Monitoring and Reporting of the Revised Restrictions/Land Use Controls: *The Army will monitor the Land Use Controls, as necessary, to ensure they are maintained; however, given that there will be no engineering controls to inspect, this Explanation of Significant Differences terminates the requirement of quarterly and annual reporting to the Ohio Environmental Protection Agency for Winklepeck Burning Grounds area of concern.*

Land Use Control Enforcement of Revised Restrictions/Land Use Controls: *The Land Use Control Remedial Design and [Property Management Plan] listed requirements for reporting to state regulatory agencies. This [Explanation of Significant Differences] terminates these reporting requirements, as the Army will internally control and restrict land use in accordance with [Department of Defense] policy.*

The remedy for Winklepeck Burning Grounds is protective of human health and the environment.

Friable asbestos was removed from Pad 70 and Commercial/Industrial Land Use was achieved by removing contaminated soil from Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. In accordance with the 2008 Record of Decision, Land Use Controls consisting of land use and dig restrictions, fencing, and activity limitations deterred unauthorized access and limited exposure. Land Use Controls indicated in the 2015 Explanation of Significant Differences continue to deter unauthorized access and limit exposure by restricting residential land use and prohibiting groundwater use.

RVAAP-08 to RVAAP-12. RVAAP-08 to RVAAP-12 consists of Load Lines 1 – 4 and 12.

The 2007 Interim Record of Decision for Load Lines 1 – 4 established the remedy as excavation and offsite disposal and includes the following (USACE, 2007):

- *Excavation of discrete areas of contaminated surface and subsurface soils and dry sediment with concentrations of contaminants exceeding clean-up goals;*
- *Temporary on-site storage via stockpiling for characterization;*

- *Off-site disposal of soils at a permitted solid waste landfill and, as needed, disposal at a Toxic Substances Control Act (TSDA) [sic] and/or Resource Conservation and Recovery Act (RCRA) permitted hazardous waste landfill;*
- *Replacement of excavated material with clean compacted backfill;*
- *Groundwater monitoring [for five years] to ensure the Selected Remedy did not impact groundwater; and*
- *Maintenance of building slabs and foundations.*

The remedy for soil and dry sediment at Load Line 12, as defined in the 2009 Record of Decision, also consists of excavation and offsite disposal of contaminated soil and dry sediment above clean-up goals and Land Use Controls (USACE, 2009a). Both remedies were designed to be protective for the reasonably anticipated future land use of National Guard Mounted Training.

To further optimize the land use at Load Lines 1 – 4 and 12, the 2019 Record of Decision Amendment selected a new remedy for soil, sediment, and surface water to support commercial/industrial land use through ex situ thermal treatment of soil and administrative Land Use Controls. The remedy *involves thermally treating explosives-, polychlorinated biphenyl-, and [Polycyclic Aromatic Hydrocarbons]-contaminated soil and disposing of the metals-impacted soil off site at a licensed, engineered landfill* (USACE, 2019b).

Components of the remedy include:

- Excavation and placement of contaminated soil into a thermal treatment system to achieve remedial goal options;
- Placement of treated soil back into the excavated area;
- Excavation and offsite disposal of soil with metals concentrations greater than remedial goal options;
- Site restoration; and,
- Land Use Controls to restrict use.

The remedy at Load Lines 1 – 4 and 12 is protective of human health and the environment.

Risk from chemicals of concern in surface and subsurface soil and sediment has been reduced to meet remedial goal options for Commercial/Industrial land use. Explosives-, polychlorinated biphenyl-, and polycyclic aromatic hydrocarbon-contaminated soil have been excavated, placed into a thermal treatment system to achieve remedial goal options, and placed back into the excavated area. Metals-contaminated soil above remedial goal options has been excavated and disposed of offsite. The site has been restored and exposure of Resident Receptor to soil containing chemicals of concern has been mitigated by administrative controls, including no residential use, annual inspections and reporting, and General Land Use Control Awareness Training for facility personnel.

RVAAP-51. RVAAP-51 consists of the Dump Along Paris-Windham Road.

The remedy for Dump Along Paris-Windham Road is Land Use Controls. Components of the remedy include:

- Development of a Remedial Design;
- Restrictive warning signs and boundary markers (Seibert Stakes) posted at least every 300 feet along the perimeter of Dump Along Paris-Windham Road;
- Excavation/digging restrictions to prohibit use and exposure to contaminated soils;
- General Land Use Control Awareness Training for installation personnel; and,
- Annual Land Use Control inspections.

The remedy for Dump Along Paris-Windham Road is protective of human health and the environment.

Land use controls (boundary markers and signs notifying personnel/the public of access and digging restrictions) are in place to prevent exposure of the resident receptor to chemicals of concern in shallow surface soil. Annual land use control inspections conducted in 2019 and 2020 confirmed that Seibert Stakes with warning signs were posted at least every 300 feet and in good condition. The soil cover was found to be intact with no signs of damage or erosion. General Land Use Control Awareness Training is provided annually to staff and tenants of Camp James A. Garfield Joint Military Training Center.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Camp James A. Garfield Joint Military Training Center		
EPA ID: OH5210020736		
Region: 5	**State:** OH	**City/County:** Ravenna/Portage & Trumbull Counties
SITE STATUS		
NPL Status: Non-NPL		
Multiple OUs: Yes	**Has the site achieved construction completion?** No	
REVIEW STATUS		
Lead Agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** U.S. Army		
Author name (Federal or State Project Manager): Kevin Sedlak		
Author Affiliation: U.S. Army National Guard		
Review period: March 25, 2021 – August 31, 2022		
Date of site inspection: December 7, 2021		
Type of review: Statutory		
Review number: 3		
Triggering action date: August 31, 2017		
Due date (*five-year cycle after triggering action date*): August 31, 2022		
Issues/Recommendations		
OU(s) without Issues/Recommendations Identified in the Five-Year Review:		
RVAAP-01, RVAAP-05, RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11, RVAAP-12, RVAAP-51		
Issues and Recommendations Identified in the Five-Year Review: None		

Protectiveness Statement(s)		
Operable Unit: RVAAP-01 (Ramsdell Quarry Landfill)	*Protectiveness Determination:* Protective	Addendum Due Date (if applicable): Not Applicable
The remedy for Ramsdell Quarry Landfill is protective of human health and the environment. All surficial asbestos-containing material was removed via non-intrusive/no-digging methods. Fencing is in place at the perimeter of Ramsdell Quarry Landfill to encompass the closed landfill, quarry bottom, and wetlands. Land use controls (digging restrictions, fencing and signage, briefings of asbestos hazards, and annual inspections) are in place to protect future receptors from remaining chemicals of concern in soil above clean-up goals and residual asbestos by restricting access to the area of concern. Annual land use control inspections occurred between 2016 and 2019 without lapse. All land use control inspections concluded that fences and signage were in good condition and signage was spaced at approximately 300-foot intervals.		
Operable Unit: RVAAP-05 (Winklepeck Burning Grounds)	*Protectiveness Determination:* Protective	Addendum Due Date (if applicable): Not Applicable
The remedy for Winklepeck Burning Grounds is protective of human health and the environment. Friable asbestos was removed from Pad 70 and Commercial/Industrial Land Use was achieved by removing contaminated soil from Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. In accordance with the 2008 Record of Decision, Land Use Controls consisting of land use and dig restrictions, fencing, and activity limitations deterred unauthorized access and limited exposure. Land Use Controls indicated in the 2015 Explanation of Significant Differences continue to deter unauthorized access and limit exposure by restricting residential land use and prohibiting groundwater use.		
Operable Unit: RVAAP-08 to RVAAP-12 (Load Lines 1 – 4 and 12)	*Protectiveness Determination:* Protective	Addendum Due Date (if applicable): Not Applicable
The remedy at Load Lines 1 – 4 and 12 is protective of human health and the environment. Risk from chemicals of concern in surface and subsurface soil and sediment has been reduced to meet remedial goal options for Commercial/Industrial land use. Explosives-, polychlorinated biphenyl-, and polycyclic aromatic hydrocarbon-contaminated soil have been excavated, placed into a thermal treatment system to achieve remedial goal options, and placed back into the excavated area. Metals-contaminated soil above remedial goal options has been excavated and disposed of offsite. The site has been restored and exposure to soil containing chemicals of concern has been mitigated by administrative controls including no residential use, annual inspections and reporting, and General Land Use Control Awareness Training for facility personnel.		
Operable Unit: RVAAP-51 (Dump Along Paris-Windham Road)	*Protectiveness Determination:* Protective	Addendum Due Date (if applicable): Not Applicable

The remedy for Dump Along Paris-Windham Road is protective of human health and the environment.

Land Use Controls (boundary markers and signs notifying personnel/the public of access and digging restrictions) are in place to prevent exposure of the resident receptor to chemicals of concern in shallow surface soil. Annual Land Use Control inspections conducted in 2019 and 2020 confirmed that Seibert Stakes with warning signs were posted at least every 300 feet and in good condition. The soil cover was found to be intact with no signs of damage or erosion. General Land Use Control Awareness Training is provided annually to staff and tenants of Camp James A. Garfield Joint Military Training Center.

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ACRONYMS AND ABBREVIATIONS

%	percent
ACM	Asbestos-containing Material
AEDB-R	Army Environmental Database-Restoration
amsl	above mean sea level
AOC	Area of Concern
Army	U.S. Department of the Army
ARNG	Army National Guard
bgs	below ground surface
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CJAG	Camp James A. Garfield Joint Military Training Center
COC	Chemical of Concern
CUG	Clean-up Goal
DAWSON	Dawson Solutions, LLC
DNT	dinitrotoluene
EIT	Engineer in Training
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
HHRA	Human Health Risk Assessment
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HQAES	Headquarters Army Environmental System
ID	Identification
IRP	Installation Restoration Program
kg	kilogram
LUC	Land Use Control
mg	milligram
MEC	munitions and explosives of concern
N/A	Not Applicable
NESHAP	National Emission Standards for Hazardous Air Pollutants
NPL	National Priorities List
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PMP	Property Management Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RGO	Remedial Goal Option
RQL	Ramsdell Quarry Landfill
ROD	Record of Decision

ACRONYMS AND ABBREVIATIONS (CONTINUED)

RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
TNT	2,4,6-trinitrotoluene
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
WBG	Winklepeck Burning Grounds

1.0 INTRODUCTION

This is the third Five-Year Review for Camp James A. Garfield Joint Military Training Center (CJAG) and includes eight Installation Restoration Program (IRP) sites (**Table 1**).

Table 1 – Camp James A. Garfield Joint Military Training Center
Five-Year Review Site Crosswalk

AEDB-R ID	Site Description	HQAES ID
RVAAP-01	Ramsdell Quarry Landfill	39747.1001
RVAAP-05	Winklepeck Burning Grounds	39747.1005
RVAAP-08	Load Line 1	39747.1066
RVAAP-09	Load Line 2	39747.1009
RVAAP-10	Load Line 3	39747.1010
RVAAP-11	Load Line 4	39747.1011
RVAAP-12	Load Line 12	39747.1012
RVAAP-51	Dump Along Paris-Windham Road	39747.1051

AEDB-R = Army Environmental Database-Restoration
HQAES = Headquarters Army Environmental System
ID = Identification
RVAAP = Ravenna Army Ammunition Plant

This third Five-Year Review does not include RVAAP-04, the Open Demolition Area #2. A 2007 Record of Decision (ROD) determined that soil and dry sediment at RVAAP-04 required No Further Action. However, interim controls are required due to the presence of munitions and explosives of concern (MEC). The interim controls/Land use Controls (LUCs) have been in place and will be maintained until the current Remedial Investigation, Feasibility Study, Proposed Plan, and ROD addressing MEC are completed, and any remedial action is implemented under the Military Munitions Response Program. The interim controls and restricted access are included in the Property Management Plan for 2021 at the request of the Ohio Environmental Protection Agency (EPA). The restricted access prevents exposure to Munitions Potentially Presenting an Explosive Hazard at RVAAP-04 and is, therefore, protective of human health.

1.1 PURPOSE

The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Five-Year Reviews also identify issues discovered during the review, if any, and provide recommendations to address them. This Five-Year Review

has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

1.2 AUTHORITY

The U.S. Army Corps of Engineers (USACE), Louisville District, with assistance from Dawson Solutions, LLC (DAWSON), has prepared this Five-Year Review on behalf of the U.S. Army Environmental Command pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section (§) 121, 42 USC § 9621, and the National Contingency Plan, 40 CFR Part 300. CERCLA §121 (c) states the following:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

The National Contingency Plan, at 40 CFR § 300.430(f)(4)(ii), states:

> *"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action."*

The U.S. Department of the Army (Army) is the lead agency responsible for managing the investigation and clean-up activities and overseeing technical and community involvement work at CJAG. The Ohio EPA is the regulatory agency that provides regulatory oversight support concerning environmental investigations, risk management, and clean-up activities at CJAG.

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2.0 BACKGROUND

2.1 PHYSICAL CHARACTERISTICS

CJAG, formerly Ravenna Army Ammunition Plant (RVAAP), consists of 21,683 acres in northeastern Ohio within Portage County and Trumbull County, approximately three miles east-northeast of the city of Ravenna and one-mile northwest of the city of Newton Falls. The facility is approximately 11 miles long and 3.5 miles wide and is bound by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garrett, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east (**Figure 1**) (Chenega, 2021a).

2.2 GEOLOGY

Most of the surface geology at CJAG consists of glacial till deposits from the Wisconsin glacial advance. The eastern two-thirds of CJAG are underlain by the clay-rich Hiram Till and associated outwash plain while the western one-third consists of a silty, sandy material known as Lavery Till, with occasional cobbles and sporadic boulders. The Lavery Till was deposited during two short glacial advances and retreats at a thickness of 20 to 40 feet over the entire installation and Hiram Till was deposited on only the eastern two-thirds of CJAG. The Hiram Till ranges in thickness from 5 to 15 feet below ground surface (bgs) and is made up of 12 percent (%) sand, 41% silt, and 47% illite and chlorite clay minerals (Leidos, 2020).

Several units of the Pennsylvanian-age Pottsville Formation make up the uppermost bedrock underlying CJAG. The units vary in composition from coarse, permeable sandstones to impermeable shales and include: Sharon Member – Sandstone/ Conglomerate Unit, Sharon Member – Shale Unit, Massillon Sandstone Member, Mercer Member, and Homewood Sandstone Member. Beneath the Pottsville Formation is the Mississippian-age shale of the Cuyahoga Formation (Leidos, 2020).

2.3 HYDROGEOLOGY

Thickness and permeability of the bedrock water-bearing formations at CJAG vary; however, CJAG is mostly comprised of clay-rich glacial tills and underlying bedrock formations with low permeabilities. The major aquifers in the area are the sandstone units of the Pottsville Formation. The Sharon Member – Sandstone/Conglomerate Unit is the most productive of this formation and is the major bedrock aquifer in northeastern Ohio. The average depth to groundwater throughout CJAG is 50 feet bgs and static levels occur between 958 and 1,184 feet above mean sea level (amsl). Groundwater flows in an eastward direction and is recharged via surface streams and surface infiltration. Southwest and northwest of CJAG are two buried valleys with unconsolidated aquifers that can yield up to 1,600 gallons per minute (Leidos, 2020).

2.4 LAND AND RESOURCE USE

RVAAP was constructed in 1940 and 1941 primarily for depot storage and ammunition loading. The facility was also used for open burning/detonation, landfill operations, and research and development. Demilitarization of various munitions took place at RVAAP between 1972 and 1992 (Chenega, 2021a).

The facility was renamed CJAG in 2018 and is now an Ohio Army National Guard (OHARNG) training site used by the Army and other DoD units. Future land use includes military training activities.

Per OHARNG Environmental Specialist Katie Tait, the east side of CJAG, where the original cantonment was constructed, has been connected to municipal water with Newton Falls since the 1990s. The main part of CJAG, the former RVAAP administrative area and new cantonment area, was connected to municipal water supply in July 2018. Water is provided by Newton Falls on the east side of CJAG and by Portage County Water Resources from the Windham water plant.

3.0 FIVE-YEAR REVIEW PROCESS

3.1 ADMINISTRATIVE COMPONENTS

The Army initiated this Third Five-Year Review Report for CJAG on March 25, 2021, with a kick-off call with USACE, Louisville District, CJAG, and DAWSON personnel to discuss the IRP sites and any items of interest pertaining to the protectiveness of the remedies currently in place. A review schedule was established that included:

- Community notification
- Document review
- Site inspection
- Interviews
- Five-Year Review Report development and review

3.2 COMMUNITY NOTIFICATION

Public notices were issued in the *Record-Courier* and *Tribune Chronicle* on June 6, 2021, notifying the public the Army was initiating the Five-Year Review at CJAG. Contact information was provided for the public to submit comments. The Public Notice affidavits are included in **Appendix A**.

The results of the review and the report will be made available at the CJAG information repositories at the following locations:

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444

Upon completion of the Third Five-Year Review Report, public notices will again be placed in the *Record-Courier* and *Tribune Chronicle* to announce availability of the Final Five-Year Review Report at CJAG information repository locations.

CJAG has an active Restoration Advisory Board, which holds meetings approximately twice per year. A Community Relations Plan, which is updated annually (most recently in 2021), is also available to Restoration Advisory Board members (Chenega, 2021a).

3.3 DOCUMENT REVIEW

The third Five-Year Review included a review of relevant site documents, including but not limited to decision/remedy selection documents, design and implementation reports,

investigations, annual reports, and regulatory documents. Reviewed documents are listed as references in **Section 9.0** of this report.

3.4 SITE INSPECTION

The Five-Year Review site inspection was conducted on December 7, 2021. In attendance were Kevin Sedlak (Army National Guard Directorate Restoration Program Manager), Katie Tait (Ohio Army National Guard Environmental Specialist 2), Tikoshia Davis, Engineer in Training (EIT) (DAWSON), and Shaun Prines (DAWSON).

Site inspections are conducted to provide information about a site's status and visually confirm and document the conditions of the remedy, the site, and the surrounding area (EPA, 2001). The site inspection checklists will be presented in **Appendix B**. The site inspection photograph logs will be presented in **Appendix C**. Applicable site inspection information for each site will be presented in each respective section.

3.5 INTERVIEWS

During this third Five-Year Review, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date at each of the IRP sites at CJAG. The project team conducted interviews with the following individuals:

- Kevin Sedlak, Restoration Program Manager, Army National Guard Directorate
- Tim Morgan, State Environmental Supervisor, Ohio Army National Guard
- Katie Tait, Environmental Specialist 2, Ohio Army National Guard
- Allan Brillinger, Program Manager, Chenega Tri-Services, LLC
- Kevin Palombo, Site Coordinator, Ohio EPA

A summary of relevant issues from interviews can be found in the applicable IRP site evaluation sections of this report. Complete interviews are presented in **Appendix D**.

During the interviews, CJAG site remedies, progress, activities, and Operations & Maintenance were discussed. Kevin Sedlak shared that Ohio EPA and other stakeholders receive notice of any proposed changes to the LUCs via the Property Management Plan. He noted that the LUCs at each site are operating as intended and are inspected annually.

Tim Morgan stated that LUCs at CJAG are being enforced and any past breaches were reported to the OHARNG Environmental Office, Army National Guard, and the Ohio EPA.

Katie Tait shared that the 2019 ROD Amendment remedy has been completed at Load Lines 1 – 4 and 12, and no problems were encountered during remedy implementation.

Allan Brillinger shared that all the LUC remedies are working as intended and are functioning well. He also shared that no unexpected Operations & Maintenance difficulties have taken place at the LUC sites in the last five years.

Kevin Palombo stated routine communications and activities are conducted by the Ohio EPA, including monthly and quarterly scheduled meetings and Ohio EPA and Army reviews.

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4.0 RVAAP-01 RAMSDELL QUARRY LANDFILL

4.1 SITE CHRONOLOGY

The site chronology for Ramsdell Quarry Landfill (RQL) is presented in **Table 2**.

Table 2 – Ramsdell Quarry Landfill Chronology

Event	Date (Year)
Quarry operations	1940 – 1941
Landfill operations	1941 – 1989
Waste explosives burned on bottom of quarry	1946 – 1950s
Solid waste disposal activities	1976 – 1989
Permitted sanitary landfill operations	1976 – 1989
Phase I Remedial Investigation	January 2004
Feasibility Study	October 2006
ROD for Soil and Dry Sediment	August 20, 2009
Remedial Design	2010
1,100 tons ACM removed	2010
First Five-Year Review Report	August 31, 2012
ROD Amendment for Soil and Dry Sediment	June 18, 2013
Remedial Design for Soil and Dry Sediment	April 2014
200 pounds ACM removed	2014
Remedial Action Report for Soil and Dry Sediment	January 2015
Second Five-Year Review Report	June 12, 2017
ROD for Sediment and Surface Water	September 15, 2020

ACM = Asbestos-containing Materials
ROD = Record of Decision

4.2 BACKGROUND

4.2.1 PHYSICAL CHARACTERISTICS

RQL, or RVAAP-01, consists of approximately 14 acres in the northeastern portion of CJAG and includes old-field communities consisting of patches of forests and grasslands (**Figure 2**). A large portion of RQL slopes 40 feet to the bottom of a former quarry. The quarry bottom is an isolated wetland with no drainage that is hydraulically connected to groundwater and collects surface water runoff. When present, the water depth is less than four feet. (USACE, 2020a).

4.2.2 LAND AND RESOURCE USE

The current land use at RQL is considered "Restricted Access," and the area is closed to training and administrative activities because contamination, including residual asbestos, was left in place at the landfill (USACE, 2009b). Future land use at RQL is anticipated to remain restricted (USACE, 2013a).

4.3 HISTORY OF CONTAMINATION

From 1940 to 1941, RQL was an active quarry for construction ballast. From 1946 through the 1950s, the abandoned quarry was used to burn waste explosives and dispose of liquid residues from annealing operations (e.g., sulfuric acid, shell casings, sodium orthosilicate, chromic acid, and alkali) (USACE, 2009b; SAIC, 2005a). The western and southern sections of the abandoned quarry were used as a landfill from 1941 to 1989. Details associated with waste disposal operations from 1941 to 1976 are unknown. From 1976 to 1989, solid waste disposal at RQL may have included explosives (e.g., 2,4,6-trinitrotoluene [TNT] and RDX), napalm, gasoline, acid dip liquor (e.g., hydrochloric or sulfuric acid), annealing residue, aluminum chloride, and inert material (USACE, 2009b; SAIC, 2005a).

The state of Ohio permitted a four-acre portion of the abandoned quarry as a sanitary landfill from 1978 to 1990 (USACE, 2009b).

4.4 INITIAL RESPONSE

Former RVAAP personnel indicated that much of the waste contained at RQL was removed during the 1980s. The sanitary landfill was closed in 1990 and capped with a clay cover. Semiannual groundwater monitoring was initiated with the installation of five monitoring wells as required under Ohio solid waste regulations (USACE, 2009b; SAIC, 2005a).

4.5 BASIS FOR TAKING ACTION

The 2005 Remedial Investigation human health risk assessment (HHRA) for RQL evaluated the Security Guard/Maintenance Worker receptor. Five chemicals of concern (COCs) were identified in the soil and dry sediment: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The carcinogenic risk to a Security Guard/Maintenance Worker at RQL was 2.1×10^{-3}, exceeding the Ohio EPA target risk level of 1×10^{-5}. Concentrations of benzo(a)pyrene in soil at two sample points resulted in a carcinogenic risk above the Ohio EPA target risk level and federal CERCLA risk range. The HHRA concluded that, under current and anticipated future land use scenarios, exposure to soil and dry sediment up to one foot bgs may result in an unacceptable risk to human receptors (USACE, 2009b).

4.6 REMEDIAL ACTIONS

4.6.1 REMEDIAL ACTION OBJECTIVES

The remedial action objective (RAO) for RQL as defined in the 2009 ROD is *to prevent National Guard Security Guard/Maintenance Worker exposure to contaminants in soil and dry sediment that exceed clean-up goals to a depth of 1 ft bgs* (USACE, 2009b).

Table 3 lists the soil and dry sediment clean-up goals (CUGs) for RQL.

Table 3 – RVAAP-01 Ramsdell Quarry Landfill
Soil and Dry Sediment Clean-up Goals for a
Security Guard/Maintenance Worker

Chemical of Concern	Clean-up Goal[1] (mg/kg)
Benz(*a*)anthracene	13
Benzo(*a*)pyrene	1.3
Benzo(*b*)fluoranthene	13
Dibenz(*a,h*)anthracene	1.3
Indeno(1,2,3-*cd*)pyrene	13

Note: Clean-up goals are based on a cancer risk of $1x10^{-5}$.
[1]U.S. Army Corps of Engineers, 2013a; Table 1
mg/kg = milligrams per kilogram
RVAAP = Ravenna Army Ammunition Plant

4.6.2 REMEDY DESCRIPTION

The remedy for RQL, as defined in the 2009 ROD, is *Excavation and Offsite Disposal.* This remedy *involves the removal of soil and dry sediment at RQL with concentrations of COCs that exceed the clean-up goals for the Security Guard/Maintenance Worker* (USACE, 2009b).

Construction and miscellaneous debris suspected to contain asbestos, including transite and roofing materials, were unexpectedly encountered during the 2009 ROD excavation activities. As a result, remedial alternatives were reevaluated to address the soil and dry sediment at RQL, and a post-ROD amendment was finalized in May 2013.

The remedy for RQL, as defined in the 2013 ROD Amendment, is *Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use. This remedy includes 1) installation of a fence at the perimeter of RQL to encompass the closed landfill, quarry bottom, and wetlands; and 2) implementing a BMP* [best management practice] *to remove surficial ACM* [asbestos-containing material] *through non-intrusive/no-digging methods* (USACE, 2013a). The clean-up goals for the 2013 ROD Amendment remain the same.

The remedy for RQL, as defined in the 2020 ROD for Sediment and Surface Water, is as follows (USACE, 2020b):

No further action is necessary for sediment and surface water at the sites in this ROD for Unrestricted (Residential) Land Use. Consequently, no further action is necessary for the future use of the sites (Military Training). Groundwater will be addressed under future CERCLA decisions. Land use controls will not be implemented as part of this decision, as no CERCLA-related chemicals of concern (COCs) were identified in sediment or surface water for the Resident Receptor (Adult and Child) and the ecological risk assessment (ERA) recommended no further action.

4.6.3 REMEDY IMPLEMENTATION

Implementation of the remedy, as defined in the 2009 ROD, was initiated in June 2010. Excavation ceased immediately after encountering ACM and was covered with plastic sheeting. After notifying the Army and Ohio EPA, the materials were sampled and analyzed. Results revealed the debris contained greater that 1% asbestos (USACE, 2013a; Leidos, 2015).

In July 2010, the Ohio EPA Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Coordinator determined that all soil and materials containing asbestos be handled and disposed of as friable ACM. The Ohio EPA NESHAP Coordinator stated that (Leidos, 2015):

> "…*any disturbed asbestos containing waste* [material]*, including debris considered to be asbestos contaminated, must be handled/disposed according to Ohio asbestos emission control rules at OAC* [Ohio Administrative Code] *3745-20. Remove all visible* [asbestos containing waste material]*/debris from the excavation and then sample the soil for any asbestos. A sampling plan must be submitted to Ohio EPA for review/approval. Cleanup levels are supposed to be to background levels*."

This NESHAP guidance required any ACM exposed during excavation be removed as encountered or addressed, even if outside the area of concern (AOC). Consequently, the soil removal area expanded into areas not contaminated by the COCs, as shown in **Appendix E;** Figure E-1. In August 2010, approximately 1,100 tons of friable ACM, including soil and construction debris, were removed from RQL (USACE, 2013a; Leidos, 2015).

After the soil removal was completed, the excavation floor and sidewalls of the quarry were visually inspected to confirm no ACM remained exposed. In September 2010, the same areas were sampled and showed no detectable concentrations of asbestos. The site was then restored using approximately 702 tons of backfill and 460 tons of topsoil, and the disturbed areas were seeded (Leidos, 2015).

The 2013 ROD Amendment remedy implementation was initiated in August 2014. To encompass the closed landfill, quarry bottom, and wetlands, a 914-foot chain-link security fence with industrial galvanized steel wire mesh was installed at the northern perimeter of RQL along Ramsdell Road. In addition, 2,178 feet of five-strand high tensile wire fence

(five feet high with ten-foot interval post centers) were installed at the eastern, southern, and western perimeters of RQL. Eleven signs were installed on the gates and fencing warning of the ACM hazard (USACE, 2013a; Leidos, 2015). These signs were installed due to the requirements of the OAC 3745-20-07(B) to inform the public the area was once used for ACM waste disposal activities (Leidos, 2015).

Once the fence installation was complete, ACM survey and clean-up began in the areas shown on **Appendix E;** Figure E-1. Approximately 200 pounds of ACM exposed at the ground surface were removed from the site using non-intrusive, no digging methods (Leidos, 2015).

The 2020 Revised Property Management Plan (PMP) details the required LUCs at RQL (USACE, 2020a):

- *All activities must be in compliance with established digging restrictions and established exposure limits (Security Guard/Maintenance Worker - one (1) hour/day for 250 days/year for 25 years).*
    - *All digging or excavation within the quarry bottom is prohibited due to residual asbestos and contamination.*
    - *Digging and excavation on the landfill cap will be regulated by the post closure care plan and the State of Ohio solid waste regulations.*
    - *Due to not meeting the industrial/commercial standard, exposure monitoring for the full-time facility employee must be conducted to ensure and document that exposure at the AOC is not above the established exposure limit set for the Security Guard/Maintenance worker of one (1) hour/day for 250 days/year for 25 years.*
- *Permanent warning signs will be installed and maintained around RQL on the gates and on the chain link and high tensile wire fence at 300 feet centers to warn of the asbestos hazard in the quarry bottom. The signs will meet the requirements of OAC 3745-20-07 (B)(1)(b).*
- *As no soil disturbing activities are allowed within the quarry bottom, [Occupational Safety and Health Administration] asbestos awareness training set forth in 29 CFR 1926.1101(k)(9)(vii) is not required. Any personnel entering the quarry bottom will be briefed of the asbestos hazards.*
- *Periodic monitoring of LUCs, in the form of site inspections, is required to be conducted by the ARNG [Army National Guard]/OHARNG to confirm that the LUCs remain effective and still meet LUC objectives for continued remedy protectiveness. Site inspections are required to be conducted on an annual basis and inspections of the solid waste landfill are conducted in accordance with State of Ohio solid waste regulations and the Ohio Environmental Protection Agency (Ohio EPA) Director's Final Findings and Orders (Ohio EPA 2004). The required annual inspection is to be submitted to the Ohio EPA for review and approval.*

4.6.4 OPERATIONS, MAINTENANCE AND MONITORING

Annual LUC inspections are required by the PMP. Annual LUC inspections from 2016 to 2020 confirmed no evidence of digging and no land use changes. Maintenance activities, including annual mowing, fence repairs, and filling and seeding minor soil depressions and animal burrows on the landfill cap, took place as needed in accordance with Ohio solid waste regulations. Fencing and signage were intact and in good condition. The asbestos warning signs are posted on gates and every 300 feet on the fence. Personnel and contractors entering RQL are briefed on the site history, asbestos hazards, and LUCs, and are required to record their name, date and time of entry and exit on the Access Logs. During the review period, personnel did not exceed the established exposure limits for the Security Guard/Maintenance Worker (one hour per day for 250 days for 25 years, or 250 hours per year) (Vista, 2017; Chenega, 2019b, 2019c, 2020, 2021b).

Annual LUC training is provided to staff and tenants of CJAG. Participants receive an overview of the history of the facility, ongoing clean-up work, location of clean-up sites, and LUCs and restrictions. Training materials are kept on file and provided to anyone that misses the April training dates. Due to coronavirus restrictions, all training was conducted virtually in 2020 (Chenega, 2019b; 2019c; 2020; 2021b).

4.7 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

The protectiveness statement presented in the Second Five-Year Review Report for RQL reads (Army National Guard Directorate, 2017b):

The remedy at Ramsdell Quarry Landfill is protective of human health and the environment because:

- *Contaminated soil/dry sediment was partially remediated.*
- *A perimeter fence with warning signs was installed and surficial ACM was removed by non-intrusive/no-digging methods in accordance with the ROD amendment.*
- *LUCs have been implemented; training, access restrictions, and land uses are being performed/maintained consistent with the ROD.*

Table 4 lists the recommendations from the second Five-Year Review for RQL and the summary of completion.

Table 4 – RVAAP-01 Ramsdell Quarry Landfill
Recommendations and Completion Summary

Issue from Previous Review	Recommendation from Previous Review	Completion Date	Action Taken
LUCs have not been incorporated into the PMP.	*Incorporate LUCs into the PMP.*	April 2020	LUCs are incorporated into the Revised PMP for the Designated Areas of Concern and Munitions Response Sites

LUC = Land Use Control
PMP = Property Management Plan
RVAAP = Ravenna Army Ammunition Plant

4.8 DATA REVIEW

The remedial action for RQL currently consists of LUCs; therefore, no data was generated or reviewed for this third Five-Year Review.

4.9 SITE INSPECTION

DAWSON (Tikoshia Davis, EIT and Shaun Prines) conducted the CJAG site inspection on December 7, 2021. Kevin Sedlak (Army National Guard Directorate Restoration Program Manager) and Katie Tait (Ohio Army National Guard Environmental Specialist 2) escorted the DAWSON team to each site and assisted in identifying important features, remedy components, boundaries, etc. The Site Inspection Checklists are presented in **Appendix B**. The Site Inspection Photograph Log is presented in **Appendix C**.

The fencing surrounding RQL, encompassing the closed landfill, quarry bottom, and wetlands, was in good condition at the time of inspection. The fencing did not exhibit damage and all gates were locked (**Appendix C**, Photographs 3, 4, and 5). Signage, warning of the asbestos hazard in the quarry bottom, was observed to be in good condition.

4.10 TECHNICAL ASSESSMENT

4.10.1 QUESTION A – IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Yes, the remedy implemented at RQL is functioning as intended by the 2009 ROD and 2013 ROD Amendment. All surficial ACM was removed via non-intrusive/no-digging methods. Fencing, gates, and signage installed around the closed landfill, quarry bottom, and wetlands are inspected and maintained. LUCs restrict access to RQL and protect future receptors from residual asbestos and remaining COCs in soil above CUGs.

4.10.2 QUESTION B – ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEAN-UP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes, the exposure assumptions, CUGs, and RAO continue to be valid. No changes to the anticipated land use at or near RQL were made and no new routes of exposure or receptors were identified that may affect the protectiveness of the remedy.

CUGs for soil and dry sediment are presented in the 2009 ROD (USACE, 2009b) and shown in **Table 3**. The 2009 ROD identified risk-based soil and dry sediment CUGs based on a Security Guard/Maintenance Worker scenario. For this Five-Year Review, soil and dry sediment CUGs were compared to current EPA Industrial Regional Screening Levels (RSLs). CUGs established in 2013 ROD Amendment remain valid and protective. RQL Applicable or Relevant and Appropriate Requirements (ARARs) and CUG evaluations are presented in **Appendix F** and **Appendix G**, respectively.

4.10.3 QUESTION C – HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

No other information has come to light that could call into question the protectiveness of the remedy.

4.10.4 TECHNICAL ASSESSMENT SUMMARY

Surficial ACM was removed from RQL and LUCs are in place “to protect future receptors from remaining COCs in soil above CUGs and residual asbestos.” No changes in land use were made, no new routes of exposure or receptors have been identified. Therefore, the remedy implemented at RQL is functioning as intended by the 2009 ROD and 2013 ROD Amendment, and the exposure assumptions and RAO continue to be valid.

4.11 ISSUES

No issues were identified for RQL during this Five-Year Review that prevent the remedy from being protective now or in the future.

4.12 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

No recommendations or follow-up actions are required since no issues were identified during this Five-Year Review that affect current or future protectiveness of the remedy.

4.13 PROTECTIVENESS STATEMENT

The remedy for RQL is protective of human health and the environment.

Surficial ACM was removed via non-intrusive/no-digging methods. Fencing is in place at RQL and encompasses the closed landfill, quarry bottom, and wetlands to restrict access to the AOC. LUCs (digging restrictions, fencing and signage, briefings on asbestos hazards, and annual inspections) are in place to protect current and future receptors from remaining contamination in soil above CUGs and residual asbestos. Annual LUC inspections occurred between 2016 and 2020 without lapse. LUC inspections concluded that the fence and signage were in good condition and signage was spaced at approximately 300-foot intervals.

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5.0 RVAAP-05 WINKLEPECK BURNING GROUNDS

5.1 SITE CHRONOLOGY

Information on site chronology for Winklepeck Burning Grounds (WBG) is presented below in **Table 5**.

Table 5 – Winklepeck Burning Grounds Chronology

Event	Date (Year)
Open burning of waste oils	Until 1973
Open burning of explosives	Prior to 1980
Burning operations in metal, refractory-lined trays at Pad 37	After 1980
Burn trays at Pad 37 and Building 1601 closed under RCRA	1998
Soil and groundwater at Pad 47 furnace transferred to CERCLA	1998
Phase I, II, and III Remedial Investigations	1998 – 2005
Focused Feasibility Study	March 2005
ROD for Soil and Dry Sediment	August 19, 2008
Remedial Action Completion Report	2009
First Five-Year Review Report	August 31, 2012
Explanation of Significant Differences for Post-ROD Changes to the Remedy	March 27, 2015
Remedial Design for Post-ROD Changes to the Remedy	August 2015
Remedial Action at Pads 38, 61/61A, 66, 67	2016 – 2017
Second Five-Year Review Report	June 12, 2017
Remedial Action Completion Report for Soil Removal	2018

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
RCRA = Resource Conservation and Recovery Act
ROD = Record of Decision

5.2 BACKGROUND

5.2.1 PHYSICAL CHARACTERISTICS

WBG, or RVAAP-05, consists of approximately 212 acres in the central portion of CJAG (**Figure 3**). WBG is an open field with a gently rolling plain. Surficial material at WBG includes low-permeability soil (silts or clay loams) and glacial sediment with some areas eroded, removed, reworked, or covered during CJAG operations. The elevation ranges from 1,084.9 to 993.2 feet amsl. The run-off gradient is west to east to southeast across WBG and the storm water run-off flows into Sand Creek via ditches. No perennial streams are present. Groundwater flows east and occurs under unconfined conditions in

discontinuous, thin, sandy interbeds within heterogeneous unconsolidated glacial till deposits (USACE, 2020a; USACE, 2008).

5.2.2 LAND AND RESOURCE USE

The Army classifies WBG as an operational range and the current land use is commercial/industrial. The future land use for WBG is military training as an active range. Groundwater use is currently prohibited at WBG (USACE, 2020a).

5.3 HISTORY OF CONTAMINATION

Operations at WBG included open burning of explosives on burn pads, burn pits, and roads. Prior to 1980, bulk explosives and explosives-contaminated burnable wastes, propellants, black powder, sludge, and sawdust from load lines, domestic wastes, and small amounts of laboratory chemicals were burned at WBG. Metallic munitions fragments and residual explosives remained after burning. Until 1973, the northeast corner of WBG was used to burn waste oils, including hydraulic oils from machines and lubrication oils from vehicles. Burning took place on the bare ground and ash was not collected from these areas. Salvageable metal was sold as marketable scrap at a salvage yard (USACE, 2008).

After 1980, burning took place in metal, refractory-lined trays within a one-acre area permitted under the Resource Conservation and Recovery Act (RCRA). Seventy burn pads were identified via historical drawings and aerial photographs; however, the exact number is not known. Most burn pads were level, approximately 20 feet wide and 40 feet long. Four of the burn pads (Pads 58, 59, 60, and 61) were surrounded on three sides by berms approximately 50 feet wide and 75 feet long (USACE, 2008). Ash residues were drummed and sent to another RCRA-permitted facility on the west side of WBG, Building 1601, for storage pending proper disposition (USACE, 2008).

5.4 INITIAL RESPONSE

In 1998, the burn trays were decontaminated, removed, and closed under RCRA. Building 1601 was also closed under RCRA (USACE, 2008). In August 2005, a MEC removal action and remediation of contaminated soil and dry sediment were completed in preparation for construction of a Mark 19 Grenade Machinegun Range. During the MEC removal, ACM was removed and disposed of offsite (USACE, 2008).

5.5 BASIS FOR TAKING ACTION

The 2005 HHRA at WBG assessed the risks to the National Guard Range Maintenance Soldier receptor. Six COCs were identified in soil and dry sediment: RDX, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The incremental lifetime cancer risk to a National Guard Range Maintenance Soldier from exposure to soil up to four feet bgs at WBG was $2.3x10^{-5}$, exceeding the Ohio EPA target risk threshold of $1.0x10^{-5}$. The HHRA concluded that exposure to soil up to four feet bgs may result in unacceptable risk to human receptors. Additionally, transite and friable asbestos were observed at Pad 70. If asbestos becomes

airborne, it could pose a hazard to the health and safety of the range personnel (SAIC, 2005b; USACE, 2008).

5.6 REMEDIAL ACTIONS

5.6.1 REMEDIAL ACTION OBJECTIVES

The RAO for WBG, as defined in the 2008 ROD, is to *prevent exposure of the National Guard Range Maintenance Soldier to contaminants in soil exceeding risk-based cleanup goals extending to a maximum depth of 4* [feet] *bgs* (USACE, 2008). **Table 6** lists the soil and dry sediment CUGs for WBG established in the 2008 ROD.

**Table 6 – RVAAP-05 Winklepeck Burning Grounds
Soil and Dry Sediment Clean-up Goals for a
National Guard Range Maintenance Soldier**

Chemical of Concern	Clean-up Goal[1] (mg/kg)
Benzo(*a*)anthracene	75
Benzo(*a*)pyrene	7.5
Benzo(*b*)fluoranthene	75
Dibenzo(*a,h*)anthracene	7.5
Indeno(1,2,3-*cd*)pyrene	75
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	617
2,4,6-Trinitrotoluene (TNT)[2]	1,935

Note: Clean-up goals are based on a target cancer risk of $1x10^{-5}$.
[1]U.S. Army Corps of Engineers (USACE), 2008; Table 2
[2]USACE and Ohio Environmental Protection Agency approved a clean-up number for TNT post-Record of Decision due to elevated concentrations of TNT found during remedy implementation in November 2008 (MKM Engineers, Inc., 2009).
mg/kg = milligrams per kilogram
RVAAP = Ravenna Army Ammunition Plant

After the remedy was implemented, the Army determined the reasonably anticipated future land use at WBG to be Commercial/Industrial for potential full-time use. The 2015 Explanation of Significant Differences (ESD) presented the post-ROD changes to the remedy at WBG, including additional soil removal needed to achieve the CUGs necessary for Commercial/Industrial Land Use. **Table 7** presents the soil and dry sediment CUGs for WBG, based on EPA Industrial RSLs (USACE, 2015).

**Table 7 – RVAAP-05 Winklepeck Burning Grounds
Industrial Soil Regional Screening Levels**

Chemical of Concern	Industrial Soil RSL[1] (mg/kg)
Benzo(*a*)anthracene	21
Benzo(*a*)pyrene	2.1
Benzo(*b*)fluoranthene	21
Dibenzo(*a,h*)anthracene	2.1
Indeno(1,2,3-*cd*)pyrene	-
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	240
2,4,6-Trinitrotoluene (TNT)	420

[1] May 2013 Industrial Soil RSLs based on a cancer risk of $1x10^{-5}$. No value was provided for indeno(1,2,3-*cd*)pyrene (Tetra Tech, Inc., 2018; Tables 2-11 and 2-12).
mg/kg = milligrams per kilogram
RSL = Regional Screening Level
RVAAP = Ravenna Army Ammunition Plant

5.6.2 REMEDY DESCRIPTION

The remedy for WBG, as defined in the 2008 ROD, is *Chemical Contamination Removal Concurrent with MEC Removal Action – Excavation, Screen for Potential MEC, Composite Sampling, and Disposal* and consists of the following (USACE, 2008):

> *The selected remedy for chemically contaminated soil and dry sediment consists of excavation and disposal of contaminated soil identified at three locations at WBG: Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. In addition, soil containing friable asbestos will be excavated and disposed from a fourth location (Pad 70). Munitions and explosives of concern (MEC) exist at WBG; therefore, MEC survey and clearance procedures are incorporated into all excavation activities at WBG. Following excavation, residual contamination at depth will remain at WBG; therefore, land use controls (LUCs) will be implemented and enforced to deter unauthorized access and limit exposure.*

To allow for Commercial/Industrial Land Use at WBG, the 2015 ESD documented the following changes to components of the remedy selected in the 2008 ROD (National Guard Bureau, 2015):

Land Use: *The [Reasonably Anticipated Future Land Use] has changed to Commercial/Industrial for potential full-time use.*

Additional Soil Removal: *Five areas of additional soil removal needed to achieve the Commercial/Industrial Land Use and allow development of the [Multi-Purpose Machine Gun] Range with fewer restrictions.*

Revised Restrictions/Land Use Controls: *Implementation of this ESD will effectively terminate the previously established LUCs and restrictions identified in the ROD, the original RD* [Remedial Design]*, and the PMP. Based on the results of the additional evaluation and risk assessment presented in the* [Remedial Investigation/Feasibility Study] *Supplement, two new LUCs will be established*:

- *The AOC cannot be used for Unrestricted (Residential) Land Use unless or until additional evaluation shows that risk levels resulting from residual contamination have been reduced to levels acceptable for Residential Land Use and any residual MEC hazards have been removed and*
- *Groundwater use or extraction of groundwater located at or underlying the WBG AOC or any portion thereof is prohibited, except for the following:*
    - *The installation, development, purging, and sampling of new or existing monitoring wells in accordance with the most recent Facility-Wide Sampling and Analysis Plan as part of the AOC-specific IRP, the Facility-Wide Ground Water Monitoring Program Plan, or the Facility-Wide Groundwater Remedial Investigation.*
    - *The modification of existing monitoring wells, if necessary, to allow for construction on the range.*
    - *The abandonment and replacement of monitoring wells damaged by activities or removed for construction, and abandonment of wells no longer utilized as part of IRP or [Facility-Wide Ground Water Monitoring Program Plan] activities, in accordance with Ohio EPA guidance, the most recent [Facility-Wide Sampling and Analysis Plan], and applicable Ohio Administrative Code requirements.*

Implementation Actions for Revised Restrictions/Land Use Controls: *The Army, through a Land Use Control Implementation Plan (LUCIP) or similar document, shall restrict the use of the WBG AOC to non-Residential usage and shall restrict use of groundwater on the AOC to non-potable uses.*

Monitoring and Reporting of the Revised Restrictions/Land Use Controls: *The Army will monitor the LUCs, as necessary, to ensure they are maintained; however, given that there will be no engineering controls to inspect, this ESD terminates the requirement of quarterly and annual reporting to the Ohio EPA for WBG AOC.*

LUC Enforcement of Revised Restrictions/Land Use Controls: *The LUC RD and PMP listed requirements for reporting to state regulatory agencies. This ESD terminates these reporting requirements, as the Army will internally control and restrict land use in accordance with DoD policy.*

Groundwater was not addressed in the scope of the remedy for WBG, as groundwater is being addressed under the site-wide groundwater AOC (RVAAP-66); however, because residual contamination will remain in the soil at depth at WBG, explosives and metals may be expected to leach into the groundwater and reach concentrations exceeding maximum contaminant levels or risk-based concentrations. Therefore, groundwater use restrictions are included in the WBG LUCs (USACE, 2008).

5.6.3 REMEDY IMPLEMENTATION

Excavation

Remedial activities began in November 2008 with excavation of contaminated soil from Pads 61/61A (4,494 cubic yards), WBG-217 (2,000 cubic yards), Pad 67 (90 cubic yards), and Pad 70 (800 cubic yards). The excavated material was processed to remove potential MEC items and stockpiled at the process area. Multi-increment confirmation soil samples taken from the excavation area floors and sidewalls indicated the presence of elevated concentrations of TNT. As a result, a clean-up value for TNT was generated (1,935 mg/kg) (MKM, 2009).

Pads 61/61A were visually inspected and sampled for asbestos; two multi-increment confirmation soil samples were collected and analyzed for TNT, RDX, and semi-volatile organic compounds. No ACM was identified and concentrations of TNT, RDX, and semi-volatile organic compounds were less than WBG CUGs. Pads 61/61A were backfilled, graded, and seeded in May 2009 (MKM, 2009).

WBG-217 was visually inspected and sampled for asbestos and trace amounts were found. As a result, the entire berm area was over-excavated by 6 inches, inspected, and re-sampled. The results showed no indication of ACM and multi-increment confirmation soil sample concentrations were less than WBG CUGs. Backfilling was not required at WBG-217; however, the area was regraded and seeded in May 2009 (MKM, 2009).

Multi-increment confirmation soil samples collected from excavation floors and sidewalls at Pad 67 and analyzed for RDX, TNT, and polycyclic aromatic hydrocarbons (PAHs) were less than WBG CUGs. Pad 67 was backfilled, graded, and seeded in May 2009 (MKM, 2009).

Pad 70 was visually inspected and sampled for asbestos; no ACM was identified. Multi-increment confirmation soil samples were analyzed for TNT, RDX, and semi-volatile organic compounds and concentrations were less than WBG CUGs. Pad 70 was backfilled, graded, and seeded in May 2009 (MKM, 2009).

2008 Record Of Decision Land Use Controls

The 2012 Property Management Plan formally documented the required LUCs as described in the 2008 WBG LUC RD (USACE, 2012b):

- *Land use of the WBG AOC shall be limited by the maintenance of the existing Camp Ravenna perimeter fence.*

- *All activities executed within the WBG AOC must be in compliance with OHARNG range safety regulations, established digging restrictions, and established exposure limits.*
- *The range will be marked with signage that is in conformance with the requirements of the most current Department of Army regulations.*
- *Groundwater use or extraction of groundwater located at or underlying the WBG AOC or any portion thereof is prohibited, except for the following:*
    - *The installation, development, purging, and sampling of new or existing monitoring wells in accordance with the most recent Facility-Wide Sampling and Analysis Plan (FWSAP) as part of the AOC-specific IRP or Facility-Wide Ground Water Monitoring Program Plan (FGWMPP).*
    - *The abandonment and replacement of monitoring wells damaged by activities conducted on the Installation, and wells no longer utilized as part of IRP or FGWMPP activities, in accordance with Ohio EPA guidance, the most recent FWSAP, and applicable Ohio Administrative Code requirements.*
- *All digging, intrusive activities, or excavation on the WBG AOC outside of the* [Unexploded Ordnance]*/MEC-cleared areas within the Mark 19 Grenade Machinegun Range is prohibited with the following exceptions:*
    - *Routine maintenance of roads, ditches, culverts, and activities listed in A-1.4 above.*
    - *Ground surface repairs by authorized range personnel in support of authorized range activities.*
    - *Digging along target array areas by authorized range personnel to a depth of 1 foot below ground surface.*

Additional Soil Removal

Implementation of the changes to the remedy, as documented in the 2015 ESD, began in November 2016. Pads 38, 66, and 67W were excavated to depths of two feet, while Pad 67 was excavated to a depth of 10 feet. A magnetic separation process removed MEC and material potentially presenting an explosive hazard from all excavated soil (Tetra Tech, 2018).

Dark, discolored soil with ash was uncovered during excavation of Pad 61/61A. Excavation operations were suspended, and the soil was stockpiled until an appropriate plan of action for disposal was developed. A sample of the material was collected and was characterized as hazardous waste due to the presence of cadmium at a concentration of 1.39 milligrams per liter. Soil and ash material were screened manually for MEC and material potentially presenting an explosive hazard with a magnetometer in March 2017. The stockpile of hazardous waste was removed in April 2017, and an additional six inches of hazardous waste was collected from beneath the pile. Pad 61/61A

was excavated to a depth of 2 feet and 550 tons of hazardous waste was removed from the area (Tetra Tech, 2018).

Following excavation, confirmation samples were collected from Pads 38, 66, 67W, and 67. Final sample concentrations were less than the CUGs for the industrial receptor. Site restoration, including repair of damaged roadways and revegetation of disturbed areas, was completed in August 2017 (Tetra Tech, 2018).

2015 Explanation of Significant Differences Land Use Controls

Implementation of the 2015 ESD terminated the previously established LUCs and restrictions identified in the 2008 ROD and 2012 PMP. The 2018 PMP details the required LUCs at RVAAP-05, as listed in **Section 5.6.2** (USACE, 2018).

5.6.4 Operations, Maintenance and Monitoring

LUC inspections were conducted quarterly in 2016 and 2017 in accordance with the 2012 PMP and summarized in an annual report. The LUCs were effective and met the objectives for continued remedy protectiveness. Minor fence damage was noted during some inspections and approximately 80% were repaired by the next quarterly inspection. Inspections found the perimeter fence at CJAG intact, in good condition, and an effective LUC for WBG. No changes in land use occurred. All activities were in compliance with OHARNG range safety regulations, with established dig restrictions and exposure limits. Signage was placed at 300-foot intervals and found to be upright, intact, and in conformance with Army regulations (Vista, 2017; Chenega, 2019b).

Following implementation of the 2015 ESD remedy, LUC inspections were conducted annually 2018 to 2020 in accordance with the 2018 PMP. Inspections confirmed that WBG LUCs remain effective and meet the objectives for remedy protectiveness. No changes in land use have occurred. No LUC violations were noted during either of the reporting periods (Chenega, 2019c, 2020, 2021b).

All LUC Monitoring Reports are submitted to the Ohio EPA annually, with the exception of the 2017 Annual LUC Report, which was submitted in 2019 instead of 2018 due to funding and contracting issues (Chenega, 2019b). Annual LUC training is provided to staff and tenants of CJAG. Participants receive an overview of the history of the facility, ongoing clean-up work, location of clean-up sites, and LUCs and restrictions. Training materials are kept on file and provided to anyone that misses the April training dates. Due to coronavirus restrictions, all training was conducted virtually in 2020 (Chenega, 2019b; 2019c; 2020; 2021b).

5.7 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

The protectiveness statement presented in the Second Five-Year Review Report for WBG reads (Army National Guard Directorate, 2017b):

The remedy at Winklepeck Burning Grounds is protective of human health and the environment because:

- *Contaminated soil/dry sediment identified in the ROD was remediated*
- *LUCs have been implemented; they are being employed and maintained in accordance with the ROD*

No issues or recommendations were identified for WBG in the 2017 Five-Year Review.

5.8 DATA REVIEW

The remedy for WBG currently consists of LUCs; therefore, no data was generated or reviewed for this third Five-Year Review.

5.9 SITE INSPECTION

DAWSON (Tikoshia Davis, EIT and Shaun Prines) conducted the CJAG site inspection on December 7, 2021. Kevin Sedlak (Army National Guard Directorate Restoration Program Manager) and Katie Tait (Ohio Army National Guard Environmental Specialist 2) escorted the DAWSON team to each site and assisted in identifying important features, remedy components, boundaries, etc. The Site Inspection Checklists are presented in **Appendix B**. The Site Inspection Photograph Log is presented in **Appendix C**.

The remedy at WBG is effective and functioning as designed. Land use changes were not observed at WBG at the time of inspection. Construction of the Multi-Purpose Machine Gun Range is ongoing and groundwater use is restricted to non-potable uses.

5.10 TECHNICAL ASSESSMENT

5.10.1 QUESTION A – IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Yes, the remedy implemented at WBG is functioning as intended by the 2008 ROD and 2015 ESD for post-ROD changes. Soil was excavated from Pads 61/61A, Site WBG-217, and Pad 67. Soil containing friable asbestos was excavated from Pad 70. Additional soil was removed from five areas to achieve Commercial/Industrial Land Use and allow for the redevelopment of the Mark 19 Grenade Machinegun Range with fewer restrictions.

The 2008 ROD LUCs, including land use and dig restrictions, fencing, and activity limitations, deterred unauthorized access and limited exposure. LUCs defined by the 2015 ESD, which includes restricting residential land use and prohibiting groundwater, remain effective and meet the objectives for remedy protectiveness.

5.10.2 QUESTION B – ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEAN-UP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes, the exposure assumptions, toxicity data, RSLs, and RAO continue to be valid.

Land use remains commercial/industrial at WBG and no new routes of exposure or receptors have been identified that may affect the protectiveness of this remedy.

WBG ARAR and RSL evaluations are presented in **Appendix F** and **Appendix G,** respectively. RSLs for soil and dry sediment are presented in the 2018 Remedial Action Completion Report (Tetra Tech, 2018) and **Table 7**. The 2018 Remedial Action Completion Report identified risk-based soil and dry sediment RSLs that assume an industrial exposure scenario. For this Five-Year Review, soil and dry sediment RSLs were compared to the current EPA RSLs for the industrial use scenario to estimate potential risk to human receptors (**Appendix G**). All RSLs are still protective.

5.10.3 QUESTION C – HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

No other information has come to light that could call into question the protectiveness of the remedy.

5.10.4 TECHNICAL ASSESSMENT SUMMARY

Soil removal has taken place to achieve Commercial/Industrial Land Use and LUCs restrict residential land use and prohibit groundwater use. No changes in land use were made and no new routes of exposure or receptors were identified. Therefore, the remedy implemented at WBG is functioning as intended by the 2008 ROD and 2015 ESD for post-ROD changes, and the exposure assumptions and RAO continue to be valid.

5.11 ISSUES

No issues were identified for WBG during this Five-Year Review that prevent the remedy from being protective now or in the future.

5.12 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

No recommendations or follow-up actions are required since no issues were identified during this Five-Year Review that affect current or future protectiveness of the remedy.

5.13 PROTECTIVENESS STATEMENT

The remedy for WBG is protective of human health and the environment.

Friable asbestos was removed from Pad 70 and Commercial/Industrial Land Use was achieved by removing contaminated soil from Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. In accordance with the 2008 ROD, LUCs consisting of land use and dig restrictions, fencing, and activity limitations deterred unauthorized access and limited exposure. LUCs indicated in the 2015 ESD continue to deter unauthorized access and limit exposure by restricting residential land use and prohibiting groundwater use.

6.0 RVAAP-08 TO -12 (LOAD LINES 1, 2, 3, 4, AND 12)

6.1 SITE CHRONOLOGY

Information on site chronology for Load Lines 1, 2, 3, 4, and 12 is presented in **Table 8**.

Table 8 – Load Lines 1 – 4 and 12 Chronology

Event	Date (Year)
Load Line 1 and Load Line 2 operations	1941 – 1951
Load Line 3 and Load Line 4 operations	1941 – 1957
Load Line 12 operations	1941 – 1971
Demolition of buildings at Load Line 12	1973 – 2000
1,500 cubic feet of soil removed in explosives composting pilot study at Load Line 12	1999
Interim ROD for Remediation of Soils at Load Lines 1 – 4	July 3, 2007
Remedial Action at Load Lines 1 – 4	2007
Building slabs removed at Load Lines 1 – 4	2008 – 2009
501 tons of soil and broken concrete removed from Load Line 4	2008
Remedial Action Completion Report for the Remediation of Soils and Dry Sediments at Load Lines 1 – 4	June 2008
ROD for Soil and Dry Sediment for Load Line 12	August 20, 2009
Remediation Completion Report Sub-Slab Soils at Load Line 2, Load Line 3, and Load Line 4	December 2010
Remedial Action at Load Line 12	2010
Remediation Completion Report for Sub-Slab Soils at Load Line 1	March 2011
First Installation-Wide Five-Year Review Report	August 31, 2012
Feasibility Study Addendum for Soil, Sediment, and Surface Water at Load Lines 1 – 4 and 12	June 2017
Second Five-Year Review Report	June 12, 2017
ROD Amendment for Soil, Sediment, and Surface Water at Load Lines 1 – 4 and 12	March 4, 2020

ROD = Record of Decision

6.2 BACKGROUND

6.2.1 PHYSICAL CHARACTERISTICS

Load Lines 1 – 4 collectively consist of 800 acres (USACE, 2020a). Located in the southeastern portion of CJAG (**Figure 4**), elevations at Load Line 1, or RVAAP-08, range

from approximately 975 to 1,016 feet amsl. Soil cover is thin to non-existent across the site and buildings were constructed on excavated bedrock (Leidos, 2017). Depth to groundwater ranges from approximately 10 to 35 feet bgs. Ditches and storm sewers carry runoff to discharge points along the perimeter of Load Line 1 (USACE, 2019b).

Load Line 2, or RVAAP-09, is located in the southeastern portion of CJAG (**Figure 5**), with elevations ranging from approximately 990 to 1,010 feet amsl. In general, the land slopes from the center of the load line in all directions with a sharp drop to the south toward Kelly's Pond. The permeability of the soil at Load Line 2 is low and exhibits seasonal wetness and rapid runoff. The majority of stormwater runoff flows south through manmade ditches. Depth to groundwater ranges from 5 to 14.7 feet bgs (USACE, 2019b).

Load Line 3, or RVAAP-10, is located in the southeastern portion of CJAG (**Figure 6**), with elevations ranging from 980 to 1,020 feet amsl. Depth to groundwater ranges from approximately 8 to 27 feet bgs. Soil at Load Line 3 is seasonably wet with medium to rapid runoff. Ditches carry surface water runoff and drain into Cobbs Pond. The sloping topography at Load Line 3 consists of a reworked sandstone bedrock surface (USACE, 2019b).

Load Line 4, or RVAAP-11, is located in the south-central portion of CJAG (**Figure 7**), with elevations ranging from 980 to 1,000 feet amsl. Depth to groundwater ranges from 3.4 to 15.8 feet bgs. Soil at Load Line 4 is seasonably wet with medium to rapid runoff. A perennial stream crosses Load Line 4 from the northwest to the southeast, flows into a large settling pond, and discharges into a surface stream exiting south of Load Line 4. The topography at Load Line 4 consists of a glacial till surface (USACE, 2019b).

Load Line 12, or RVAAP-12, consists of 76 acres in the south-central portion of CJAG with elevations that range from 970 to 987 feet amsl (**Figure 8**). Depth to groundwater ranges from 1.5 to 10 feet bgs. Soil at Load Line 12 is seasonably wet with medium to rapid runoff. The primary drainage feature, the Main Ditch, flows north and intersects with the primary surface water conveyance, the Active Area Channel. The moderately subdued topography at Load Line 12 consists of a reworked sandstone bedrock surface (USACE, 2019b).

6.2.2 Land and Resource Use

The current and future use for Load Lines 1 – 4 and 12 is Commercial/Industrial Land Use (USACE, 2019b).

6.3 HISTORY OF CONTAMINATION

TNT and Composition B were melted and loaded into large-caliber shells and bombs at Load Line 1 from 1941 to 1945. From 1947 to 1949, demilitarization projects took place and the TNT washout plant and debanding equipment were moved to Load Line 12. Cartridge bases were reclaimed for reuse from 1950 to 1952. Chemicals used during the annealing process consisted of sulfuric acid, sodium orthosilicate, chromic acid, and alkali. From 1961 to 1967, munition rehabilitation activities took place, including dismantling, replacing components, and repainting mines. Demilitarization of propellant

charges and cartridges was conducted at Load Line 1 from 1965 to 1966 and 1973 to 1974. Wastewater from load line operations discharged into two unlined settling ponds, Charlie's Pond and Criggy's Pond. Both ponds discharged into Sand Creek (USACE, 2019b).

From 1941 to 1952, Load Line 2 operations were similar to Load Line 1 operations. Approximately ten million munitions were produced at Load Line 2 during this time and approximately four million pounds of TNT were salvaged during demilitarization activities (USACE, 2019b).

Bulk explosives and Composition B were melted and loaded into large-caliber shells and bombs at Load Line 3 from 1941 to 1945, producing approximately 6.5 million munitions. Bulk TNT and HMX were screened and prepared for loading at Buildings EA-6 and EA-6A and later processed and loaded into shells at Buildings EA-4 and EA-4A. Washout activities for bulk explosive carriers took place at Building EB-25. From 1951 to 1957, demilitarization activities took place at Load Line 3 and approximately 228,000 munitions were processed (USACE, 2019b).

TNT was melted and loaded into large-caliber shells, bombs, and anti-tank mines, producing about 1.2 million munitions at Load Line 4 from 1941 to 1945. Load Line 4 produced 91,970 projectiles and bombs, and 1.2 million mines from 1951 to 1957 (USACE, 2019b).

Explosive-grade ammonium nitrate was manufactured at Load Line 12 from 1941 to 1943. Afterward, demilitarization operations began along with munitions renovations. In the late 1950s, a steam melt-out process was used to improve the quality of TNT recovered during washout operations. Silas Mason Company leased the 76-acre site, from 1946 to 1950, to manufacture fertilizer-grade ammonium nitrate. Building FF-19 was leased by Hercules Alcor, Inc. from 1965 to 1967 to produce aluminum chloride. Load Line 12 produced M54 primers from 1969 to 1971 in support of the Southeast Asian conflict. From 1981 to 2000, a pinkwater treatment plant operated near Building 904 (USACE, 2019b).

6.4 INITIAL RESPONSE

In 1951, Load Line 1 and Load Line 2 were rehabilitated by excavating soil contaminated with accumulated explosives, and the wastewater lines were replaced at Load Line 1. Approximately 1,500 cubic feet of soil was removed from Load Line 12 as part of an explosives composting pilot study in 1999 (USACE, 2019b).

6.5 BASIS FOR TAKING ACTION

A 2004 HHRA assessed the risks to the National Guard Trainee receptor at Load Lines 1 – 4. The HHRA concluded that, under current and anticipated land use scenarios, exposure to soil up to four feet bgs may result in an unacceptable risk to human receptors (USACE, 2007).

The 2004 HHRA also assessed the risks to the National Guard Trainee receptor at Load Line 12, estimating an incremental lifetime cancer risk of 1.8×10^{-5} based on exposure to

soil from 0 to 4 feet bgs, exceeding the Ohio EPA target risk of $1x10^{-5}$. The HHRA concluded that, under current and anticipated land use scenarios, exposure to soil up to 4 feet bgs may result in an unacceptable risk to human receptors (USACE, 2009a).

6.6 REMEDIAL ACTIONS

6.6.1 REMEDIAL ACTION OBJECTIVES

The 2007 Interim ROD RAO for surface and subsurface soils and dry sediment at Load Lines 1 – 4 is *to prevent ingestion, inhalation, or direct contact with COCs exceeding the identified clean-up goals*. The CUGs, presented in **Table 9**, were based on the anticipated future land use, National Guard Mounted Training (USACE, 2007).

Table 9 – RVAAP-08 to RVAAP-11 (Load Lines 1 – 4)
Soil and Dry Sediment Clean-up Goals

Chemical of Concern	Clean-Up Goal[1] (mg/kg)
Aluminum	34,942
Antimony	2,458
Arsenic	31
Barium	3,483
Cadmium	109
Chromium, hexavalent	16
Manganese (surface soils)	1,800
Manganese (subsurface soils)	3,030
Lead	1,995
TNT	1,646
RDX	838
Aroclor-1254	35
Benz(a)anthracene	105
Benzo(a)pyrene	10
Benzo(b)fluoranthene	105
Dibenz(a,h)anthracene	10

Note: Clean-up goals are based on a target cancer risk of $1x10^{-5}$.
[1]U.S. Army Corps of Engineers, 2007; Table 3
mg/kg = milligrams per kilogram
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
RVAAP = Ravenna Army Ammunition Plant
TNT = 2,4,6-trinitrotoluene

The RAO for soil and dry sediment at Load Line 12, as defined in the 2009 ROD, is *to prevent National Guard Trainee exposure to contaminants in soil and dry sediment that exceed the clean-up goals to a depth of 4 feet bgs* (USACE, 2009a). **Table 10** lists the soil and dry sediment CUG for Load Line 12.

Table 10 – RVAAP-12 (Load Line 12)
Soil and Dry Sediment Clean-up Goal

Chemical of Concern	Clean-up Goal[1] (mg/kg)
Arsenic	31

Note: Clean-up goal is based on a target cancer risk of $1x10^{-5}$.
[1]U.S. Army Corps of Engineers, 2009a; Table 2
mg/kg = milligrams per kilogram
RVAAP = Ravenna Army Ammunition Plant

Following remediation in accordance with the Interim ROD for Load Lines 1 – 4 and the ROD for Load Line 12, OHARNG evaluated residual risk and subsequently developed a new RAO to optimize land use for Load Lines 1 – 4 and 12. The RAO, as defined in the 2019 ROD Amendment, is to reduce *risk from COCs in surface and subsurface soil and sediment to acceptable levels (RGOs [Remedial Goal Options]) for likely future land use (i.e., Industrial and/or Military Training) that are protective of human health at Load Lines 1 – 4 and 12*. *Exposure of Resident Receptor to soil containing COCs would be mitigated by administrative controls at the site* (USACE, 2019b). **Table 11** lists soil RGOs for Load Lines 1 – 4 and 12.

Table 11 – RVAAP-08 to RVAAP-12 (Load Lines 1 – 4 and 12)
Soil Remedial Goal Options
for Commercial/Industrial Land Use

Load Line	Chemical of Concern	Industrial RGO[1] (mg/kg)
1	Antimony	470
	Lead	800
	TNT	510
	RDX	280
	Benz(a)anthracene	29

Load Line	Chemical of Concern	Industrial RGO[1] (mg/kg)
	Benzo(a)pyrene	2.9
	Benzo(b)fluoranthene	29
	Aroclor-1254	9.7
2	TNT	510
3	TNT	510
	Benz(a)anthracene	29
	Benzo(a)pyrene	2.9
	Benzo(b)fluoranthene	29
	Dibenz(a,h)anthracene	2.9
	Aroclor-1254	9.7
4	Lead	800
	Benz(a)anthracene	29
	Benzo(a)pyrene	2.9
	Benzo(b)fluoranthene	29
	Dibenz(a,h)anthracene	2.9
	Aroclor-1260	9.9
12	TNT	510
	2,6-DNT	15
	Benz(a)anthracene	29
	Benzo(a)pyrene	2.9
	Benzo(b)fluoranthene	29
	Dibenz(a,h)anthracene	2.9

Note: Industrial RGOs are based on a target cancer risk of $1x10^{-5}$.
[1]U.S. Army Corps of Engineers, 2019b; Table 2
DNT = dinitrotoluene
mg/kg = milligrams per kilogram
RGO = Remedial Goal Option
TNT = 2,4,6-trinitrotoluene

6.6.2 REMEDY DESCRIPTION

The 2007 Interim ROD for Load Lines 1 – 4 established the remedy as excavation and offsite disposal which includes the following (USACE, 2007):

- *Excavation of discrete areas of contaminated surface and subsurface soils and dry sediment with concentrations of contaminants exceeding clean-up goals;*

- *Temporary on-site storage via stockpiling for characterization;*
- *Off-site disposal of soils at a permitted solid waste landfill and, as needed, disposal at a Toxic Substances Control Act (TSDA) [sic] and/or Resource Conservation and Recovery Act (RCRA) permitted hazardous waste landfill;*
- *Replacement of excavated material with clean compacted backfill;*
- *Groundwater monitoring* [for five years] *to ensure the Selected Remedy did not impact groundwater; and*
- *Maintenance of building slabs and foundations.*

The remedy for soil and dry sediment at Load Line 12, as defined in the 2009 ROD, also consists of excavation and off-site disposal of contaminated soil and dry sediment above CUGs and LUCs (USACE, 2009a). Both remedies were designed to be protective for the reasonably anticipated future land use of National Guard Mounted Training.

To further optimize the land use at Load Lines 1 – 4 and 12, the 2019 ROD Amendment selected a new remedy for soil, sediment, and surface water, which supersedes previous remedies, to support commercial/industrial land use through *ex situ* thermal treatment of soil and administrative LUCs. The remedy *involves thermally treating explosives-, polychlorinated biphenyl (PCB)-, and PAH-contaminated soil and disposing of the metals-impacted soil off-site at a licensed, engineered landfill* (USACE, 2019b).

Components of the remedy include:

- Excavation and placement of contaminated soil into a thermal treatment system to achieve RGOs;
- Placement of treated soil back into the excavated area;
- Excavation and offsite disposal of soil with metals concentrations greater than RGOs;
- Site restoration; and,
- LUCs to restrict use.

6.6.3 REMEDY IMPLEMENTATION

In accordance with the 2007 Interim ROD, 1,752 tons of PCB-contaminated soil and 9,489 tons of non-hazardous soil were removed from Load Lines 1 – 4 in 2007. Confirmatory sample results verified that no contaminated soils with COCs exceeding CUGs remained, and all excavated areas were restored with clean soil (Shaw, 2008).

Contaminated dry sediment (1,181 tons) from within the Load Line 12 Main Ditch was removed in June 2010 in accordance with the 2009 ROD for Soil and Dry Sediment to support National Guard Mounted Training (SAIC, 2010c). The following LUCs for Load Line 12 were established: *maintain the Camp Ravenna perimeter fence; restrict future land use to National Guard Mounted Training; maintain a LUC training program; limit*

activities to tracked and wheeled operations that are consistent with the National Guard mounted training scenario and other essential security, safety, and natural resources management activities; and, prohibit digging beyond four (4) [feet] *below ground surface (bgs) except for routine maintenance* (Chenega, 2019b).

In October 2020, remedial action began at Load Lines 1 – 4 and 12. Explosives-, PCB-, and PAH-contaminated soil (2,528 cy) was excavated for on-site ex-situ thermal treatment and metals-contaminated soil (88 cy) was disposed off-site as non-hazardous waste. Concrete walkway and foundation structures (400 tons) were demolished and recycled off-site. In her interview, Katie Tait shared that construction was successfully completed and no problems were encountered while implementing the 2019 ROD Amendment remedy. Confirmation and treatment verification samples were collected until the RGOs were met. The treated soil and soil from an approved backfill source were used to backfill the excavated areas and the remedial action ended in February 2021. The areas were regraded and seeded in April 2021. The remedial action is complete for Load Lines 1-4 and 12 and met the RAO to reduce risk from COCs in surface and subsurface soil to acceptable levels (RGOs) that are protective of human health and congruent with likely future land use (commercial/industrial).

The 2021 Remedial Action Completion Report revised the LUCs for Load Lines 1 – 4 and 12: *LUCs will consist of no residential use, annual inspections and reporting,* [and] *general LUC training for facility personnel* (CH2M Hill, 2021). Because the remedial action achieved the RAO, less restrictive LUCs have been implemented, including removal of the requirement to maintain the perimeter fence.

6.6.4 Operations, Maintenance and Monitoring

Following the implementation of the remedy in the 2007 Interim ROD at Load Lines 1 – 4, the Base Realignment and Closure Division contracted to have the slabs and foundations removed. Removal was completed in May 2009 and routine maintenance was no longer needed as part of the remedy (Shaw, 2008; URS, 2010). In addition, the five-year groundwater monitoring requirement took place within the Facility-Wide Groundwater Monitoring Program under the site-wide groundwater AOC (RVAAP-66), outside of the Interim ROD requirements (USACE, 2020a).

The Army conducts LUC inspections annually at Load Lines 1 – 4 to ensure land use is maintained as National Guard Mounted Training and produces an annual report that is submitted to the Ohio EPA. The 2017 annual inspection was not conducted until July 2018 due to funding and contracting issues. LUC inspections from 2017 to 2020 reported that the only activities taking place at Load Lines 1 – 4 include groundwater monitoring well sampling and mowing of the access roads. No mounted training has taken place and no digging was observed or reported (Chenega, 2019b; 2019c; 2020; 2021b).

LUC inspections are conducted by the Army annually at Load Line 12 to ensure the LUCs remain effective and meet the objectives for remedy protectiveness. The results are reported in an annual report and submitted to the Ohio EPA. Inspections from 2017 to 2020 have reported that land use remains restricted to National Guard Mounted Training,

and the only activities taking place at Load Line 12 include groundwater monitoring and mowing of the access roads. No training has taken place and no digging was observed or reported until November 2020, when remedial action began at Load Line 12 (Chenega, 2019b; 2019c; 2020; 2021b). The 2021 Annual LUC Monitoring report for Load Lines 1 – 4 and 12, post-completion of the 2019 ROD Amendment remedy, has not been finalized as of the time of this Five-Year Review.

Access to Load Line 12 is limited, and personnel exposure is within the established limitations (24 hours per day for 39 days per year for 25 years). The six-foot perimeter fence around CJAG was inspected quarterly in 2017. Thereafter, the fence was inspected annually. From 2018 to 2020, approximately 80% of defects were repaired by the next annual inspection (Chenega, 2019b; 2019c; 2020; 2021b). However, since the remedial action was completed in 2021, the perimeter fence is no longer included as LUC for Load Line 12 and thus, annual inspections will cease.

Annual LUC training is provided to staff and tenants of CJAG. Participants receive an overview of the history of the facility, ongoing clean-up work, location of clean-up sites, and LUCs and restrictions. Training materials are kept on file and provided to anyone that misses the April training dates. Due to coronavirus restrictions, all training was conducted virtually in 2020 (Chenega, 2019b; 2019c; 2020; 2021b).

6.7 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

The protectiveness statement presented in the Second Five-Year Review Report for Load Lines 1 – 4 and 12 reads (Army National Guard Directorate, 2017b):

The remedy at Load Lines 1 – 4 currently protects human health and the environment because:

- *Contaminated soil/dry sediment identified in the Interim ROD was remediated*

However, in order for the remedy to be protective in the long-term, the following action needs to be taken to ensure protectiveness:

- *Determine if unacceptable risk associated with remaining contaminated soils at Load Lines 1 - 4 exists and remediate in a manner consistent with the Interim ROD, if necessary to mitigate risk*

The remedy at Load Line 12 is protective of human health and the environment because:

- *Contaminated soil/dry sediment identified in the ROD was remediated*
- *The site is not being used and access is restricted by a perimeter fence with warning signs*

Table 12 lists the recommendations from the second Five-Year Review for Load Lines 1 – 4 and the summary of completion.

Table 12 – Issue/Recommendation from the Second Five-Year Review

Issue from Previous Review	Recommendation from Previous Review	Milestone Date	Action Taken
Load Lines 1 – 4			
Contaminated soils and dry sediment are present above site cleanup goals at Load Lines 1 – 4 and may be accessible to installation personnel during future military training activities.	*Determine if unacceptable risk associated with remaining contaminated soils at Load Lines 1 – 4 exists and remediate in a manner consistent with the Interim ROD, if necessary to mitigate risk.*	September 2017	The remedy for soil and sediment at RVAAP-08 to RVAAP-11 (Load Lines 1 – 4) was revised in the 2019 ROD Amendment and comprises: *Commercial/Industrial Land Use – Ex Situ Thermal Treatment of Soil and Administrative LUCs. This alternative involves thermally treating explosives-, polychlorinated biphenyl (PCB)-, and PAH-contaminated soil and disposing of the metals-impacted soil off-site at a licensed, engineered landfill.* Remedial action for the 2019 ROD Amendment remedy was completed at Load Lines 1 – 4 in April 2021 and Commercial/Industrial land use has been achieved.

LUC = Land Use Control
PAH = Polycyclic Aromatic Hydrocarbon
ROD = Record of Decision
RVAAP = Ravenna Army Ammunition Plant

6.8 DATA REVIEW

The remedy for Load Lines 1 – 4 and 12 currently consists of LUCs; therefore, no data was generated or reviewed for this third Five-Year Review.

6.9 SITE INSPECTION

DAWSON (Tikoshia Davis, EIT and Shaun Prines) conducted the CJAG site inspection on December 7, 2021. Kevin Sedlak (Army National Guard Directorate Restoration Program Manager) and Katie Tait (Ohio Army National Guard Environmental Specialist 2) escorted the DAWSON team to each site and assisted in identifying important features, remedy components, boundaries, etc. The Site Inspection Checklists are presented in **Appendix B**. The Site Inspection Photograph Log is presented in **Appendix C**.

The remedy at Load Lines 1 – 4 and 12 is effective and functioning as designed. At the time of inspection, land use changes were not observed, inspections and reporting take place annually, and general LUC training is available for facility personnel.

6.10 TECHNICAL ASSESSMENT

6.10.1 QUESTION A – IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Yes, the 2007 Interim ROD remedy functioned as intended for Load Lines 1 – 4. PCB-contaminated and non-hazardous soil and dry sediment above CUGs were excavated and disposed off site in 2007, five-year groundwater monitoring took place under the Facility-Wide Groundwater Monitoring Program, and building slabs and foundations were removed in 2009. LUC inspections at Load Lines 1 – 4, conducted annually from 2017 to 2020, confirmed land use was maintained as National Guard Mounted Training.

The 2009 ROD remedy functioned as intended for Load Line 12. Contaminated dry sediment was excavated and disposed offsite in 2009. Load Line 12 LUC inspections, conducted annually from 2017 to 2020, confirm LUCs functioned as intended with land use and dig restrictions, a LUC training program, limited activities, and maintenance of the CJAG perimeter fence.

The 2019 ROD Amendment remedy is functioning as intended. Explosives-, PCB-, and PAH-contaminated soil have been excavated, placed into a thermal treatment system to achieve RGOs, and placed back into the excavated area. Metals-contaminated soil has been excavated and disposed of offsite. The site has been restored, regraded and seeded. LUCs, including no residential use, annual inspections and reporting, and general LUC training for facility personnel, are in place and functioning as intended.

6.10.2 QUESTION B – ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEAN-UP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes, the exposure assumptions, toxicity data, RGOs, and RAO presented in the 2019 ROD Amendment continue to be valid.

No changes to anticipated land use were made at or near Load Lines 1 – 4 and 12. No new routes of exposure or receptors were identified that may affect the protectiveness of this remedy.

The 2019 ROD Amendment identified risk-based soil and dry sediment RGOs for the commercial/industrial land use scenario (anticipated land use) to determine administrative controls to mitigate exposure to the resident receptor. For this Five-Year Review, soil and dry sediment RGOs (May 2013 EPA industrial RSLs) were compared to current EPA industrial RSLs. Based on this comparison, it was determined RGOs are still protective. ARAR and RSL evaluations for Load Lines 1 – 4 and 12 are presented in **Appendix F** and **Appendix G,** respectively.

6.10.3 Question C – Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

6.10.4 Technical Assessment Summary

Explosives-, PCB-, and PAH-contaminated soil have been excavated, placed into a thermal treatment system to achieve RGOs, and placed back into the excavated area. Metals-contaminated soil has been excavated and disposed of offsite. Groundwater monitoring took place for five years and the building slabs and foundations have been removed. No changes in land use were made and no new routes of exposure or receptors were identified. LUCs, including no residential use, annual inspections and reporting, and general LUC training for facility personnel, support commercial/industrial land use and are protective of human health.

6.11 ISSUES

No issues were identified for Load Lines 1 – 4 and 12 during this Five-Year Review that prevent the remedy from being protective now or in the future.

6.12 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

No recommendations or follow-up actions are required since no issues were identified during this Five-Year Review that affect current or future protectiveness of the remedy.

6.13 PROTECTIVENESS STATEMENT

The remedy at Load Lines 1 – 4 and 12 is protective of human health and the environment.

Risk from COCs in surface and subsurface soil and sediment has been reduced to meet RGOs for Commercial/Industrial land use. Explosives-, PCB-, and PAH-contaminated soil have been excavated, placed into a thermal treatment system to achieve RGOs, and placed back into the excavated area. Metals-contaminated soil above RGOs has been excavated and disposed of offsite. The site has been restored and exposure to soil containing COCs has been mitigated by administrative controls including no residential use, annual inspections and reporting, and General LUC Awareness Training for facility personnel.

7.0 RVAAP-51 DUMP ALONG PARIS-WINDHAM ROAD

7.1 SITE CHRONOLOGY

Important events and relevant dates for Dump Along Paris-Windham Road are presented below in **Table 13**.

Table 13 – Dump Along Paris-Windham Road Chronology

Event	Date (Year)
Relative Risk Site Evaluation for Newly Added Sites	1998
Phase I, II, and III Remedial Investigations	1998 – 2012
Final Report for Remedial Design/Removal Action	2004
Final Site Characterization and Focused Feasibility Study Work Plan	2010
Final Site Characterization and Focused Feasibility Study	2015
Final Proposed Plan for Soil, Sediment, and Surface Water	2016
Final Record of Decision for Soil, Sediment, and Surface Water	September 15, 2017
Final Remedial Design for Soil	2019

Note: Dump Along Paris-Windham Road was not included in the First and Second Five-Year Review Report.

Dump Along Paris-Windham Road, or RVAAP-51, was utilized as an open dump for the disposal of miscellaneous construction and demolition material. ACM, such as transite roofing and siding, laboratory bottles and drums, concrete, brick, glass, scrap metal, fencing, and wood debris were among the types of waste disposed of at the dump. Dump Along Paris-Windham Road operation dates and amounts of debris disposed are not available (Chenega, 2019a).

7.2 BACKGROUND

7.2.1 PHYSICAL CHARACTERISTICS

Dump Along Paris-Windham Road is located in the east central portion of CJAG and encompasses approximately 0.25-acres of land where the elevation ranges from 948 to 964 feet amsl (**Figure 9**). Topography at Dump Along Paris-Windham Road consists of hillsides sloping east to west, away from the adjacent Paris-Windham Road. No structures are present at Dump Along Paris-Windham Road (USACE, 2017b).

Soils at Dump Along Paris-Windham Road consist of silty clayey soil and glacial sediment overlying shale bedrock. Groundwater elevations at Dump Along Paris-Windham Road range from 950 to 975 feet amsl. Surface water drains to the west into Sand Creek feet (USACE, 2017b).

7.2.2 Land and Resource Use

Dump Along Paris-Windham Road is not currently being utilized for training by the Army. The reasonable and anticipated future land use for Dump Along Paris-Windham Road is military training, although residual asbestos remains, restricting access and training at this AOC. Groundwater within Dump Along Paris-Windham Road is not used for domestic or industrial purposes (USACE, 2017b).

7.3 HISTORY OF CONTAMINATION

Dump Along Paris-Windham Road was primarily used for the disposal of construction materials and ACM. These activities resulted in contamination between the surficial soil layer and one-foot bgs (USACE, 2017b).

7.4 INITIAL RESPONSE

In 2003, initial response activities at Dump Along Paris-Windham Road were implemented to address surface soil contamination caused by prior waste disposal operations. The RD/Removal Action removal activities resulted in the removal of surface construction debris and ACM at Dump Along Paris-Windham Road. Approximately 300 tons of surficial and subsurface debris were removed, transported, and properly disposed of off site (MKM Engineers, 2004). Additionally, a two-foot-thick soil cover was installed over the entirety of Dump Along Paris-Windham Road. The soil cover acts as a barrier to prevent the direct contact between COCs and surface water runoff. The soil cover also reduces precipitation infiltration rates through waste material on site, which limits the contamination of dry sediments and runoff that accumulate along the drainage swale at the base of the dump (USACE, 2017b).

7.5 BASIS FOR TAKING ACTION

The 2015 Final Site Characterization and Focused Feasibility Study for Dump Along Paris-Windham Road determined soil contaminated with Benzo(a)pyrene and Dibenz(a,h)anthracene poses a potential threat to human receptors (USACE, 2017b).

7.6 REMEDIAL ACTIONS

7.6.1 Remedial Action Objectives

The RAO for Dump Along Paris-Windham Road, as defined in the 2017 ROD, is as follows:

> *The RAO for the Dump Along Paris-Windham Road is to prevent exposure of the Resident Receptor to shallow surface soil (0-1 feet bgs) with COC levels exceeding the TR* [Target Risk] *of 1E-05 and a hazard quotient of 1.0.*

The RAO references target risk levels and provides corresponding COC CUGs that are considered protective of human health under current reasonable and anticipated future land use scenarios. CUGs are presented in **Table 14**.

**Table 14 – RVAAP-51 Dump Along Paris-Windham Road
Shallow Surface Soil Clean-up Goals for a Resident Receptor**

Chemical of Concern	Clean-up Goal[1] (mg/kg)
Benzo(a)pyrene	0.221
Dibenz(a,h)anthracene	0.221

Notes: Clean-up goals are based on a target cancer risk of $1x10^{-5}$.
Shallow surface soil is 0-1 foot below ground surface.
[1]U.S. Army Corps of Engineers, 2017b; Table 2
mg/kg = milligram/kilogram
RVAAP = Ravenna Army Ammunition Plant

7.6.2 REMEDY DESCRIPTION

The remedy for Dump Along Paris-Windham Road is LUCs. Components of the remedy include (USACE, 2017b):

- Development of a RD;
- Restrictive warning signs and boundary markers (Seibert Stakes) posted at least every 300 feet along the perimeter of Dump Along Paris-Windham Road;
- Excavation/digging restrictions to prohibit use and exposure to contaminated soils;
- General LUC Awareness Training for installation personnel; and
- Annual LUC inspections.

7.6.3 REMEDY IMPLEMENTATION

LUCs include an Operations & Maintenance Plan and dig restrictions to ensure the soil cover is maintained. In addition, signs posted at the AOC state the area is a former ACM disposal location. Specific LUC requirements are identified in the RD for Soil at Dump Along Paris-Windham Road (Chenega, 2019a) and formally documented in the 2020 Revised PMP for the Designated Areas of Concern and Munitions Response Sites (USACE, 2020a).

7.6.3.1 Signs and Boundary Markers

Seibert Stakes are used in military training areas to mark off-limit or sensitive areas. Seibert Stakes consist of 2-inch PVC Schedule 40 (2-3/8-inch outer diameter with 2-inch inner diameter) by 16-inch-long pipe wrapped with bands of white, yellow, and red Hi-Intensity prismatic sheeting. One side of the stake has a black band that faces towards the protected area. The Seibert Stakes are mounted on poles and placed around the perimeter of the protected area (**Appendix C,** Photograph 34) (Chenega, 2019a).

Eleven alternating Seibert Stakes and nine “Unauthorized Personnel” warning signs were placed along the perimeter at approximately 50-foot intervals. The “Unauthorized Personnel” warning signs read:

DANGER
UNAUTHORIZED
PERSONNEL
KEEP OUT

Four “Asbestos Waste Disposal Site” warning signs have replaced four “Unauthorized Personnel” warning signs. Asbestos Waste Disposal Site signs read:

DANGER
ASBESTOS WASTE
DISPOSAL SITE
NO DIGGING
DO NOT CREATE DUST
BREATHING ASBESTOS
IS HAZARDOUS TO YOUR
HEALTH

The signs meet the requirements of OAC 3745-20-07-(B)(1)(b).

7.6.3.2 Digging Restrictions

All digging or excavation within Dump Along Paris-Windham Road is prohibited due to residual asbestos and COCs in the surface soil beneath the soil cover. The digging restriction is communicated using permanent signs and Seibert Stakes placed along the Dump Along Paris-Windham Road perimeter, as well as annual general LUC awareness training at CJAG.

7.6.3.3 Annual LUC Inspection

An annual LUC inspection is conducted by the ARNG/OHARNG or other authorized personnel to confirm the LUCs remain effective and still meet LUC objectives. The annual LUC inspection also notes any change in land use and documents the conditions of the soil cover, signs, and Seibert Stakes. If deficiencies are noted, the inspection recommends corrective actions. LUC violations are reported to the ARNG/OHARNG and documented in the report. The required annual inspection is submitted to the Ohio EPA for review and approval (Chenega, 2019a).

7.6.4 Operations, Maintenance and Monitoring

During the review period, visual inspections occurred in 2019 and 2020. The soil cover was observed to be in good condition during all inspection events. Administrative LUCs remain in place, no unauthorized site access or digging occurred, and no residential use or residential development of the property took place at Dump Along Paris-Windham Road. Additionally, all required Seibert Stakes and warning signs were present and in

good condition. Visual inspections from the review period concluded that both the Seibert Stakes and signs were visible, free of vegetation, and spaced at the appropriate 300-foot intervals (Chenega, 2020; 2021b).

Annual LUC training is provided to staff and tenants of CJAG. Participants receive an overview of the history of the facility, ongoing clean-up work, location of clean-up sites, and LUCs and restrictions. Training materials are kept on file and provided to anyone that misses the April training dates. Due to coronavirus restrictions, all training was conducted virtually in 2020 (Chenega, 2020; 2021b).

7.7 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

This is the first Five-Year Review for Dump Along Paris-Windham Road.

7.8 DATA REVIEW

The Dump Along Paris-Windham Road remedy currently consists of LUCs; therefore, no data was generated or reviewed.

7.9 SITE INSPECTION

DAWSON (Tikoshia Davis, EIT and Shaun Prines) conducted the CJAG site inspection on December 7, 2021. Kevin Sedlak (Army National Guard Directorate Restoration Program Manager) and Katie Tait (Ohio Army National Guard Environmental Specialist 2) escorted the DAWSON team to each site and assisted in identifying important features, remedy components, boundaries, etc. The Site Inspection Checklists are presented in **Appendix B**. The Site Inspection Photograph Log is presented in **Appendix C**.

The site inspection confirmed that the warning signs were visible, well-labeled, and maintained. The Seibert stakes were placed at the correct and required 300-foot interval surrounding the entirety of Dump Along Paris-Windham Road. No changes in land use were observed. Additionally, no evidence of unauthorized access or intrusive actives were observed.

7.10 TECHNICAL ASSESSMENT

7.10.1 QUESTION A – IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Yes, the remedy implemented at Dump Along Paris-Windham Road is functioning as intended by the 2017 ROD. LUCs (boundary markers and signs notifying personnel/the public of access and digging restrictions) prevent exposure of the resident receptor with COCs at shallow surface soil. Seibert Stakes and warning signs installed along the perimeter were observed to be clearly posted at appropriate intervals and in good condition during the 2019 and 2020 LUC Inspections. Additionally, the soil cover at Dump Along Paris-Windham Road was inspected and observed to be intact with no signs of damage or erosion. Annual LUC training is provided to staff and tenants of CJAG, and annual LUC inspection reports are submitted to Ohio EPA as required.

7.10.2 QUESTION B – ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEAN-UP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes, the exposure assumptions, toxicity data, CUGs, and RAO continue to be valid. No changes to the anticipated land use were made at or near Dump Along Paris-Windham Road. Additionally, no unauthorized access or intrusive activities have occurred. The implemented LUCs remain in place and are successful at restricting access to Dump Along Paris-Windham Road.

The Dump Along Paris-Windham Road ARAR and risk evaluation is presented in **Appendix F**. Based on these evaluations, no changes in toxicity data and clean-up levels were identified that affect the protectiveness of the remedy. The RAO remains valid, LUCs have been implemented to prevent exposure of the Resident Receptor to shallow surface soil (0-1 feet bgs) with COC levels exceeding the target risk of 1×10^{-5} and a hazard quotient of 1.0.

7.10.3 QUESTION C – HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

No other information has come to light that could call into question the protectiveness of the remedy.

7.10.4 TECHNICAL ASSESSMENT SUMMARY

LUCs are in place to restrict site use/access and to reduce and prevent the exposure of potential receptors to surface and near surface soil contamination. No changes in land use were made and no new routes of exposure or receptors were identified. Therefore, the remedy implemented at Dump Along Paris-Windham Road is functioning as intended by the 2017 ROD, and the exposure assumptions and RAO continue to be valid.

7.11 ISSUES

No issues were identified for Dump Along Paris-Windham Road during this Five-Year Review that prevent the remedy from being protective now or in the future.

7.12 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

No recommendations or follow-up actions are required since no issues were identified during this Five-Year Review that affect current or future protectiveness of the remedy.

7.13 OTHER FINDINGS

No other findings for Dump Along Paris-Windham Road were identified during this Five-Year Review.

7.14 PROTECTIVENESS STATEMENT

The remedy for Dump Along Paris-Windham Road is protective of human health and the environment.

LUCs (boundary markers and signs notifying personnel/the public of access and digging restrictions) are in place to prevent exposure of the resident receptor to COCs in shallow surface soil. Annual LUC inspections conducted in 2019 and 2020 confirmed that Seibert Stakes with warning signs were posted at least every 300 feet and in good condition. The soil cover was found to be intact with no signs of damage or erosion. General LUC Awareness Training is provided annually to staff and tenants of CJAG.

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8.0 NEXT REVIEW

The next Five-Year Review is due on August 31, 2027.

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FIGURES

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Site Map of Camp James A. Garfield Joint Military Training Center Portage and Trumbull Counties, Ohio

Date
APRIL 2022

Figure
1

KEY

- Installation Restoration Program AOC Boundary
- Camp James A. Garfield Joint Military Training Center Installation Boundary

RVAAP-01 Ramsdell Quarry Landfill
RVAAP-08 Load Line 1
RVAAP-51 Dump Along Paris Windham Road
RVAAP-05 Winklepeck Burning Grounds
RVAAP-09 Load Line 2
RVAAP-10 Load Line 3
Camp James A. Garfield Joint Military Training Center
RVAAP-12 Load Line 4
RVAAP-11 Load Line 3

Engineering Scale
1" = 5,000'

Source(s)
DAWSON, Esri

Projection
WGS 1984 UTM Zone 17N

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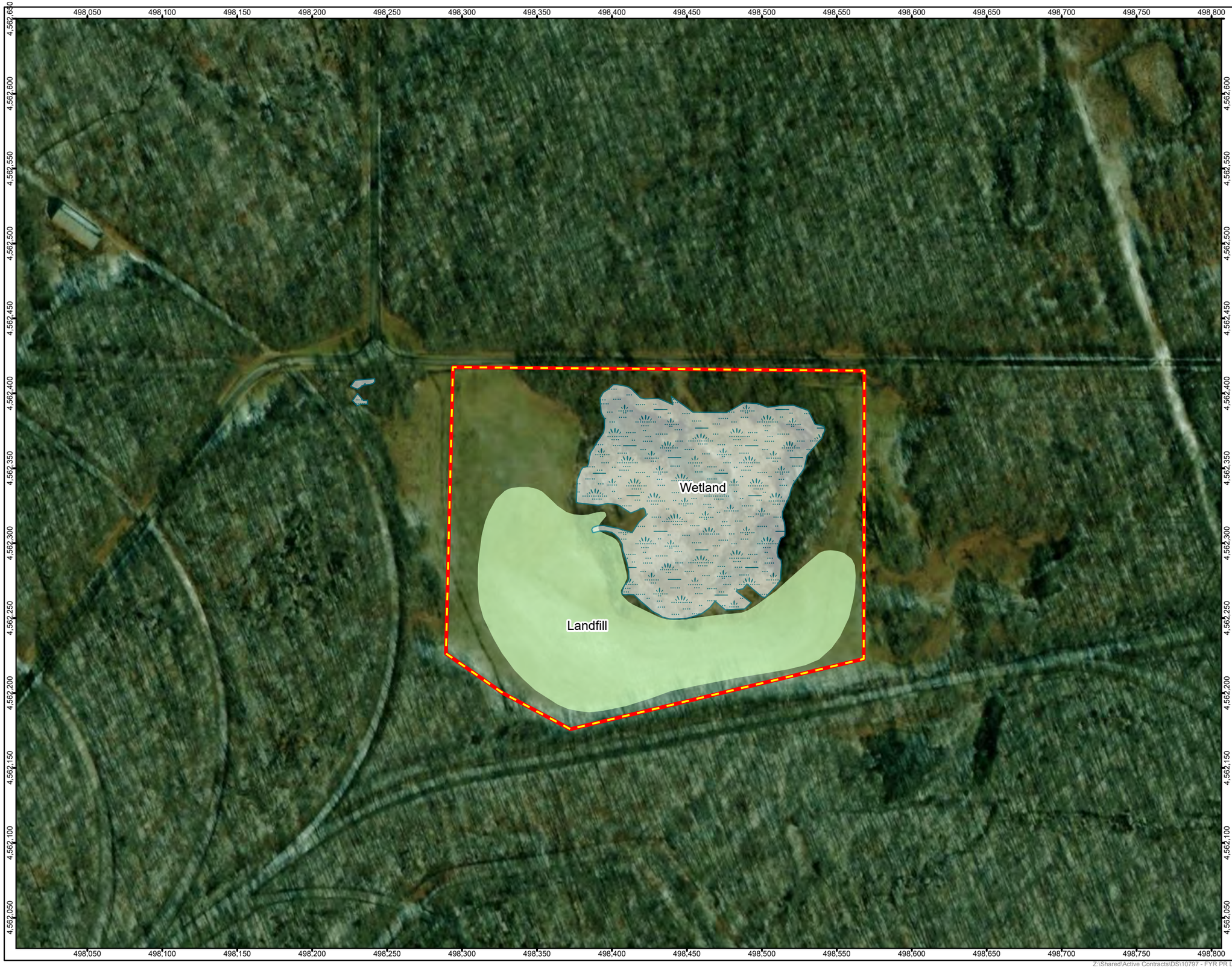
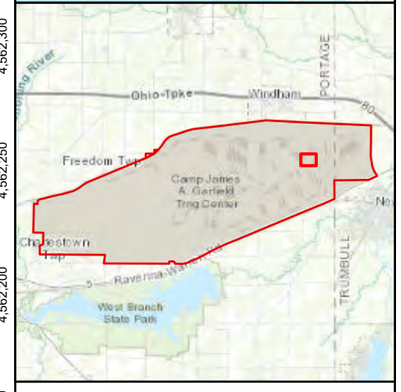


RVAAP-01 – Ramsdell Quarry Landfill
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date	Figure
MARCH 2022	2

KEY

- RVAAP-01 Ramsdell Quarry Landfill AOC Boundary
- Landfill
- Wetland
- Fence



Engineering Scale
1" = 200'

Source(s)
DAWSON, Esri

Projection
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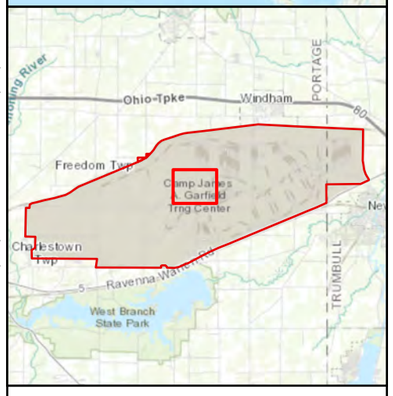
RVAAP-05 – Winklepeck Burning Grounds
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date	Figure
APRIL 2022	3

KEY

RVAAP-05 AOC Boundary



Engineering Scale
1" = 575'

Source(s)
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Projection
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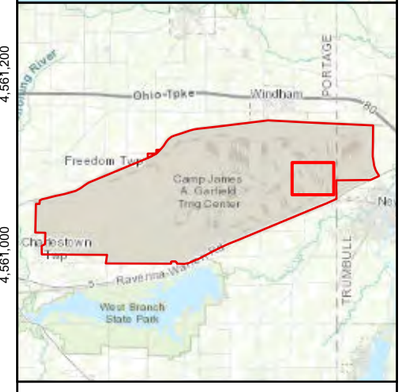
RVAAP-08 – Load Line 1
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date
MARCH 2022

Figure
4

KEY

RVAAP-08 AOC Boundary



Engineering Scale
1" = 550'

Source(s)
DAWSON, Esri

Projection
WGS 1984 UTM Zone 17N

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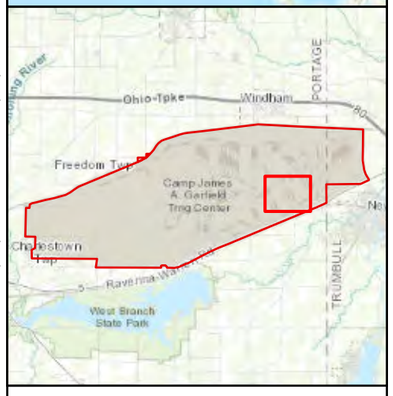
RVAAP-09 – Load Line 2
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date
MARCH 2022

Figure
5

KEY

RVAAP-09 AOC Boundary



Engineering Scale
1" = 600'

Source(s)
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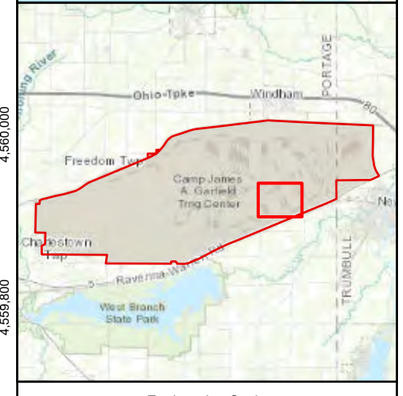
RVAAP-10 – Load Line 3
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date
MARCH 2022

Figure
6

KEY

RVAAP-10 AOC Boundary



Engineering Scale
1" = 575'

Source(s)
DAWSON, Esri

Projection
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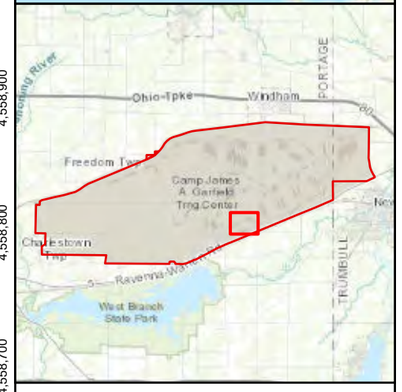
RVAAP-11 – Load Line 4
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date
MARCH 2022

Figure
7

KEY

RVAAP-11 AOC Boundary



Engineering Scale
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Source(s)
DAWSON, Esri

Projection
WGS 1984 UTM Zone 17N

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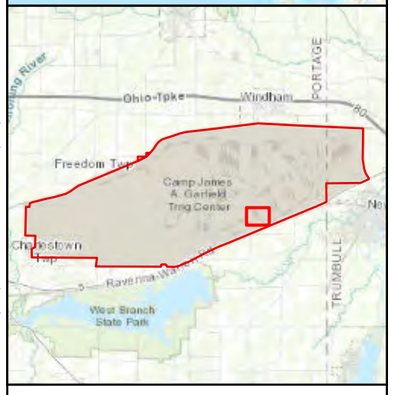
RVAAP-12 – Load Line 12
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date
MARCH 2022

Figure
8

KEY

RVAAP-12 AOC Boundary



Engineering Scale
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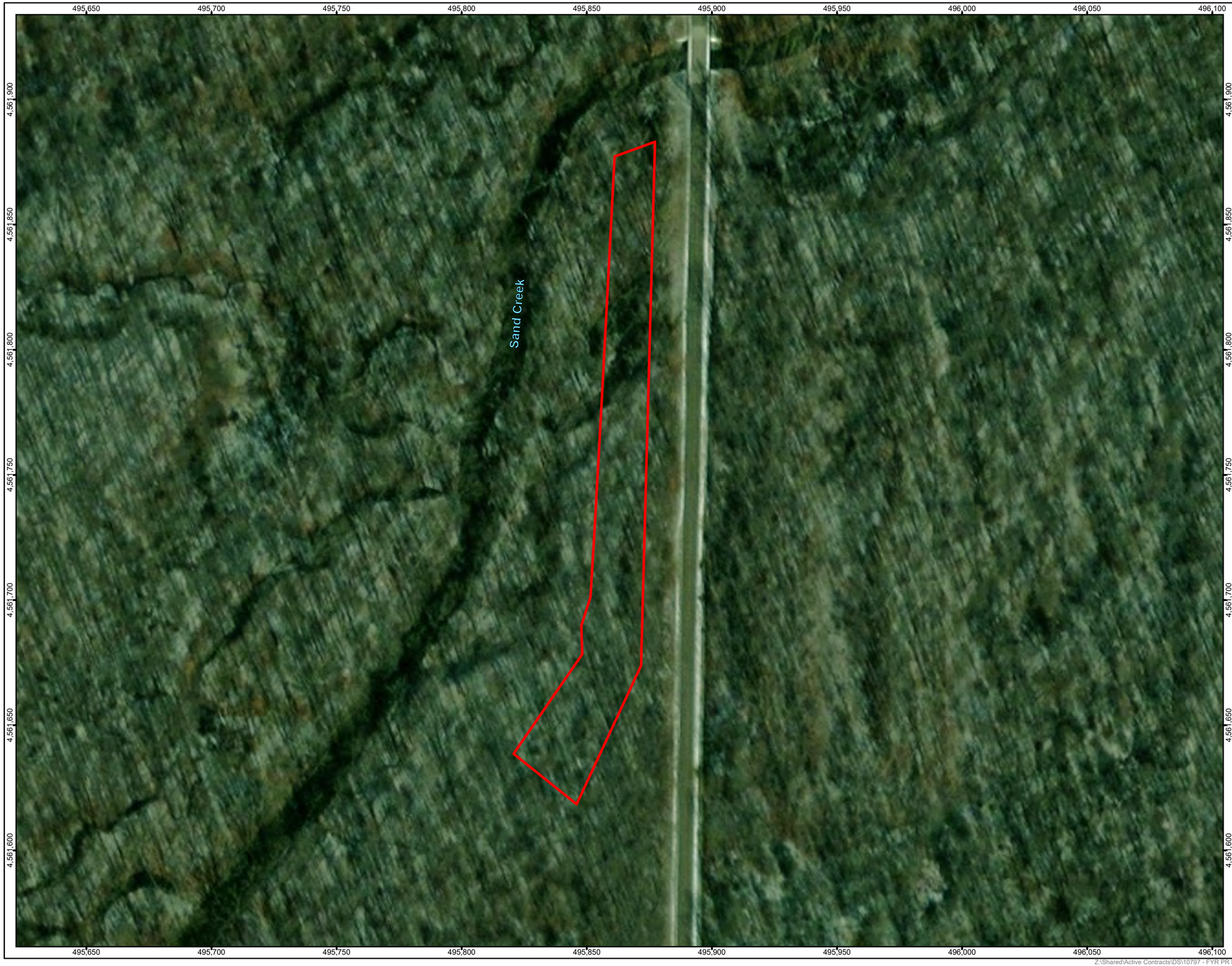
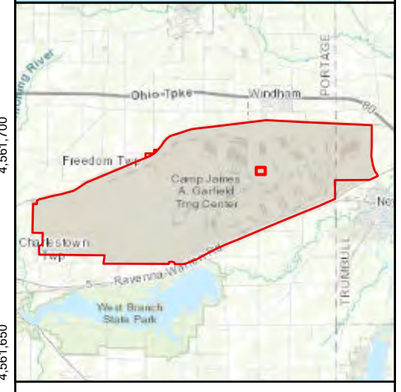


RVAAP-51 – Dump Along Paris-Windham Road
Camp James A. Garfield
Joint Military Training Center
Portage and Trumbull Counties, Ohio

Date	Figure
MARCH 2022	9

KEY

RVAAP-51 AOC Boundary



Engineering Scale
1" = 120'

Source(s)
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APPENDIX A

PUBLIC NOTICE AFFIDAVIT

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PUBLIC NOTICE
Ravenna Army Ammunition Plant Restoration Program
Camp James A. Garfield Joint Military Training Center
Notification of Third Five-Year Review

The Army National Guard, in coordination with the Ohio Environmental Protection Agency, is initiating the third Five-Year Review of environmental remedies implemented at the former Ravenna Army Ammunition Plant, now known as Camp James A. Garfield Joint Military Training Center, in Portage and Trumbull counties, Ohio.

The purpose of the Five-Year Review is to determine whether the selected remedies are protective of human health and the environment. If any issues are identified that impact the remedial actions' protectiveness, the Five-Year Review Report will include recommendations to address them. The focus of the third Five-Year Review includes Ramsdell Quarry Landfill, Winklepeck Burning Grounds, Load Lines 1 through 4, Load Line 12, and the Dump Along Paris-Windam Road.

Ramsdell Quarry Landfill is an abandoned quarry that operated as a landfill for domestic, commercial, and industrial solid wastes. Soil and sediment were contaminated with polycyclic aromatic hydrocarbons (PAHs). A 2009 Record of Decision (ROD) established the remedy as excavation and off-site disposal of contaminated soil and sediment and land use controls. Due to the discovery of asbestos-containing material (ACM) during the remedial action, the 2013 ROD Amendment revised the remedy to include installation of a security fence and implementation of best management practices to remove surficial ACM through non-intrusive methods.

Winklepeck Burning Grounds operated as an open burning area for bulk explosives and explosives-contaminated wastes, propellants, black powder, sludge, sawdust, domestic wastes, and small amounts of laboratory chemicals. Soil and dry sediment were contaminated with explosives, PAHs, and ACM. The 2008 ROD selected excavation and disposal of contaminated soil and dry sediment as the remedy. The remedy also included land use controls prohibiting residential use and restricting groundwater use and extraction. A 2015 Explanation of Significant Differences (ESD) required removal of contaminated soil and sediment from additional areas to meet industrial use requirements.

Load Lines 1 through 4 were used to melt and load explosives into large caliber shells. Operations resulted in the contamination of soil and dry sediment with metals (including hexavalent chromium), explosives, polychlorinated biphenyls, and PAHs. A 2007 Interim ROD selected excavation and off-site disposal of contaminated soil and dry sediment, groundwater monitoring, and maintenance of former building slabs to prevent potential leaching of contamination from soil and dry sediment to groundwater. Load Line 12 operations included production of ammonium nitrate and ammonium chloride, and demilitarization of bombs to recover explosives. Operations resulted in arsenic contamination in soil and dry sediment. The 2016 ROD required excavation and off-site disposal of contaminated soil and dry sediment and land use controls. A 2019 ROD Amendment for Load Lines 1 through 4 and 12 revised the selected remedies to ex situ thermal treatment and off-site disposal of soil and land use controls to prohibit residential use.

The Dump Along Paris-Windam Road operated as an open dump for construction and demolition debris, including ACM, that resulted in PAH contamination in soil. The selected remedy in the 2017 ROD is land use controls to limit access and restrict residential land use.

The Third Five-Year Review Report is scheduled for completion by August 31, 2022, and will be available for public review at the Ravenna Army Ammunition Plant Restoration Program Information Repositories and online at www.rvaap.org.

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444

Should members of the community have questions or comments about the third Five-Year Review or are interested in additional site information, please contact:

Kathryn Toll
Ohio Army National Guard
614-336-6136
kathryn.s.toll.nfg@mail.mil

11 - 6/6/21 (5929832)

PUBLIC NOTICE
Ravenna Army Ammunition Plant Restoration Program
Camp James A. Garfield Joint Military Training Center
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Winklepeck Burning Grounds operated as an open burning area for bulk explosives and explosives-contaminated wastes, propellants, black powder, sludge, sawdust, domestic wastes, and small amounts of laboratory chemicals. Soil and dry sediment were contaminated with explosives, PAHs, and ACM. The 2008 ROD selected excavation and disposal of contaminated soil and dry sediment as the remedy. The remedy also included land use controls prohibiting residential use and restricting groundwater use and extraction. A 2015 Explanation of Significant Differences (ESD) required removal of contaminated soil and sediment from additional areas to meet industrial use requirements.

Load Lines 1 through 4 were used to melt and load explosives into large caliber shells. Operations resulted in the contamination of soil and dry sediment with metals (including hexavalent chromium), explosives, polychlorinated biphenyls, and PAHs. A 2007 Interim ROD selected excavation and off-site disposal of contaminated soil and dry sediment, groundwater monitoring, and maintenance of former building slabs to prevent potential leaching of contamination from soil and dry sediment to groundwater. **Load Line 12** operations included production of ammonium nitrate and ammonium chloride, and demilitarization of bombs to recover explosives. Operations resulted in arsenic contamination in soil and dry sediment. The 2010 ROD required excavation and off-site disposal of contaminated soil and dry sediment and land use controls. A 2019 ROD Amendment for Load Lines 1 through 4 and 12 revised the selected remedies to ex situthermal treatment and off-site disposal of soil and land use controls to prohibit residential use.

The **Dump Along Paris-Windam Road** operated as an open dump for construction and demolition debris, including ACM, that resulted in PAH contamination in soil. The selected remedy in the 2017 ROD is land use controls to limit access and restrict residential land use. The Third Five-Year Review Report is scheduled for completion by August 31, 2022, and will be available for public review at the Ravenna Army Ammunition Plant Restoration Program Information Repositories and online at www.rvaap.org.

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Kathryn Tait
Ohio Army National Guard
614-336-6136
kathryn.s.tait.nfg@mail.mil.

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09/04/2022

and that the fees charged are legal.

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Notary, State of WI, County of Brown

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PUBLIC NOTICE
Camp James A. Garfield Joint Military Training Center
Army National Guard Completes Third Five-Year Review

The Army National Guard has completed the third Five-Year Review of the environmental remedies implemented at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield Joint Military Training Center, in Portage and Trumbull counties, Ohio. This statutory Five-Year Review was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substances Pollution Contingency Plan. The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy to determine if the remedy is or will be protective of human health and the environment. Five-Year Reviews also identify issues found during the review, if any, and provide recommendations to address them.

This Five-Year Review evaluated the following RVAAP Restoration Program sites and their remedies:

Ramsdell Quarry Landfill. The remedy for Ramsdell Quarry Landfill is protective of human health and the environment. Surficial asbestos-containing material was removed and fencing installed around the perimeter of Ramsdell Quarry Landfill to encompass the closed landfill, quarry bottom, and wetlands. Land use controls (digging restrictions, fencing and signage, briefings, and annual inspections) are in place to protect receptors and restrict activities.

Winklepeck Burning Grounds. The remedy for Winklepeck Burning Grounds is protective of human health and the environment. Asbestos was removed from Pad 70 and Commercial/Industrial land use was achieved by removing contaminated soil from Pads 61/61A, Site WBG-217 located near Pads 61/61A, and Pad 67. Land Use Controls limit exposure by restricting residential land use and prohibiting groundwater use.

Load Lines 1 through 4 and 12. The remedy at Load Lines 1 - 4 and 12 is protective of human health and the environment. Risk from chemicals of concern in surface and subsurface soil and sediment has been reduced to meet Commercial/Industrial land use. Contaminated soils have been excavated, thermally treated to achieve Commercial/ Industrial land use, sampled, and reused or properly disposed of offsite. Land use controls including no residential use, annual inspections and reporting, and training for facility personnel have been implemented.

Dump Along Paris-Windham Road. The remedy for the Dump Along Paris-Windham Road is protective of human health and the environment. Land use controls (boundary markers and signs, training, inspections, and digging restrictions) are in place to prevent exposure to receptors The soil cover is intact with no signs of damage or erosion.

A copy of the Third Five-Year Review Report is available at the following locations (information repositories):

Reed Memorial Library 167 East Main Street Ravenna, Ohio 44266 Newton Falls Public Library 204 South Canal Street Newton Falls, Ohio 44444

If you have questions or concerns about this third Five-Year Review, please contact Ms. Kathryn Tait, Ohio Army National Guard, at (614) 336-6136, kathryn.s.tait.nfg@army.mil.

#264- 1T- September 21, 2022- #7660

PROOF OF PUBLICATION

STATE OF OHIO
TRUMBULL COUNTY SS: HARRY NEWMAN

BEING DULY SWORN, UPON OATH STATES THAT ***HE*** IS AN AUTHORIZED REPRESENTATIVE OF EASTERN OHIO NEWSPAPERS INC, PUBLISHERS OF THE TRIBUNE CHRONICLE AND THE VINDICATOR (an edition of the Tribune Chronicle), NEWSPAPERS PRINTED AND IN THE GENERAL CIRCULATION OF TRUMBULL, MAHONING, COLUMBIANA COUNTIES IN OHIO AND IN MERCER COUNTY IN PENNSYLVANIA.

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X **THE TRIBUNE CHRONICLE**
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SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS ***27TH*** DAY OF ***September 2022***

NOTARY PUBLIC

LAWRENCE J. KOVACH, Notary Public
STATE OF OHIO
MY COMMISSION EXPIRES SEPTEMBER 23, 2027

SEAL

APPENDIX B

SITE INSPECTION FORMS

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I. SITE INFORMATION

Site name: HQAES ID 39747.1001; RVAAP-01: Ramsdell Quarry Landfill (RQL)	**Date of inspection:** 12/07/2021
Location and Region: Portage and Trumbull Counties, Ohio	**EPA ID:** OH5210020736 (CERCLIS)
Agency, office, or company leading the five-year review: US Army Corps of Engineers, Louisville District	**Weather/temperature:** Partly cloudy, 29º F

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment
☐ Monitored natural attenuation
☒ Access controls
☐ Groundwater containment
☒ Institutional controls
☐ Vertical barrier walls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☒ Other The remedy for RQL as defined in the 2009 Record of Decision (ROD) is Excavation and Offsite Disposal. This remedy involves the removal of soil and dry sediment at RQL with concentrations of COCs that exceed the clean-up goals for the Security Guard/Maintenance Worker.

The remedy for RQL as defined in the 2013 ROD Amendment is Perimeter Fence – Security Guard/Maintenance Worker with Restricted Land Use. This remedy includes 1) installation of a fence at the perimeter of RQL to encompass the closed landfill, quarry bottom, and wetlands; and 2) implementing a [Best Management Practice] to remove surficial [Asbestos-containing Material] through non-intrusive/no-digging methods.

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Kevin Sedlak (Name) Restoration Program Manager, ARNG (Title) 8/25/21-8/26-21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** Al Brillinger (Name) Program Manager, Chenega Tri-Services (Title) 8/25/21-8/26/21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Ohio Environmental Protection Agency
Contact Kevin Palombo Site Coordinator 9/15/21 N/A
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

- Tim Morgan, State Environmental Supervisor, Ohio Army National Guard
- Katie Tait, Environmental Specialist 2, Ohio Army National Guard

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks -LUC requirements for RQL are listed in the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 3.0, April 2020.*
-Excavation drawings are provided in the *Final Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill, September 2011.*
-LUC inspection reports are provided in the *Final 2020 Annual Land Use Control Monitoring Report, RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 through RVAAP-11 (Load Lines 1 through 4), RVAAP-12 (Load Line 12) and RVAAP-51 (Dump Along Paris-Windham Road), May 2021.*

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☐ Up to date ☐ N/A
☐ Contingency/Emergency Response Plan ☐ Readily available ☐ Up to date ☐ N/A
Remarks *Final Facility-Wide Safety and Health Plan for Environmental Investigations, February 2011.*

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks _____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A
Remarks Groundwater monitoring is not a component of the remedy for RQL; however, groundwater monitoring takes place under the site-wide groundwater AOC (RVAAP-66). Groundwater monitoring reports and published annually and the most recent is the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020, July 21, 2021.*

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

10. **Daily Access/Security Logs** ☒ Readily available ☒ Up to date ☐ N/A
Remarks _____
_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____
_____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons:

_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A
Remarks The fencing surrounding RVAAP-01 (Ramsdell Quarry Landfill) was intact and in good condition at the time of inspection. The fencing did not exhibit damage and all gates were locked (Photographs 4 and 5).

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
Remarks Signage was observed to be in good condition. The signage was clearly posted and legible at the time of inspection. The asbestos warning signs are posted on gates and every 300 feet on the fence. Personnel and contractors entering RQL are required to record their name, date, and time of entry and exit on the Access Logs (Photograph 3).

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting
Frequency Annual
Responsible party/agency CJAG/OHARNG
Contact Katie Tait Environmental Specialist, OHARNG 614-336-6136 (office)
Name Title Date Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met
☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☒ N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks ICs, including digging and soil disturbing restrictions, established exposure limits, and annual LUC inspections, were observed to be in place at the time of inspection. All ICs were found to be effective and adequate.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks _____
_____

2. **Land use changes on site** ☐ N/A
Remarks No land use changes were observed on site at the time of inspection.

3. **Land use changes off site** ☐ N/A
Remarks No land use changes were observed off site at the time of inspection.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A
Remarks Installation roads (paved and unpaved) were observed to be in good condition.

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

Remarks RQL was closed in 1990 and capped with a clay cover. However, landfill covers are not a component of the RQL remedy.

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks _____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks _____
_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks _____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks _____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Height _____
Remarks _____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent _____
☐ Ponding ☐ Location shown on site map Areal extent _____
☐ Seeps ☐ Location shown on site map Areal extent _____
☐ Soft subgrade ☐ Location shown on site map Areal extent _____
Remarks _____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent _____
Remarks _____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
_____

5. **Obstructions** ☐ No obstructions ☐ Location shown on site map
Type _____ Areal extent _____
Size _____
Remarks _____
_____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

4. **Leachate Extraction Wells**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
   Remarks_____
   _____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A
☐ Siltation not evident
Remarks _____
_____

2. **Erosion** Areal extent _____ Depth _____
☐ Erosion not evident
Remarks _____
_____

3. **Outlet Works** ☐ Functioning ☐ N/A
Remarks _____
_____

4. **Dam** ☐ Functioning ☐ N/A
Remarks _____
_____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement _____ Vertical displacement _____
Rotational displacement _____
Remarks _____
_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks _____
_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Areal extent _____ Type _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks _____
_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks _____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

Remarks Vertical barrier walls are not a component of the RQL remedy.

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Performance Monitoring** Type of monitoring _____
☐ Performance not monitored
Frequency _____ ☐ Evidence of breaching
Head differential _____
Remarks _____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

Remarks The 2020 ROD for Sediment and Surface Water selected the following remedy for Ramsdell Quarry Landfill: No further action is necessary for sediment and surface water for Unrestricted (Residential) Land Use and Military Training.

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks _____
_____
_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____
_____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters _____
☐ Additive (*e.g.*, chelation agent, flocculent) _____
☐ Others _____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually _____
☐ Quantity of surface water treated annually _____
Remarks _____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks _____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks _____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

Remarks <u>There are no other remedies at the site.</u>

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). The remedy at RQL consists of excavation, offsite disposal, installation of a fence at the perimeter of RQL, and asbestos removal. The fencing surrounding RQL, encompassing the closed landfill, quarry bottom, and wetlands, was in good condition at the time of inspection. The fencing did not exhibit damage and all gates were locked (Photographs 3, 4, and 5). Signage, warning of the asbestos hazard in the quarry bottom, was observed to be in good condition.
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M procedures were determined to be adequate.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. No early indicators of a potential remedy problem were observed.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. No opportunities for optimization were identified at the time of inspection.

I. SITE INFORMATION	
Site name: HQAES ID 39747.1005; RVAAP-05: Winklepeck Burning Grounds (WBG)	**Date of inspection:** 12/07/2021
Location and Region: Portage and Trumbull Counties, Ohio	**EPA ID:** OH5210020736 (CERCLIS)
Agency, office, or company leading the five-year review: US Army Corps of Engineers, Louisville District	**Weather/temperature:** Partly cloudy, 29º F

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment ☐ Monitored natural attenuation
☒ Access controls ☐ Groundwater containment
☒ Institutional controls ☐ Vertical barrier walls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☒ Other The remedy for WBG as defined in the 2008 ROD is Chemical Contamination Removal Concurrent with MEC Removal Action – Excavation, Screen for Potential MEC, Composite Sampling, and Disposal.

The 2015 ESD documented the following changes to the remedy: Commercial/Industrial Land Use, Additional Soil Removal, revised restrictions and LUCs including implementation actions, monitoring and reporting, and enforcement.

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Kevin Sedlak Restoration Program Manager, ARNG 8/25/21-8/26-21
   Name Title Date
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** Al Brillinger Program Manager, Chenega Tri-Services 8/25/21-8/26/21
   Name Title Date
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Ohio Environmental Protection Agency
Contact Kevin Palombo Site Coordinator 9/25/21 N/A
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

- Tim Morgan, State Environmental Supervisor, Ohio Army National Guard
- Katie Tait, Environmental Specialist 2, Ohio Army National Guard

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks -LUC requirements for WBG are listed in the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 3.0, April 2020.*
-Excavation drawings for the 2008 ROD Remedy are provided in the *Final Remedial Action Completion Report for RVAAP-05 Winklepeck Burning Grounds Pads 61/61A, 67, and 70, November 2009.*
-Excavation drawings for the 2015 ESD Remedy are provided in the *Final Remedial Completion Report for the Soil Remedy at RVAAP-05 Winklepeck Burning Grounds, February 2018.*
-LUC inspection reports are provided in the *Final 2020 Annual Land Use Control Monitoring Report, RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 through RVAAP-11 (Load Lines 1 through 4), RVAAP-12 (Load Line 12) and RVAAP-51 (Dump Along Paris-Windham Road), May 2021.*

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☐ Up to date ☐ N/A
☐ Contingency/Emergency Response Plan ☐ Readily available ☐ Up to date ☐ N/A
Remarks *Final Facility-Wide Safety and Health Plan for Environmental Investigations, February 2011.*

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks _____
_____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

7.	**Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A Remarks Groundwater monitoring is not a component of the remedy for WBG; however, groundwater monitoring takes place under the site-wide groundwater AOC (RVAAP-66). Groundwater monitoring reports and published annually and the most recent is the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020, July 21, 2021.*
8.	**Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A Remarks _____ _____
9.	**Discharge Compliance Records** ☐ Air ☐ Readily available ☐ Up to date ☒ N/A ☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A Remarks _____ _____
10.	**Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A Remarks _____ _____
	IV. O&M COSTS
1.	**O&M Organization** ☐ State in-house ☐ Contractor for State ☐ PRP in-house ☐ Contractor for PRP ☐ Federal Facility in-house ☐ Contractor for Federal Facility ☐ Other _____ _____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons:
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☒ N/A
Remarks Fencing is not included in the WBG remedy; however, the access gates were locked and in good condition at the time of inspection (Photograph 13).

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
Remarks Signage is not included in the WBG remedy.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting

Frequency Annual

Responsible party/agency CJAG/OHARNG

Contact Katie Tait Environmental Specialist, OHARNG 614-336-6136 (office)

Name Title Date Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

_____

_____

_____

_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks ICs, including land use and groundwater use restrictions, were observed to be in place at the time of inspection. All ICs were found to be effective and adequate.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks _____

_____

2. **Land use changes on site** ☐ N/A

Remarks No land use changes were observed on site at the time of inspection.

3. **Land use changes off site** ☐ N/A

Remarks No land use changes were observed off site at the time of inspection.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks Installation roads (paved and unpaved) were observed to be in good condition.

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

Remarks Landfill covers are not a component of the WBG remedy.

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks _____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks _____
_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks _____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks _____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Height _____
Remarks _____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent _____
☐ Ponding ☐ Location shown on site map Areal extent _____
☐ Seeps ☐ Location shown on site map Areal extent _____
☐ Soft subgrade ☐ Location shown on site map Areal extent _____
Remarks _____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent _____
Remarks _____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
_____

5. **Obstructions** ☐ No obstructions ☐ Location shown on site map
Type _____ Areal extent _____
Size _____
Remarks _____
_____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks _____
   _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks _____
   _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A
   ☐ Siltation not evident
   Remarks _____
   _____

2. **Erosion** Areal extent _____ Depth _____
   ☐ Erosion not evident
   Remarks _____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks _____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks _____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement _____ Vertical displacement _____
Rotational displacement _____
Remarks _____
_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks _____
_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Areal extent _____ Type _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks _____
_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks _____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

Remarks Vertical barrier walls are not a component of the WBG remedy.

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Performance Monitoring** Type of monitoring _____
☐ Performance not monitored
Frequency _____ ☐ Evidence of breaching
Head differential _____
Remarks _____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

Remarks Groundwater/Surface water remedies are not a component of the WBG remedy.

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____
   _____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☐ Carbon adsorbers
   ☐ Filters _____
   ☐ Additive (*e.g.*, chelation agent, flocculent) _____
   ☐ Others _____
   ☐ Good condition ☐ Needs Maintenance
   ☐ Sampling ports properly marked and functional
   ☐ Sampling/maintenance log displayed and up to date
   ☐ Equipment properly identified
   ☐ Quantity of groundwater treated annually _____
   ☐ Quantity of surface water treated annually _____
   Remarks _____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks _____
   _____

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

5. **Treatment Building(s)**
   ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
   ☐ Chemicals and equipment properly stored
   Remarks _____
   _____

6. **Monitoring Wells** (pump and treatment remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

D. Monitoring Data

1. Monitoring Data
   ☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

Remarks There are no other remedies at the site.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
The remedy at WBG consists of Commercial/Industrial land use, additional soil removal, and revised restrictions/land use controls.

The remedy at WBG is effective and functioning as designed. Land use changes were not observed at WBG at the time of inspection. Construction of the Multi-Purpose Machine Gun Range is ongoing and groundwater use is restricted to non-potable uses.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
O&M procedures were determined to be adequate.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.
No early indicators of a potential remedy problem were observed.

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. No opportunities for optimization were identified at the time of inspection.

I. SITE INFORMATION

Site name: HQAES ID 39747.1066; RVAAP-08: Load Line 1 HQAES ID 39747.1009; RVAAP-09: Load Line 2 HQAES ID 39747.1010; RVAAP-10: Load Line 3 HQAES ID 39747.1011; RVAAP-11: Load Line 4 HQAES ID 39747.1012; RVAAP-12: Load Line 12	**Date of inspection:** 12/07/2021
Location and Region: Portage and Trumbull Counties, Ohio	**EPA ID:** OH5210020736 (CERCLIS)
Agency, office, or company leading the five-year review: US Army Corps of Engineers, Louisville District	**Weather/temperature:** Partly cloudy, 29º F

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment ☐ Monitored natural attenuation
☒ Access controls ☐ Groundwater containment
☒ Institutional controls ☐ Vertical barrier walls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☒ Other The 2019 ROD Amendment remedy *involves thermally treating explosives-, polychlorinated biphenyl (PCB)-, and PAH-contaminated soil and disposing of the metals-impacted soil off-site at a licensed, engineered landfill.*

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Kevin Sedlak (Name) Restoration Program Manager, ARNG (Title) 8/25/21-8/26-21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☒ Report attached _____

2. **O&M staff** Al Brillinger (Name) Program Manager, Chenega Tri-Services (Title) 8/25/21-8/26/21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Ohio Environmental Protection Agency
Contact Kevin Palombo Site Coordinator 9/15/21 N/A
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

- Tim Morgan, State Environmental Supervisor, Ohio Army National Guard
- Katie Tait, Environmental Specialist 2, Ohio Army National Guard

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual ☒ Readily available ☒ Up to date ☐ N/A
☒ As-built drawings ☒ Readily available ☐ Up to date ☐ N/A
☒ Maintenance logs ☒ Readily available ☒ Up to date ☐ N/A

Remarks -LUC requirements for Load Lines 1, 2, 3, 4, and 12 are listed in the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 3.0, April 2020.*

-Excavation drawings for the 2019 ROD Remedy are provided in the *Final Remedial Action Completion Report Load Lines 1, 2, 3, 4, and 12 (RVAAP-08 to 12), October 2021.*

-LUC inspection reports are provided in the *Final 2020 Annual Land Use Control Monitoring Report, RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 through RVAAP-11 (Load Lines 1 through 4), RVAAP-12 (Load Line 12) and RVAAP-51 (Dump Along Paris-Windham Road), May 2021.*

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☐ Up to date ☐ N/A

☐ Contingency/Emergency Response Plan ☐ Readily available ☐ Up to date ☐ N/A

Remarks *Final Facility-Wide Safety and Health Plan for Environmental Investigations, February 2011.*

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

4. **Permits and Service Agreements**

☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
☐ Other permits _____ ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☒ N/A

Remarks Groundwater monitoring is not a component of the remedy for Load Lines 1 – 4 and 12; however, groundwater monitoring takes place under the site-wide groundwater AOC (RVAAP-66). Groundwater monitoring reports are published annually and the most recent is the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020, July 21, 2021.*

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____
_____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons:
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☒ N/A
Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
Remarks Signage is not included in the remedy for Load Lines 1 – 4 and 12.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting
Frequency Annual
Responsible party/agency CJAG/OHARNG
Contact Katie Tait Environmental Specialist, OHARNG 614-336-6136 (office)
Name Title Date Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met
☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☒ N/A
Other problems or suggestions: ☐ Report attached
_____
_____
_____
_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks ICs, including land use restrictions, LUC training, and annual LUC inspections, were observed to be in place at the time of inspection. All ICs were found to be effective and adequate.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
   Remarks _____
   _____

2. **Land use changes on site** ☐ N/A
   Remarks No land use changes were observed on site at the time of inspection.

3. **Land use changes off site** ☐ N/A
   Remarks No land use changes were observed off site at the time of inspection.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A
   Remarks Installation roads (paved and unpaved) were observed to be in good condition

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

Remarks Landfill covers are not a component of the remedy for Load Lines 1 – 4 and 12.

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths _____ Widths _____ Depths _____
   Remarks _____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks _____
_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks _____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks _____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Height _____
Remarks _____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent _____
☐ Ponding ☐ Location shown on site map Areal extent _____
☐ Seeps ☐ Location shown on site map Areal extent _____
☐ Soft subgrade ☐ Location shown on site map Areal extent _____
Remarks _____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent _____
Remarks _____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
_____

5. **Obstructions** ☐ No obstructions ☐ Location shown on site map
Type _____ Areal extent _____
Size _____
Remarks _____
_____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A
   ☐ Siltation not evident
   Remarks _____
   _____

2. **Erosion** Areal extent _____ Depth _____
   ☐ Erosion not evident
   Remarks _____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks _____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks _____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement _____ Vertical displacement _____
   Rotational displacement _____
   Remarks _____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks _____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent _____ Type _____
   Remarks _____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks _____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

Remarks Vertical barrier walls are not a component of the remedy for Load Lines 1 – 4 and 12.

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Performance Monitoring** Type of monitoring _____
☐ Performance not monitored
Frequency _____ ☐ Evidence of breaching
Head differential _____
Remarks _____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

Remarks The 2019 ROD for Wet Sediment and Surface Water at RVAAP-12 Load Line 12 selected the following remedy: No further action is necessary for wet sediment and surface water at Load Line 12 for Unrestricted (Residential) Land Use, as no CERCLA-related chemicals of concern were identified in wet sediment or surface water for the Resident Receptor.

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks _____
_____
_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____
   _____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☐ Carbon adsorbers
   ☐ Filters _____
   ☐ Additive (*e.g.*, chelation agent, flocculent) _____
   ☐ Others _____
   ☐ Good condition ☐ Needs Maintenance
   ☐ Sampling ports properly marked and functional
   ☐ Sampling/maintenance log displayed and up to date
   ☐ Equipment properly identified
   ☐ Quantity of groundwater treated annually _____
   ☐ Quantity of surface water treated annually _____
   Remarks _____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks _____
   _____

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks _____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

Remarks There are no other remedies at the site.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
The 2019 ROD Amendment remedy *involves thermally treating explosives-, polychlorinated biphenyl (PCB)-, and PAH-contaminated soil and disposing of the metals-impacted soil off-site at a licensed, engineered landfill.*

The remedy at Load Lines 1 – 4 and 12 is effective and functioning as designed. At the time of inspection, land use changes were not observed, inspections and reporting take place annually, and general LUC training is available for facility personnel.

B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M procedures were determined to be adequate.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. No early indicators of a potential remedy problem were observed.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. No opportunities for optimization were identified at the time of inspection.

I. SITE INFORMATION	
Site name: HQAES ID 39747.1051; RVAAP-51: Dump Along Paris-Windham Road	**Date of inspection:** 12/07/2021
Location and Region: Portage and Trumbull Counties, Ohio	**EPA ID:** OH5210020736 (CERCLIS)
Agency, office, or company leading the five-year review: US Army Corps of Engineers, Louisville District	**Weather/temperature:** Partly Sunny, 29°F

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment
☒ Access controls
☒ Institutional controls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☐ Monitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls
☒ Other The remedy for soil, sediment, and surface water at Dump Along Paris-Windham Road is LUCs. This remedy includes restrictive warning signs and boundary markers (Seibert Stakes) posted at least every 300 feet along the perimeter of the Dump Along Paris-Windham Road. Also, the remedy includes excavation/digging restrictions to prohibit use and exposure to contaminated soils. General LUCs Awareness Training is made available for installation personnel and LUC inspections are completed annually.

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Kevin Sedlak (Name) Restoration Program Manager, ARNG (Title) 8/25/21-8/26-21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** Al Brillinger (Name) Program Manager, Chenega Tri-Services (Title) 8/25/21-8/26/21 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. N/A
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Ohio Environmental Protection Agency
Contact Kevin Palombo Site Coordinator 9/15/21 N/A
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

- Tim Morgan, State Environmental Supervisor, Ohio Army National Guard
- Katie Tait, Environmental Specialist 2, Ohio Army National Guard

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual ☒ Readily available ☒ Up to date ☐ N/A
☒ As-built drawings ☒ Readily available ☐ Up to date ☐ N/A
☒ Maintenance logs ☒ Readily available ☒ Up to date ☐ N/A

Remarks -LUC requirements for the Dump Along Paris-Windham Road are listed in the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 3.0, April 2020.*

-Excavation drawings are provided in the *Final Remedial Design for Soil at RVAAP-51 Dump Along Paris-Windham Road, February 2019.*

-LUC inspection reports are provided in *Final 2020 Annual Land Use Control Monitoring Report, RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 through RVAAP-11 (Load Lines 1 through 4), RVAAP-12 (Load Line 12) and RVAAP-51 (Dump Along Paris-Windham Road), May 2021.*

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☐ Up to date ☒ N/A

☐ Contingency/Emergency Response Plan ☐ Readily available ☐ Up to date ☐ N/A

Remarks *Final Facility-Wide Safety and Health Plan for Environmental Investigations, February 2011.*

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

_____

4. **Permits and Service Agreements**

☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
☐ Other permits _____ ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

_____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

_____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

_____

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A

Remarks Groundwater monitoring is not a component of the remedy for RQL; however, groundwater monitoring takes place under the site-wide groundwater AOC (RVAAP-66). Groundwater monitoring reports and published annually and the most recent is the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020, July 21, 2021.*

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____
_____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons:

_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☒ N/A
Remarks Fencing is not a component of the remedy at Dump Along Paris-Windham Road.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☒ N/A
Remarks Seibert Stakes were observed to properly placed at the correct 300' interval and were in good condition. The signage was clearly posted and legible at the time of inspection.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting
Frequency Annual
Responsible party/agency CJAG/OHARNG
Contact Katie Tait Environmental Specialist, OHARNG 614-336-6136 (office)
Name Title Date Phone no.

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met
☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☒ N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks ICs, including LUC awareness training and annual LUC inspections, were observed to be in place at the time of inspection. All ICs were found to be effective and adequate.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks _____
_____

2. **Land use changes on site** ☐ N/A
Remarks No land use changes were observed on site at the time of inspection.

3. **Land use changes off site** ☐ N/A
Remarks No land use changes were observed off site at the time of inspection.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A
Remarks Installation roads (paved) were observed to be in good condition.

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

Remarks Landfill covers are not a component of the Dump Along Paris-Windham Road remedy.

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks _____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks _____
_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks _____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks _____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Height _____
Remarks _____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent _____
☐ Ponding ☐ Location shown on site map Areal extent _____
☐ Seeps ☐ Location shown on site map Areal extent _____
☐ Soft subgrade ☐ Location shown on site map Areal extent _____
Remarks _____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent _____
Remarks _____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
_____

5. **Obstructions** ☐ No obstructions ☐ Location shown on site map
Type _____ Areal extent _____
Size _____
Remarks _____
_____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks _____
_____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A
   ☐ Siltation not evident
   Remarks _____
   _____

2. **Erosion** Areal extent _____ Depth _____
   ☐ Erosion not evident
   Remarks _____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks _____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks _____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement _____ Vertical displacement _____
   Rotational displacement _____
   Remarks _____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks _____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent _____ Type _____
   Remarks _____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks _____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

Remarks Vertical Barrier Walls covers are not a component of the Dump Along Paris-Windham Road remedy.

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks _____
_____

2. **Performance Monitoring** Type of monitoring _____
☐ Performance not monitored
Frequency _____ ☐ Evidence of breaching
Head differential _____
Remarks _____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

Remarks The 2017 ROD for soil, sediment, and surface water at the Dump Along Paris-Windham Road selected the following remedy: LUCs.

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks _____
_____
_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____
_____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters _____
☐ Additive (*e.g.*, chelation agent, flocculent) _____
☐ Others _____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually _____
☐ Quantity of surface water treated annually _____
Remarks _____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks _____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks _____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks _____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

Remarks <u>There are no other remedies at the site.</u>

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). The remedy at the Dump Along Paris-Windham Road is LUCs with annual inspections. Components of the remedy include warning signs, Seibert Stakes, excavation/digging restrictions, General LUC Awareness Training for installation personnel, and annual LUC inspections. The remedy is functioning as intended and is protective of human health and the environment. The Seibert stakes surrounding the Dump Along Paris-Windham Road were observed to be in good condition and placed at the appropriate 300-foot intervals. Warning signs were observed to be in good condition (See Photographs 32, 33, 34, 35).
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M procedures were determined to be adequate.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. No early indicators of a potential remedy problem were observed.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. No opportunities for optimization were identified at the time of inspection.

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APPENDIX C

SITE INSPECTION PHOTOGRAPH LOG

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HQAES 39747.1001; RVAAP-01 Ramsdell Quarry	
Photograph 1	
Location: RVAAP-01, Ramsdell Quarry Landfill (RQL), Camp James A. Garfield Joint Military Training Center (CJAG), Ohio (OH)	
Date: 12/7/2021	
Description: View of RVAAP-01 RQL landfill and wetland area, facing Southeast.	
Photograph 2	
Location: RVAAP-01, Ramsdell Quarry Landfill, CJAG, OH	
Date: 12/7/2021	
Description: View of RVAAP-01 RQL landfill area, facing East.	

Photograph 3 **Location:** RVAAP-01, Ramsdell Quarry Landfill, CJAG, OH **Date:** 12/7/2021 **Description:** View of locked gate at entrance of RVAAP-01 RQL, including warning signs and access log.	
Photograph 4 **Location:** RVAAP-01, Ramsdell Quarry Landfill, CJAG, OH **Date:** 12/7/2021 **Description:** View of the perimeter fence at the Northwest corner of RVAAP-01 RQL.	

Photograph 5 **Location:** RVAAP-01, Ramsdell Quarry Landfill, CJAG, OH **Date:** 12/7/2021 **Description:** View of the perimeter fence at the Northern corner of RVAAP-01 RQL.	
Photograph 6 **Location:** RVAAP-01, Ramsdell Quarry Landfill, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-01 Ramsdell Quarry Landfill facing South. Monitoring well MW-016 pictured in photo.	

HQAES 39747.1005; RVAAP-05
Winklepeck Burning Grounds (WBG)

Photograph 7 **Location:** RVAAP-05, Winklepeck Burning Grounds (WBG), CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-05 WBG, showing a site access road, facing Northeast.	
Photograph 8 **Location:** RVAAP-05, Winklepeck Burning Grounds, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-05 WBG, facing Southeast.	

Photograph 9	
Location: RVAAP-05, Winklepeck Burning Grounds, CJAG, OH	
Date: 12/7/2021	
Description: View of RVAAP-05 WBG. The orange fencing has been installed to section off wetland areas to avoid during development of the Multi-Purpose Machine Gun Range, facing North.	
Photograph 10	
Location: RVAAP-05, Winklepeck Burning Grounds, CJAG, OH	
Date: 12/7/2021	
Description: View of RVAAP-05. The orange fencing has been installed to section off wetland areas to avoid during development of the Multi-Purpose Machine Gun Range, facing West.	

Photograph 11 **Location:** RVAAP-05, Winklepeck Burning Grounds, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-05. Also shown are the current redevelopment efforts being performed at the site, facing Northeast.	
Photograph 12 **Location:** RVAAP-05, Winklepeck Burning Grounds, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-05. The orange fencing has been installed to section off wetland areas to avoid during development of the Multi-Purpose Machine Gun Range, facing Northwest.	

Photograph 13	
Location: RVAAP-05, Winklepeck Burning Grounds, CJAG, OH	
Date: 12/7/2021	
Description: View of gate and access road leading into RVAAP-05, facing East. Although not part of the remedy for WBG, the gate is kept locked at all times.	

HQAES 39747.1066; RVAAP-08
Load Line 1

Photograph 14	
Location: RVAP-08, Load Line 1, CJAG, OH	
Date: 12/7/2021	
Description: View of the current conditions at RVAAP-08, facing Northeast.	

Photograph 15 **Location:** RVAAP-08, Load Line 1, CJAG, OH **Date:** 12/7/2021 **Description:** View showing the current conditions at RVAAP-08, facing Northwest.	
Photograph 16 **Location:** RVAAP-08, Load Line 1, CJAG, OH **Date:** 12/7/2021 **Description:** View of locked gate with warnings signs and the access road leading into RVAAP-08, facing East. Note: The gate and signage are not a component of the remedy for RVAAP 08 – 12.	

HQAES 39747.1009; RVAAP-09
Load Line 2

Photograph 17 **Location:** RVAAP-09, Load Line 2, CJAG, OH **Date:** 12/7/2021 **Description:** View showing the current conditions at RVAAP-09, facing Northeast.	
Photograph 18 **Location:** RVAAP-09, Load Line 2, CJAG, OH **Date:** 12/7/2021 **Description:** View showing the current conditions at RVAAP-09 and the site access road, facing East.	

Photograph 19 **Location:** RVAAP-09, Load Line 2, CJAG, OH **Date:** 12/7/2021 **Description:** View showing the current conditions at RVAAP-09, facing Northeast.	
Photograph 20 **Location:** RVAAP-09, Load Line 2, CJAG, OH **Date:** 12/7/2021 **Description:** View of locked gate with warnings signs and the access road leading into RVAAP-09, facing East. Note: The gate and signage are not a component of the remedy for RVAAP 08 – 12.	

HQAES 39747.1010; RVAAP-10
Load Line 3

Photograph 21 **Location:** RVAAP-10, Load Line 3, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions of the excavated area, Building EB-9a, at RVAAP-10, facing East.	
Photograph 22 **Location:** RVAAP-10, Load Line 3, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions of the excavated area, West Perimeter, at RVAAP-10, facing East.	

Photograph 23	
Location: RVAAP-10, Load Line 3, CJAG, OH	
Date: 12/7/2021	
Description: View of locked gate and warning signs at RVAAP-10, facing East. Also visible is the site access road for RVAAP-10. Note: The gate and signage are not a component of the remedy for RVAAP 08 – 12.	
HQAES 39747.1011; RVAAP-11 Load Line 4	
Photograph 24	
Location: RVAAP-11, Load Line 4, CJAG, OH	
Date: 12/7/2021	
Description: View of the current conditions at RVAAP-11, facing Northeast.	

Photograph 25 **Location:** RVAAP-11, Load Line 4, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions at the excavated area, Former Water Tower, at RVAAP-11, facing Northwest. The concrete blocks shown are the foundation of the Former Water Tower..	
Photograph 26 **Location:** RVAAP-11, Load Line 4, CJAG, OH **Date:** 12/7/2021 **Description:** View of the site access road for RVAAP-11, facing South.	

HQAES 39747.1012; RVAAP-12
Load Line 12

Photograph 27 **Location:** RVAAP-12, Load Line 12, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions at RVAAP-12, facing North.	
Photograph 28 **Location:** RVAAP-12, Load Line 12, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions at RVAAP-12.	

Photograph 29 **Location:** RVAAP-12, Load Line 12, CJAG, OH **Date:** 12/7/2021 **Description:** View of the current conditions at RVAAP-12, facing Northeast.	
Photograph 30 **Location:** RVAAP-12, Load Line 12, CJAG, OH **Date:** 12/7/2021 **Description:** View of the locked gate with warnings signs and the site access road for RVAAP-12, facing East. Note: The gate and signage are not a component of the remedy for RVAAP 08 – 12.	

HQAES 39747.1051; RVAAP-51
Dump Along Paris-Windham Road

Photograph 31 **Location:** RVAAP-51, Dump along Paris-Windham Road, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-51 and Paris-Windham Road, facing Northwest. Signage visible in the background is identified in Photograph 32.	
Photograph 32 **Location:** RVAAP-51, Dump along Paris-Windham Road, CJAG, OH **Date:** 12/7/2021 **Description:** View of RVAAP-51 and associated warning signs, facing Southwest.	

Photograph 33 **Location:** RVAAP-51, Dump along Paris-Windham Road, CJAG, OH **Date:** 12/7/2021 **Description:** View of warning signs and Seibert stakes at RVAAP-51 facing South on Paris-Windham Road, facing West.	
Photograph 34 **Location:** RVAAP-51, Dump along Paris-Windham Road, CJAG, OH **Date:** 12/7/2021 **Description:** View of warning signs and Seibert stakes at RVAAP-51 facing South on Paris-Windham Road, facing southwest.	

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APPENDIX D

INTERVIEWS

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INTERVIEW RECORD

Site Name: Camp James A. Garfield Joint Military Training Center
Subject: Five-Year Review **Date:** August 25 & 26, 2021
Type: ☒ Telephone ☐ Visit ☒ Other ☐ Incoming ☐ Outgoing
Location of Visit: Not applicable

Contact Made By:

Name: Tikoshia Davis
Title: Project Specialist
Organization: Dawson Solutions, LLC

Individual Contacted:

Name: Allan Brillinger
Title: Program Manager
Organization: Chenega Tri-Services, LLC
Telephone No: 330-872-4234 (office)
E-Mail Address: abrillinger@chenega.com
Street Address: 1438 State Route 534, SW
City: Newton Falls **State:** OH **Zip:** 44444

Summary of Conversation:
O&M Staff Questions

1. What is your overall impression of the project? (general sentiment)

Chenega Tri-Services, LLC (CTS) is a USACE-hired contractor assisting the OHARNG and NGB staff at Camp James A. Garfield (CJAG) with Environmental Program Support Services (EPSS). We assist with a number of environmentally-related activities at CJAG, including O&M services at the Land Use Control (LUC) areas. I have high praise for the NGB and CJAG staff we work with and the environmental projects we work on at CJAG. LUCs are working.

2. Is the remedy functioning as expected? How well is the remedy performing?

All of the LUC remedies are working as intended and are functioning well.

3. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

CTS has a full-time (32-hrs/week) presence in the field at CJAG. The field crew consists of 2 people, with an occasional seasonal worker. The field crew is devoted to groundwater monitoring well maintenance, LUC and Area of Concern (AOC) and access road mowing, soil and signage repairs at LUC and AOC sites and other environmentally-related field support services. The LUC sites are officially inspected annually and an annual report prepared by CTS.

Due to COVID, all office staff works from home. However, all field staff is still on site full time.

4. Have there been any significant changes in the O&M requirements or maintenance schedules since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

As the LUC sites have remedial activities completed, certain LUC activities change or are eliminated. One example of this is the CJAG perimeter fence inspection (~30 miles), which was required quarterly for the RVAAP-05 Winklepeck Burning Grounds (WBG) site. The perimeter fence was a LUC for WBG and as such it was required to be fully inspected quarterly and a quarterly and annual report prepared. After remedial soil activities were completed at WBG, this requirement was removed. The CJAG perimeter fence is still a LUC for RVAAP-12 Load Line 12 and is inspected annually and an annual report prepared by CTS.

5. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

There have been no unexpected O&M difficulties at the LUC sites since start-up or in the last five years that I am aware of.

6. Have there been opportunities to optimize O&M? Please describe changes and resultant or desired cost savings or improved efficiency.

I have no comments for this item.

7. Do you have any comments, suggestions, or recommendations regarding the project?

Everything is working well. No suggestions.

INTERVIEW RECORD

Site Name: Camp James A. Garfield Joint Military Training Center
Subject: Five-Year Review **Date:** September 8, 2021
Type: ☒ Telephone ☐ Visit ☐ Other ☐ Incoming ☐ Outgoing
Location of Visit: Not applicable

Contact Made By:

Name: Tikoshia Davis
Title: Project Specialist
Organization: Dawson Solutions, LLC

Individual Contacted:

Name: Kathryn Tait
Title: Environmental Specialist 2
Organization: Ohio Army National Guard
Telephone No: 614-336-6136
E-Mail Address: kathryn.s.tait.nfg@mail.mil
Street Address: 1438 State Route 534 SW
City: Newton Falls **State:** Ohio **Zip:** 44444

Summary of Conversation:

1. What procedures are in place for EPA and other stakeholders to receive notice of any proposed changes to the LUCs?
Changes to the LUCs are documented in decision documents.

2. Does Ravenna have an LUC tracking system or other applicable database (e.g., GIS maps) to keep information about LUCs?
Information about LUCs is contained in the Property Management Plan. There is no GIS tracking system at this time.

3. How has the LUC process been working and are there any suggestions for improvement?
The LUC process has been working well, there are no deficiencies. There have been some changes in LUCs at Load Lines 1 – 4 as a result of an amended decision document. Namely, the land use is now commercial/industrial use.

RVAAP-01 Ramsdell Quarry Landfill

1. Have any breaches of the LUCs occurred at RVAAP-01, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?
No, there have been no breaches of the LUCs at RVAAP-01.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-01 as required?
Yes, through an annual inspection that is sent to the Ohio Environmental Protection Agency (EPA). In addition, there have been two Five-Year Reviews to date to report on the status of the LUCs.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-01 (e.g., follow-up inspections)?
Annual LUC Inspections and annual reports.

4. Are LUCs being enforced at RVAAP-01? What is the enforcement plan in the event of an LUC breach?
There are two different procedures: facility in-house procedures and stakeholder procedures. The stakeholder procedure is based on the annual inspection. Any repairs or deficiencies are first reported to Ohio Army National Guard (OHARNG) and Army National Guard (ARNG) for funding to complete repairs. Once repairs are completed the deficiencies and corrective actions are reported to Ohio EPA. The facility in-house procedure consists of an annual LUC brief with soldiers and personnel at the facility. The briefs notify the soldiers and personnel of the restrictions that are in place. And if they see anything suspicious or see a breach, they are to notify the environmental office or range control.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-01 of which Ravenna is aware?
No, there aren't any new developments in the area at RVAAP-01.

6. Has land use changed at RVAAP-01, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?
No, land use has not changed at RVAAP-01.

RVAAP-05 Winklepeck Burning Grounds

1. Have any breaches of the LUCs occurred at RVAAP-05, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?
No, there have been no breaches of the LUCs at RVAAP-05.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-05 as required?
Yes, through an annual inspection report that is sent to Ohio EPA.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-05 (e.g., follow-up inspections)?
Annual LUC Inspections and annual reports.

4. Are LUCs being enforced at RVAAP-05? What is the enforcement plan in the event of an LUC breach?
There are two different procedures: facility in-house procedures and stakeholder procedures. The stakeholder procedure is based on the annual inspection. Any repairs or deficiencies are first reported to Ohio Army National Guard (OHARNG) and Army National Guard (ARNG) for funding to complete repairs. Once repairs are completed the deficiencies and corrective actions are reported to Ohio EPA. The facility in-house procedure consists of an annual LUC brief with soldiers and personnel at the facility. The briefs notify the soldiers and personnel of the restrictions that are in place. And if they see anything suspicious or see a breach, they are to notify the environmental office or range control.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-05 of which Ravenna is aware?
Current land use is Commercial/industrial with no residential use. The site was a Mark 19 range and is now being turned into a multi-purpose machine gun range.

6. Has land use changed at RVAAP-05, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?
No, land use has not changed at RVAAP-05.

RVAAP-08 to RVAAP-12 Load Lines 1 – 4 and 12

1. Has construction for the 2019 ROD Amendment remedy been completed?
Yes. Based on the construction and the draft Remedial Action Completion Report (RACR), the 2019 ROD Amendment remedy construction appears to have been successful.

2. Was the 2019 ROD Amendment remedy construction successful?
Yes, the 2019 ROD Amendment remedy construction was successful.

3. Were there any problems encountered while implementing the 2019 ROD Amendment remedy?
No problems were encountered while implementing the 2019 ROD Amendment remedy.

4. Have LUCs for RVAAP-08 to RVAAP-12 been established?
The LUCs for RVAAP-08 to RCAAP-12 have been established. An Appendix in the RACR contains an amendment for the PMP, and identifies restrictions. RVAAP-08 to RVAAP-12 will be subject to annual inspections beginning this fall. The LUCs restrict residential use of the property and the sites will be added to the training brief. The RACR is currently in Draft and will be submitted to Ohio EPA for review. The Final RACR is anticipated to be complete by the end of 2021.

RVAAP-51 Dump Along Paris-Windham Road

1. Have any breaches of the LUCs occurred at RVAAP-51, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?
No, there have been no breaches of the LUCs at RVAAP-51.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-51 as required?
Yes, through an annual inspection report that is sent to Ohio EPA.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-51 (e.g., follow-up inspections)?
Annual LUC Inspections and annual reports.

4. Are LUCs being enforced at RVAAP-51? What is the enforcement plan in the event of an LUC breach?
There are two different procedures: facility in-house procedures and stakeholder procedures. The stakeholder procedure is based on the annual inspection. Any repairs or deficiencies are

reported to Ohio EPA. The facility in-house procedure consists of an annual LUC brief with soldiers and personnel at the facility. If they see anything suspicious or see a breach, they are to notify the office or range control.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-51 of which Ravenna is aware?
No, there are no new developments in the area at RVAAP-51.

6. Has land use changed at RVAAP-51, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?
No, there are no land use changes at RVAAP-51.

Additional Notes:
The PMP is updated annually. LUCs and clean-up program are not static. Every year the PMP is updated with new sites that have LUCs and changes to existing LUCs. The cleanup program changes are documented in the PMP.

INTERVIEW RECORD

Site Name: Camp James A. Garfield Joint Military Training Center
Subject: Five-Year Review **Date:** September 15, 2021
Type: ☒ Telephone ☐ Visit ☐ Other ☐ Incoming ☐ Outgoing
Location of Visit:

Contact Made By:

Name: Tikoshia Davis
Title: Project Specialist
Organization: Dawson Solutions, LLC

Individual Contacted:

Name: Kevin Palombo
Title:
Organization: Ohio Environmental Protection Agency
Telephone No:
E-Mail Address:
Street Address:
City: **State:** **Zip:**

Summary of Conversation:
State and Local Authorities Questions

1. What is your overall impression of the project? (general sentiment)
Kevin's overall impression is that it's a big project with 22,000 acres and 50 to 80 areas of concern over the years. He shared that it is an impressive site and project. Everything has gone well and smoothly. The relationship between Ohio EPA and the Army is good. Any difficulties have been resolved.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
Yes, there have been routine communications and activities. There are monthly scheduled calls where individual ongoing projects are discussed, including EPA and Army reviews. There are three or four site coordinators assigned to a certain number of AOCs, and those coordinators get together monthly to discuss the status of their AOCs.

Kevin is the Ohio EPA representative on the board, and they meet quarterly. Board members include local community leaders, township representatives, and county representatives.

Special meetings are called with the Army, as necessary, to discuss any AOCs with concerns.

Kevin has a good relationship with the Army representative. If he needs to observe any sampling, for example, he can call and get permission without any problems. He feels they have good communication.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.
Yes, there has been an incident related to the site requiring a response by their office. There was one issue where the Army installed monitoring wells close to the property line. It was later determined that the well was installed on private property. The Army had to address the

property owner's complaint and come to a resolution. The well was removed and placed on Army property.

The office has received calls in the past with concerns about safety and health issues for homeowners downgradient of the installation, but these occurred more than five years ago.

4. Do you feel well informed about the site's activities and progress?
Yes, Kevin shared he feels well informed about the site's activities and progress. In comparison to other facilities in the state of Ohio, Ravenna is far more advanced and keeps the Ohio EPA the most informed. Ravenna communicates all problems and they have all been resolved.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
Kevin shared that Ravenna is doing pretty well and if there are any issues, they are brought up during the monthly or quarterly meetings.

INTERVIEW RECORD

Site Name: Camp James A. Garfield Joint Military Training Center
Subject: Five-Year Review **Date:** August 26, 2021
Type: ☒ Telephone ☐ Visit ☐ Other ☐ Incoming ☐ Outgoing
Location of Visit: Not applicable

Contact Made By:

Name: Tikoshia Davis
Title: Project Specialist
Organization: Dawson Solutions, LLC

Individual Contacted:

Name: Kevin Sedlak
Title: Restoration Project Manager
Organization: Army National Guard Directive
Telephone No: 614-336-6000 Ex. 2053
E-Mail Address: kevin.m.sedlak.ctr@mail.mil
Street Address: 1438 State Route 534 SW
City: Newton Falls **State:** Ohio **Zip:** 44444

Summary of Conversation:

1. What procedures are in place for Ohio EPA and other stakeholders to receive notice of any proposed changes to the LUCs?

Ohio EPA and other stakeholders receive notice of any proposed changes to the LUCs via the Property Management Plan, which is updated annually. All LUCs are documented.

2. Does Ravenna have an LUC tracking system or other applicable database (e.g., GIS maps) to keep information about LUCs?

Yes, all LUCs can be found on RVAAP.org, in public libraries, and within an on-site library.

3. How has the LUC process been working and are there any suggestions for improvement?

The LUC process is working well. No suggestions.

RVAAP-01 Ramsdell Quarry Landfill

1. Have any breaches of the LUCs occurred at RVAAP-01, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

No. Fenced area on an active military facility.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-01 as required?

Yes, via the annual LUC report and Property Management Plan.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-01 (e.g., follow-up inspections)?

LUC inspections are conducted annually.

4. Are LUCs being enforced at RVAAP-01? What is the enforcement plan in the event of an LUC breach?

Yes. Enforcement will occur via military channels.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-01 of which Ravenna is aware?

No.

6. Has land use changed at RVAAP-01, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?

No.

RVAAP-05 Winklepeck Burning Grounds

1. Have any breaches of the LUCs occurred at RVAAP-05, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

No. Fenced area on an active military facility.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-05 as required?

Yes, via the annual LUC report and Property Management Plan.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-05 (e.g., follow-up inspections)?

LUC inspections are conducted annually.

4. Are LUCs being enforced at RVAAP-05? What is the enforcement plan in the event of an LUC breach?

Yes. Enforcement will occur via military channels.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-05 of which Ravenna is aware?

No.

6. Has land use changed at RVAAP-05, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?

No.

RVAAP-08 to RVAAP-12 Load Lines 1 – 4 and 12

1. Has construction for the 2019 ROD Amendment remedy been completed?

Yes.

2. Was the 2019 ROD Amendment remedy construction successful?

Yes.

3. Were there any problems encountered while implementing the 2019 ROD Amendment remedy?

No.

4. Have LUCs for RVAAP-08 to RVAAP-12 been established?

They have not been finalized yet.

RVAAP-51 Dump Along Paris-Windham Road

1. Have any breaches of the LUCs occurred at RVAAP-51, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

No. Fenced area on an active military facility.

2. Has the federal agency (for a federal facility site) reported on the status of the LUCs at RVAAP-51 as required?

Yes, via the annual LUC report and Property Management Plan.

3. What type of monitoring is currently being conducted or has been conducted to determine LUC compliance at RVAAP-51 (e.g., follow-up inspections)?

LUC inspections are conducted annually.

4. Are LUCs being enforced at RVAAP-51? What is the enforcement plan in the event of an LUC breach?

Yes. Enforcement will occur via military channels.

5. Are there any new developments, either constructed or planned, in the area at RVAAP-51 of which Ravenna is aware?

No.

6. Has land use changed at RVAAP-51, or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?

No.

INTERVIEW RECORD

Site Name: Camp James A. Garfield Joint Military Training Center
Subject: Five-Year Review **Date:** 30 Aug 2021
Type: ☐ Telephone ☐ Visit ☒ Other ☐ Incoming ☐ Outgoing
Location of Visit: Not applicable

Contact Made By:

Name: Tikoshia Davis
Title: Project Specialist
Organization: Dawson Solutions, LLC

Individual Contacted:

Name: Tim Morgan
Title: State Environmental Supervisor
Organization: Ohio Army National Guard
Telephone No: 614-336-6568
E-Mail Address: timothy.m.morgan.nfg@mail.mil
Street Address: 1438 State Route 534 SW
City: Newton Falls **State:** Ohio **Zip:** 44444

Summary of Conversation:

1. Have any breaches of the ICs occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

Not that I have been made aware of.

2. Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required?

An annual inspection and report is done each year. I do not believe there is a US Army requirement to to do annual inspects and reporting. We do it IAW our Property Management Plan.

3. What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

See 2 above.

4. Are ICs being enforced? What is the enforcement plan in the event of an IC breach?

Yes. The breach is reported to the OHARNG ENV office at CJAG and from there to ARNG G9 and the Ohio EPA by the OHARNG. We figure out what happened and why and take whatever steps are appropriate to correct the situation.

5. Are there any new developments, either constructed or planned, in the area of which Ravenna is aware?

Nothing new. We are currently construction the MPMG Range within the footprint of WBG, which is IAW the approved land use.

6. Has land use changed or is it anticipated to change (e.g., housing developments, either constructed or planned, exist in the area)?

No change and no change expected.

7. What procedures are in place for stakeholders to receive notice of any proposed changes to the ICs?

Changes to ICs would require a new decision document, which would include every stateholder in the process. Not sure I understand the question. We would have to follow CERCLA.

We do annual training for CJAG staff to keep them current on LUC's/IC's.

8. Does Ravenna have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?

We do have a GIS data base and Property Management Plan (PMP) that identified LUCs/ICs. I'm not sure what the question is asking. We have everything in a document approved by applicable stakeholders/regulators and we keep all annual reports. I do not know what is meant by a tracking system??? There is no searchable data base that we can search IC breaches by site. We don't need it. We have a couple of sites with LUC's/IC's and the primary LUC in Industrial land use which enables us to do everything we need. A couple sites have access or dig restrictions and are posted with signs and Siebert stakes or fenced. We are pretty simple.

9. How has the IC process been working and are there any suggestions for improvement?

Working fine. We continually update the PMP as sites are finalized. I would like to see all site in the PMP, even those without LUC's/IC's. This would give us one complete summary of all sites and any restrictions in one document. This would be useful for Range Control and leadership making land use, master planning, training decisions.

APPENDIX E

SUPPLEMENTAL FIGURES

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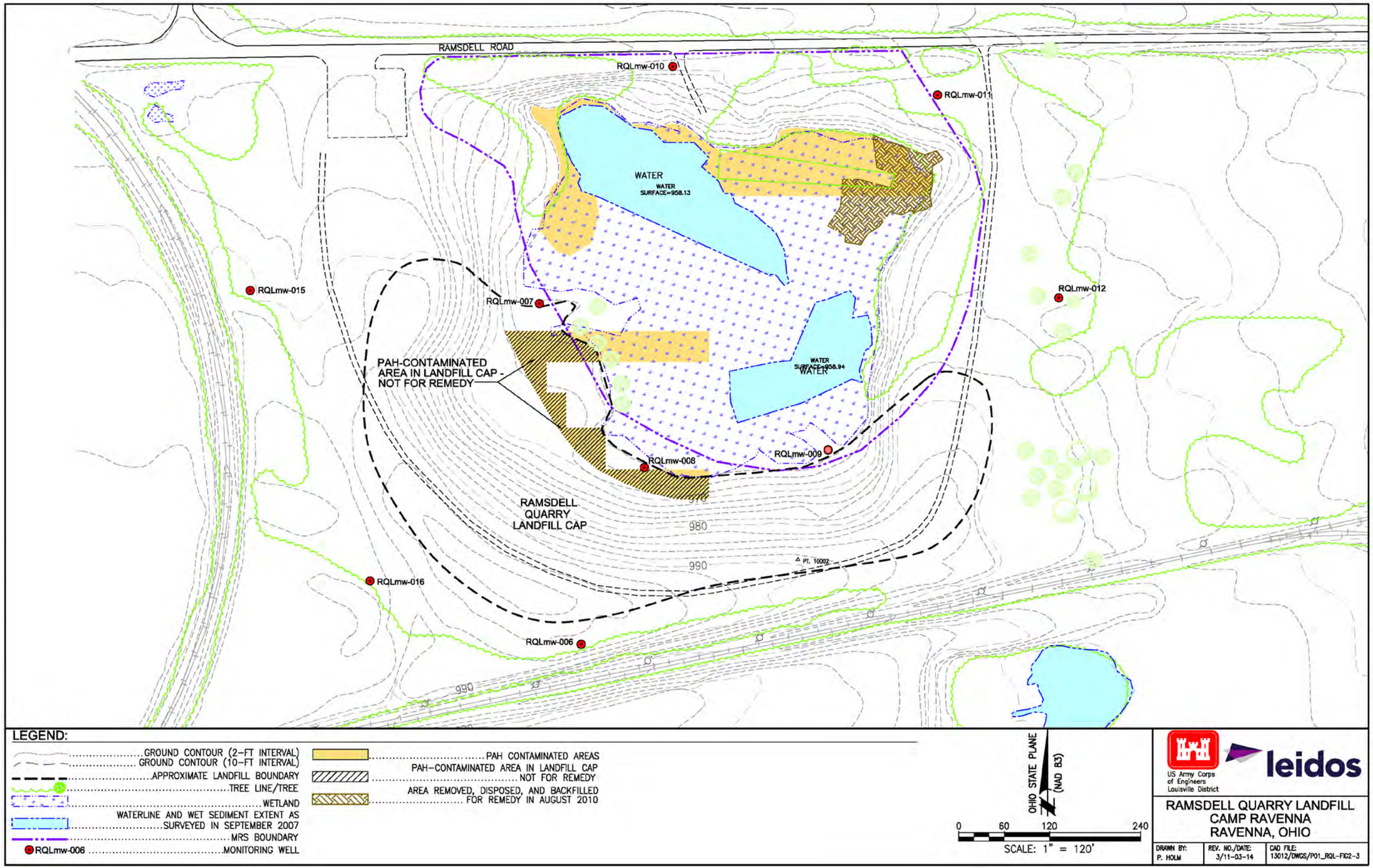

Figure 3-1. Ramsdell Quarry Landfill Site Features and Soil Removal Extents

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APPENDIX F

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

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Table F-1 – ARAR Evaluation RVAAP-01 Ramsdell Quarry Landfill

Authority	Requirement Summary	Details	Citation	Type	Analysis
Soil Contaminated with RCRA Hazardous Waste	These rules prohibit land disposal of RCRA hazardous wastes 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 contaminated soil prior to disposal are set forth in the two cited rules. Use of the greater of either technology-based standards or UTS is prescribed.	All soils 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 metal 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 10xUTS."	OAC Section 3745-400-49 OAC Section 3745-400-48 UTS	Action-Specific ARAR	Authority and Citations are no longer in effect.
Debris Contaminated with RCRA Hazardous Waste	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.	Standards are extraction or destruction methods prescribed in OAC Section 3745-400-47. Treatment residues continue to be subject to RCRA hazardous waste requirements.	OAC Section 3745-400-49 OAC Section 3745-400-47	Action-Specific ARAR	Authority and Citations are no longer in effect.
Soils/Debris Contaminated with RCRA Hazardous Waste – Variance	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.	OAC Section 3745-400-44	Action-Specific ARAR	Authority and Citation is no longer in effect.
Soils Disposed of in a CAMU	Only CAMU-eligible waste can be disposed of in a CAMU. CAMU-eligible waste includes hazardous and non-hazardous waste that are managed for implementing clean-up, depending on the Director's approval or prohibition of specific wastes or waste streams. Use of a CAMU for disposal does not trigger LDRs or MTRs as long as the standards specified in the rule are observed. The Director will incorporate design and treatment standards into a permit or order.	Design standards include a composite liner and a leachate collection system that is designed and constructed to maintain less than a thirty centimeter depth of leachate over the liner. A composite liner means a system consisting of two components; each of which has detailed specifications and installation requirements. The Director may approve alternate requirements if he can make the findings specified in the rule. Treatment standards are similar to LDR standards for contaminated soil, although alternative and adjusted standards may be approved or required by the Director, as long as the adjusted standard is protective of human health and the environment. Treatment standards are de facto clean-up standards for wastes disposed of in a CAMU.	OAC Section 3745-57-53	Action-Specific ARAR	Authority and Citation is no longer in effect. This requirement is covered under the following authority and citation: Corrective action management units (CAMUs) OAC 3745-57-72. .
Clean Water Act	Section 404 of the Clean Water Act of 1977 governs the discharge of dredged and fill material into waters of the U.S., including adjacent wetlands.	The wetland in question is hydrologically isolated and incidentally created. It has no direct surface water connections to any waters of the U. S. The USACE would have to make a jurisdictional determination regarding the wetland's status under Section 404 of the CWA. Both EPA and USACE have jurisdiction over wetlands. EPA's Section 404 guidelines are promulgated in 40 CFR § 230; USACE guidelines are promulgated in 33 CFR § 320.	33 USC § 1344 Sections 401, 404	Action-Specific ARAR	No changes to substantive requirements.

Table F-1 – ARAR Evaluation RVAAP-01 Ramsdell Quarry Landfill

Authority	Requirement Summary	Details	Citation	Type	Analysis
Executive Order 11990 Protection of Wetlands	EO 11990 requires that federal agencies minimize the destruction, loss, or degradation of wetlands; preserve and enhance the natural and beneficial value of wetlands,; and avoid support of new construction in wetlands if a practicable alternative exists.	EO 11990 requirements were addressed through the CERCLA evaluation of alternative actions for remediation.		Location-Specific	No changes to substantive requirements.
Wetland Antidegradation	These rules prescribe the steps to categorize the existing wetland and outline the procedures for the antidegradation of wetlands.	The wetland in question was rated as a Category 1 through the ORAM as prescribed by Ohio EPA. A category 1 wetland generally supports minimal wildlife habitat, hydrologic, and recreational functions. The impact as a result of excavation would not result in significant degradation to the aquatic ecosystem - as determined consistent with 40 CFR part 230.10(2). The results of the action would result in better water quality. Ohio EPA could require mitigation for loss of wetland habitat.	OAC Section 3745-1-54	Location-Specific	No changes to substantive requirements.

ARAR = Applicable and relevant or appropriate requirements.
CAMU = Corrective Action Management Unit
LDR = Land Disposal Restrictions
MTR = Minimum technical requirements
OAC = Ohio Administrative Code
RCRA = Resource Conservation and Recovery Act
TCLP = Toxicity characteristic leaching procedure
UHC = Underlying Hazardous Constituent
UTS = Universal Treatment Standard

Table F-2 – ARAR Evaluation RVAAP-05 Winklepeck Burning Grounds

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Surface Waters and Wetlands	All waters of the state shall be free of suspended solids, floating debris, oil, scum, or toxic substances from human activity that create a nuisance, cause degradation, or adversely affect aquatic life. There may be no degradation of water quality that results in violation of the applicable water quality criteria or the impairment of existing uses. Wetlands designated uses shall be maintained and protected such that degradation through direct, indirect, or cumulative impacts do not result in wetland loss or function.	Applicable to activities at WBG that may impact waters of the state (connected drainageways) or wetlands, including isolated wetlands.	OAC 3745-1-04 OAC 3745-1-51 OAC 3745-1-54(B)(1)	Location-specific ARAR	No changes to substantive requirements.
Activities Causing Fugitive Dust Emissions	Persons engaged in construction activities shall take reasonable precautions to prevent particulate matter from becoming airborne; reasonable precautions include, but are not limited to, the following: – the use of water or chemicals for control of dust during construction operations or clearing of land; and – the application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces, which can create airborne dusts. No person shall cause, or allow, fugitive dust to be emitted in such a manner that visible emissions are produced beyond the property line. Monitoring may be employed to determine the effectiveness of dust emission controls.	Applicable to fugitive emissions from demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land. Applicable to pre-construction clearing activities and soil excavation activities.	OAC 3745-17-08(B)	Action-specific ARAR	No changes to substantive requirements.
Construction Activities Causing Storm Water Run-off (e.g., clearing, grading, and excavation)	Construction activities disturbing more than 1 acre must develop and implement a stormwater pollution prevention plan incorporating best management practices (including sediment and erosion controls, vegetative controls, and structural controls) in accordance with the requirements of the Ohio EPA General Permit for Construction Activities (Permit ORC 000002).	Applicable to stormwater discharges from land disturbances from a construction activity involving more than 1 acre.	40 CFR 122.26 OAC 3745-38-06	Action-specific ARAR	Authority and Citation (OAC 3745-38-06) is no longer in effect. This requirement is covered under the following authority and citation: Stormwater permits general and individual OAC 901:10-3-11 . No changes to substantive requirements for 40 CFR 122.26.
Generation and Characterization of Solid Waste (all primary and secondary wastes)	The generator must determine if the material is a solid waste, as defined in 40 CFR 261.2 and 40 CFR 261.4(a). If the material is a solid waste, the generator must determine if the solid waste is a hazardous waste by: • determining if the waste is listed under 40 CFR Part 261; or • determining if the waste exhibits characteristics by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used; and • determining if the waste is excluded under 40 CFR Parts 261, 262, 266, 268, and 273.	Applicable to generation of a solid waste as defined in 40 CFR 261.2 and that is not excluded under 40 CFR 261.4(a).	40 CFR 262.11(a)(b)(c) OAC 3745-52-11(A)(B)(C)(D)	Action-specific ARAR	No changes to substantive requirements.
		Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Process history indicates that soil may have been contaminated with K047 (pink/red water) from RVAAP operations. Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Site data indicate that soil contains metals at concentrations that exceed 20 times the toxicity characteristic limit and may exhibit the characteristics D008. Applicable to generation of decontamination wastewater.	40 CFR 262.11(a)(b)(c) OAC 3745-52-11(A)(B)(C)(D)	Action-specific ARAR	No changes to substantive requirements.
	The generator must determine if the waste is restricted from land disposal under 40 CFR 268 et seq. by testing in accordance with prescribed methods or use of generator knowledge of waste.	Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Applicable to generation of decontamination wastewater.	40 CFR 268.7 OAC 3745-270-07	Action-specific ARAR	No changes to substantive requirements.

Table F-2 – ARAR Evaluation RVAAP-05 Winklepeck Burning Grounds

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Generation and Characterization of Solid Waste (all primary and secondary wastes) (cont'd)	The generator must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 CFR 268.40, Subpart D.	Applicable to the generation and characterization of hazardous-contaminated soil and hazardous debris resulting from excavation. Applicable to generation of decontamination wastewater.	40 CFR 268.9(a) OAC 3745-270-07 OAC 3745-270-09	Action-specific ARAR	No changes to substantive requirements.
	The generator must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the waste.	Applicable to the generation and characterization of RCRA characteristic hazardous waste (except D001 nonwastewaters treated by combustion, recovery of organics, or polymerization. see 268.42, Table I) and to hazardous-contaminated soil for their subsequent storage, treatment, or disposal.	40 CFR 268.9(a) OAC 3745-270-09	Action-specific ARAR	No changes to substantive requirements.
Accumulation of Hazardous Debris from Excavation and Screening (it is assumed that any debris resulting from excavation and screening will be accumulated for less than 90 days)	A generator may accumulate for up to 90 days or conduct treatment of hazardous wastes in containers without an Ohio EPA permit. Generators that accumulate for 90 days or conduct on-site treatment of hazardous waste in containers must comply with the personnel training, preparedness and prevention requirements, and contingency plan requirements of 40 CFR 265.16; 40 CFR 265, Subpart C; and 40 CFR 265, Subpart D, respectively. Personal training and contingency plan requirements would appear to be administrative in nature. Arguably, some of the components/goals of the contingency plan such as: (1) to minimize the hazards to human health or environment from fire, explosion, or sudden release of hazardous waste or hazardous constituents; or (2) presence of an emergency coordinator on-site, could be viewed as substantive. If determined to be substantive, these provisions should be cited as ARAR; however, the plans, details, or implementation steps should be included in the CERCLA documentation for the site (i.e., remedial design documents).	Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.	40 CFR 262.34(a)(4) OAC 3745-52-34(A)(4) OAC 3745-66-70 to 66-77	Action-specific ARAR	Authority and Citation (OAC 3745-52-34) is no longer in effect. No changes to substantive requirements for 40 CFR 262.34(a)(4) and OAC 3745-66-70 to 66- 77.
	Containers must be marked with the date upon which period of accumulation began and with the words “Hazardous Waste.”	Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.	40 CFR 262.34 (a)(2)(3) OAC 3745-52-34 (A)(2)(3)	Action-specific ARAR	Authority and Citation (OAC 3745-52-34) is no longer in effect. No changes to substantive requirements for 40 CFR 262.34 (a)(2)(3).
	Containers holding hazardous wastes must be kept closed except to add or remove wastes and must not be managed in a manner that would cause them to leak. Containers of hazardous waste must be maintained in good condition and comparable with the waste stored therein. Containers holding ignitable or reactive wastes must be separated from potential ignition sources and located 50 ft from the property boundary.	Applicable to 90-day accumulation of debris from excavation and screening if such debris contains listed wastes or exhibits a characteristic.	40 CFR 264.171 40 CFR 264.172 40 CFR 264.173 40 CFR 264.176 40 CFR 264.17 OAC 3745-52-34(A)(1)	Action-specific ARAR	Authority and Citation (OAC 3745-52-34) is no longer in effect. No changes to substantive requirements for 40 CFR 264.17, 40 CFR 264.171, 40 CFR 264.172, 40 CFR 264.173, and 40 CFR 264.176.

Table F-2 – ARAR Evaluation RVAAP-05 Winklepeck Burning Grounds

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Placement of Hazardous-contaminated Soil in a Staging Pile	In 1988, EPA created a new unit for the temporary management of remediation waste known as a staging pile. The staging pile is an accumulation of solid, nonflowing remediation wastes that may be used for storage of those wastes for 2 years. The requirements for staging piles include the performance criteria of 40 CFR 264.554(d). These standards require that: – the staging pile must be designed to prevent or minimize releases of hazardous waste or hazardous constituents into the environment, and – the staging pile must be designed to minimize cross-media transfer as necessary to protect human health and the environment (by using liners, runoff/run-on controls as appropriate). The staging pile requirements also contain closure requirements (separate provisions for staging piles located in previously contaminated areas and those located in previously uncontaminated areas).	Applicable to storage of hazardous-contaminated soil in staging piles. Potentially relevant and appropriate if excavated soil are determined to not contain listed wastes or exhibit the toxicity characteristics of soil.	40 CFR 264.554 OAC 3745-57-74	Action-specific ARAR	No changes to substantive requirements.
Generation and Storage of Wastewater from Equipment Decontamination (wastewater may contain listed wastes or exhibit a hazardous waste characteristic)	The generator must determine if the wastewater contains listed wastes or exhibits a characteristic, and must characterize the pollutants sufficiently to meet the waste acceptance criteria of the receiving facility. See previous requirements concerning the generation/characteristic of solid wastes.	Applicable to generation of wastewater from equipment decontamination.	40 CFR 262.11 OAC 3745-52-11 (A)(B)(C)(D)	Action-specific ARAR	No changes to substantive requirements.
Asbestos-Containing Materials at Pad 70 (worker training, material handling, containerization, transport and disposal)	The management of Asbestos Containing Materials (ACM) is subject to the technical requirements found at 40 CFR 61.145 and OAC 3745-20. These standards require: • That prior to the management of any asbestos material at least one trained person be present at all times that is trained in accordance with OAC3745-20-5.• That no visible dust emissions occur during activities and that sufficient asbestos control measures (e.g., wetting, fixing, etc.) be included within the activities to prevent fugitive emissions of asbestos particles. • That asbestos wastes be controlled at all times (e.g., adequately wetted/fixed, work controls preclude the potential of rendering non-friable asbestos airborne, etc.). • The emission control measures be included within the planned actions and be approved prior to implementation. • Wastes be properly marked and disposed of at an approved facility. The technical or substantive requirements will govern the manner in which ACM are removed, managed, packaged, and shipped for final disposal.	Applicable for asbestos-containing material generated from remedial actions at Pad 70.	40 CFR 61.145 OAC 3745-20	Action-specific ARAR	No changes to substantive requirements.

ARAR = Applicable or relevant and appropriate requirement
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
COC = Chemical of concern
EPA = U. S. Environmental Protection Agency
OAC = Ohio Administrative Code
Ohio EPA = Ohio Environmental Protection Agency
ORC = Ohio Revised Code
PCB = Polychlorinated biphenyl
RCRA = Resource Conservation and Recovery Act
RVAAP = Ravenna Army Ammunition Plant
TSCA = Toxic Substances Control Act
WBG = Winklepeck Burning Grounds

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Table F-3 – ARAR Evaluation RVAAP-08 to RVAAP-12
Load Lines 1 - 4 and 12

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Air Pollution Nuisances Prohibited	These rules prohibit releasing nuisance air pollution that endangers health, safety, or welfare of the public or cause personal injury or property damage.	Any person undertaking an activity is prohibited from emitting nuisance air pollution.	OAC Section 3745-15-07	Action-specific ARAR	No changes to substantive requirements.
Construction and Development Point Source Category	These rules require that storm water controls be employed at construction sites that exceed 1 acre.	Persons undertaking construction activities (including grubbing and land clearing) at an AOC where the construction footprint is more than 1 acre must design and implement erosion and runoff controls.	40 CFR Part 450	Action-specific ARAR	No changes to substantive requirements.
Hazardous Waste Determination and Recordkeeping	These rules require that a generator determine whether a material generated is a hazardous waste.	Any person that generates a waste as defined must use prescribed methods to determine if waste is considered characteristically hazardous using the prescribed methods.	OAC Section 3745-52-11	Action-specific ARAR	No changes to substantive requirements.
Staging Piles	These rules require hazardous wastes to be staged in a pile that is designed to facilitate a reliable, effective, and protective remedy; and be designed to prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer as necessary to protect human health and the environment (e.g., use of liners, covers, runoff/run-on controls as appropriate).	In setting the standards and design criteria, the director must consider the following factors: • Length of time pile will be in operation; • Volumes of waste you intend to store in the pile; • Physical and chemical characteristics of the wastes to be stored in the unit; • Potential for releases from the unit; • Hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and • Potential for human and environmental exposure to potential releases from the unit. At closure, a staging pile must be closed by removing or decontaminating all remediation waste, contaminated containment system components, and structures and equipment contaminated with waste and leachate. Any contaminated subsoil in a previously contaminated area must be decontaminated in a manner the director determines will protect human health and the environment. In uncontaminated areas, contaminated subsoil must be decontaminated or removed. If they cannot be practicably removed, post closure care must be provided.	OAC Section 3745-57-74	Action-specific ARAR	No changes to substantive requirements.
Generator Standards: Packaging, Labeling, Marking, and Placarding	These rules require that hazardous waste be properly packaged, labeled, marked, and accumulated on site pending on-or off-site disposal.	All hazardous waste must be accumulated in a compliant manner that includes proper marking, labeling, and packaging in accordance with the specified regulations. This includes inspecting containers or container areas where hazardous waste is accumulated on site.	OAC Sections 3745-52-30 through 3745-52-34	Action-specific ARAR	Authority and Citation (OAC 3745-52-34) is no longer in effect.
Alternative Land Disposal Restriction Treatment Standards for Contaminated Soil and Universal Treatment Standards	These rules prohibit land disposal of RCRA hazardous wastes subject to them, unless the waste is treated to meet certain standards that are protective of human health and the environment. Standards for treating hazardous waste-contaminated soil prior to disposal are set forth in the two cited rules. Using the greater of either technology-based standards or UTS is prescribed.	All soil subject to treatment must be treated as follows: (1) For non-metals except carbon disulfide, cyclohexanone, and methanol, 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 UHC), subject to item 3 below. (2) For the inorganic chemicals 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 item 3 below. (3) When treating any constituent subject to achieve 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.”	OAC Section 3745-270-49 OAC Section 3745-270-48 UTS	Action-specific ARAR	No changes to substantive requirements.
Variance from a Treatment Standard	The Ohio EPA Director will recognize a variance approved by USEPA from the alternative treatment standards for hazardous contaminated soil or for hazardous debris.	A site-specific variance from the soil treatment standards that can be used when treatment to concentrations of hazardous constituents higher than those specified in the soil treatment standards and 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.	OAC Section 3745-270-44	Action-specific ARAR	No changes to substantive requirements.
Environmental Performance Standards - Miscellaneous Units	These standards address the management and treatment of hazardous wastes when such activities do not fall under the descriptions or prerequisites of other hazardous waste units covered in the regulations.	Unit must be located, designed, constructed, operated and maintained, and closed in a manner that will ensure protection of human health and the environment. Protection of human health and the environment includes, but is not limited to, prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air, considering the factors listed in OAC Section 3745-57-91.	OAC Section 3745-57-91	Action-specific ARAR	No changes to substantive requirements.

Table F-3 – ARAR Evaluation RVAAP-08 to RVAAP-12
Load Lines 1 - 4 and 12

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Rules for Inspection and Licensing of Solid Waste Facilities	Ohio considers the soil that will be excavated and treated to be a solid waste. The transportation, temporary storage, and treatment of the soil are not directly regulated; however, the treated soil is still considered a solid waste after treatment and its ultimate disposal is regulated by our Division of Materials and Waste Management Solid Waste program. An exemption in this case, would exempt the treated soil from solid waste disposal and closure requirements, thus allowing its unrestricted use or placement on the facility.	The director, by order, may exempt any person generating, collecting, storing, treating, disposing of, or transporting solid wastes, in such quantities or under such circumstances that, in the determination of the director, are unlikely to adversely affect the public health or safety or the environment from any solid waste requirement.	ORC 3734.02	Action-specific ARAR	No changes to substantive requirements.

AOC = Area of Concern
ARAR = Applicable or Relevant and Appropriate Requirement
CFR = Code of Federal Regulations
LDR = Land Disposal Restriction
OAC = Ohio Administrative Code
Ohio EPA = Ohio Environmental Protection Agency
RCRA = Resource Conservation and Recovery Act
TCLP = Toxicity Characteristic Leaching Procedure
UHC = Underlying Hazardous Constituent
USEPA = U.S. Environmental Protection Agency
UTS = Universal Treatment Standards

Table F-4 – ARAR Evaluation RVAAP-51 Dump Along Paris-Windham Road

Authority	Requirement Summary	Details	Citation(s)	Type	Analysis
Standard for Inactive Asbestos Waste Disposal Sites	These rules require that inactive asbestos disposal sites be covered and posted to ensure access to ACM is controlled. In addition, these rules require that no visible emissions be allowed from the AOC.	An inactive asbestos disposal site must be covered by 6 inches of compacted soil with a vegetated cover or 2 ft of compacted soil. In addition, the AOC must be posted as having ACM present and most have access control to ensure exposure to asbestos does not occur.	OAC 3745-20-07	Location-specific ARAR	No changes to substantive requirements.
Post-Closure Care for Sanitary Landfill Facilities	These rules specify the required post-closure care activities required for solid waste facilities, including existing facilities.	Required inspection and maintenance of the cover. Additional provisions are not considered ARARs, as the debris disposed at the AOC does not generarte methane gas or leachate.	OAC 3745-27-14	Action-specific ARAR	No changes to substantive requirements.

ACM = Asbestos-containing Material

AOC = Area of Concern

ARAR = Applicable or Relevant and Appropriate Requirement

OAC = Ohio Administrative Code

RCRA = Resource Conservation and Recovery Act

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APPENDIX G

RISK EVALUATIONS

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Table G-1 RVAAP-01 Soil Cleanup Goal Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	ROD		Third Five-Year Review Evaluation					
COC	**Soil Clean-up Goal (mg/kg)**	**Soil Clean-up Goal Basis**	**EPA Soil Industrial Cancer RSL (mg/kg)**	**EPA Soil Industrial Noncancer RSL (mg/kg)**	**Soil Clean-up Goal Cancer Risk[1]**	**Soil Clean-up Goal Adult HQ[2]**	**Potential Change in Risk?**	**Conclusions**
Benz[a]anthracene	13	TCR = 10^{-5} THQ = 1	206	-	6.E-07	N/A	No	Clean-up goal risk is acceptable.
Benzo[a]pyrene	1.3	TCR = 10^{-5} THQ = 1	21	222	6.2E-07	0.006	No	Clean-up goal risk is acceptable.
Benzo[b]fluoranthene	13	TCR = 10^{-5} THQ = 1	211	-	6.E-07	N/A	No	Clean-up goal risk is acceptable.
Dibenz[a,h]anthracene	1.3	TCR = 10^{-5} THQ = 1	21	-	6.2E-07	N/A	No	Clean-up goal risk is acceptable.
Indeno[1,2,3-cd]pyrene	13	TCR = 10^{-5} THQ = 1	211	-	6.E-07	N/A	No	Clean-up goal risk is acceptable.

Notes:

RSLs have a TCR of 10-5 and a THQ of 1.

Risk evaluations are performed per the DERP Manual requirements and use EPA Industrial RSLs (May 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.

[1]Soil Clean-up Goal Cancer Risk = (Soil Clean-up Goal / EPA Soil Industrial Cancer RSL) * TCR

[2]Soil Clean-up Goal Adult HQ = (Soil Clean-up Goal / EPA Soil Industrial Noncancer RSL) * THQ

COC = Contaminant of Concern

HQ = Hazard Quotient

mg/kg = milligram/kilogram

ROD = Record of Decision

RSL = Regional Screening Level (Environmental Protection Agency)

TCR = Target Cancer Risk

THQ = Target Hazard Quotient

Table G-2 RVAAP-05 Soil Regional Screening Level Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	ROD		Third Five-Year Review Evaluation					
COC	**Industrial Soil RSL (mg/kg)**	**Industrial Soil RSL Basis**	**EPA Industrial Soil Cancer RSL (mg/kg)**	**EPA Industrial Soil Noncancer RSL (mg/kg)**	**Industrial Soil RSL Cancer Risk[1]**	**Industrial Soil RSL Adult HQ[2]**	**Potential Change in Risk?**	**Conclusions**
Benz[a]anthracene	21	TCR = 10^{-5} THQ = 1	206	-	1.E-06	N/A	No	Industrial RSL risk is acceptable.
Benzo[a]pyrene	2.1	TCR = 10^{-5} THQ = 1	21	222	1.0E-06	0.009	No	Industrial RSL risk is acceptable.
Benzo[b]fluoranthene	21	TCR = 10^{-5} THQ = 1	211	-	1.E-06	N/A	No	Industrial RSL risk is acceptable.
Dibenz[a,h]anthracene	2.1	TCR = 10^{-5} THQ = 1	21	-	1.0E-06	N/A	No	Industrial RSL risk is acceptable.
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	240	TCR = 10^{-5} THQ = 1	384	4390	6.E-06	0.05	No	Industrial RSL risk is acceptable.
2,4,6-Trinitrotoluene	420	TCR = 10^{-5} THQ = 1	960	514	4.E-06	1	No	Industrial RSL risk is acceptable.

Notes:

RSLs have a TCR of 10-5 and a THQ of 1.

Risk evaluations are performed per the DERP Manual requirements and use EPA Industrial RSLs (May 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.

[1] Industrial Soil RSL Cancer Risk = (Industrial Soil RSL / EPA Industrial Soil Cancer RSL) * TCR

[2] Industrial Soil RSL Adult HQ = (Industrial Soil RSL / EPA Industrial Soil Noncancer RSL) * THQ

COC = Contaminant of Concern

HQ = Hazard Quotient

mg/kg = milligram/kilogram

N/A = Not Applicable

ROD = Record of Decision

RSL = Regional Screening Level (Environmental Protection Agency)

TCR = Target Cancer Risk

Table G-3 RVAAP-08 Soil Remedial Goal Option Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	Industrial RGO							
	2019 ROD Amendment		Third Five-Year Review Evaluation					
COC	Soil Industrial RGO (mg/kg)	Soil Industrial RGO Basis	EPA Soil Industrial Cancer RSL (mg/kg)	EPA Soil Industrial Noncancer RSL (mg/kg)	Soil Industrial RGO Cancer Risk[1]	Soil Industrial RGO Adult HQ[2]	Potential Change in Risk?	Conclusions
Antimony	470	TCR = 10^{-5} THQ = 1	-	467	N/A	1	No	Industrial RGO risk is acceptable.
Lead[3]	800	TCR = 10^{-5} THQ = 1	-	-	N/A	N/A	No	Industrial RGO risk is acceptable.
Trinitrotoluene, 2,4,6	510	TCR = 10^{-5} THQ = 1	960	514	5.E-06	1	No	Industrial RGO risk is acceptable.
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	280	TCR = 10^{-5} THQ = 1	384	4390	7.E-06	1	No	Industrial RGO risk is acceptable.
Benz[a]anthracene	29	TCR = 10^{-5} THQ = 1	206	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Benzo[a]pyrene	2.9	TCR = 10^{-5} THQ = 1	21	222	1.4E-06	0.001	No	Industrial RGO risk is acceptable.
Benzo[b]fluoranthene	29	TCR = 10^{-5} THQ = 1	211	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Aroclor 1254	9.7	TCR = 10^{-5} THQ = 1	9.7	15	1.0E-05	0.660	No	Industrial RGO risk is acceptable.

Notes:
RSLs have a TCR of 10-5 and a THQ of 1.
Risk evaluations are performed per the DERP Manual requirements and use current EPA Industrial RSLs (May, 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.
[1]Soil Industrial RGO Cancer Risk = (Soil Industrial RGO / EPA Soil Industrial Cancer RSL) * TCR
[2]Soil Industrial RGO Adult HQ = (Soil Industrial RGO / EPA Soil Industrial Noncancer RSL) * THQ
[3]The lead RSL is based on blood lead modeling. No cancer or non-cancer risk calculations can be performed.
COC = Contaminant of Concern
HQ = Hazard Quotient
mg/kg = milligram/kilogram
N/A = Not Applicable
ROD = Record of Decision
RSL = Regional Screening Level (Environmental Protection Agency)
TCR = Target Cancer Risk
THQ = Target Hazard Quotient

Table G-4 RVAAP-09 Soil Remedial Goal Option Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	Industrial RGO							
	2019 ROD Amendment		Third Five-Year Review Evaluation					
Trinitrotoluene, 2,4,6-	510	TCR = 10^{-5} THQ = 1	960	514	5.E-06	1	No	Industrial RGO risk is acceptable.

Notes:

RSLs have a TCR of 10^{-5} and a THQ of 1.

Risk evaluations are performed per the DERP Manual requirements and use current EPA Industrial RSLs (May, 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.

[1]Soil Industrial RGO Cancer Risk = (Soil Industrial RGO / EPA Soil Industrial Cancer RSL) * TCR

[2]Soil Industrial RGO Adult HQ = (Soil Industrial RGO / EPA Soil Industrial Noncancer RSL) * THQ

COC = Contaminant of Concern
HQ = Hazard Quotient
mg/kg = milligram/kilogram
N/A = Not Applicable
ROD = Record of Decision
RSL = Regional Screening Level (Environmental Protection Agency)
TCR = Target Cancer Risk

Table G-5 RVAAP-10 Soil Remedial Goal Option Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

COC	Soil Industrial RGO (mg/kg)	Soil Industrial RGO Basis	EPA Soil Industrial Cancer RSL (mg/kg)	EPA Soil Industrial Noncancer RSL (mg/kg)	Soil Industrial RGO Cancer Risk[1]	Soil Industrial RGO Adult HQ[2]	Potential Change in Risk?	Conclusions
Aroclor 1254	9.7	TCR = 10^{-5} THQ = 1	9.7	15	N/A	0.65	No	Industrial RGO risk is acceptable.
Benz[a]anthracene	29	TCR = 10^{-5} THQ = 1	206	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Benzo[a]pyrene	2.9	TCR = 10^{-5} THQ = 1	21	222	1.4E-06	0.013	No	Industrial RGO risk is acceptable.
Benzo[b]fluoranthene	29	TCR = 10^{-5} THQ = 1	211	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Dibenz[a,h]anthracene	2.9	TCR = 10^{-5} THQ = 1	21	-	1.4E-06	N/A	No	Industrial RGO risk is acceptable.
Trinitrotoluene, 2,4,6-	510	TCR = 10^{-5} THQ = 1	960	514	5.E-06	1	No	Industrial RGO risk is acceptable.

Notes:
RSLs have a TCR of 10^{-5} and a THQ of 1.
Risk evaluations are performed per the DERP Manual requirements and use current EPA Industrial RSLs (May, 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.
[1]Soil Industrial RGO Cancer Risk = (Soil Industrial RGO / EPA Soil Industrial Cancer RSL) * TCR
[2]Soil Industrial RGO Adult HQ = (Soil Industrial RGO / EPA Soil Industrial Noncancer RSL) * THQ
COC = Contaminant of Concern
HQ = Hazard Quotient
mg/kg = milligram/kilogram
N/A = Not Applicable
ROD = Record of Decision
RSL = Regional Screening Level (Environmental Protection Agency)
TCR = Target Cancer Risk

Table G-6 RVAAP-11 Soil Remedial Goal Option Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	Industrial RGO							
	2019 ROD Amendment		Third Five-Year Review Evaluation					
COC	Soil Industrial RGO (mg/kg)	Soil Industrial RGO Basis	EPA Soil Industrial Cancer RSL (mg/kg)	EPA Soil Industrial Noncancer RSL (mg/kg)	Soil Industrial RGO Cancer Risk[1]	Soil Industrial RGO Adult HQ[2]	Potential Change in Risk?	Conclusions
Aroclor 1260	9.9	TCR = 10^{-5} THQ = 1	10	-	1.E-05	N/A	No	Industrial RGO risk is acceptable.
Benz[a]anthracene	29	TCR = 10^{-5} THQ = 1	206	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Benzo[a]pyrene	2.9	TCR = 10^{-5} THQ = 1	21	222	1.4E-06	0.013	No	Industrial RGO risk is acceptable.
Benzo[b]fluoranthene	29	TCR = 10^{-5} THQ = 1	211	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Dibenz[a,h]anthracene	2.9	TCR = 10^{-5} THQ = 1	21	-	1.4E-06	N/A	No	Industrial RGO risk is acceptable.
Lead[3]	800	TCR = 10^{-5} THQ = 1	-	-	N/A	N/A	No	Industrial RGO risk is acceptable.

Notes:

RSLs have a TCR of 10^{-5} and a THQ of 1.

Risk evaluations are performed per the DERP Manual requirements and use current EPA Industrial RSLs (May, 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.

[1]Soil Industrial RGO Cancer Risk = (Soil Industrial RGO / EPA Soil Industrial Cancer RSL) * TCR

[2]Soil Industrial RGO Adult HQ = (Soil Industrial RGO / EPA Soil Industrial Noncancer RSL) * THQ

[3]The lead RSL is based on blood lead modeling. No cancer or non-cancer risk calculations can be performed.

COC = Contaminant of Concern
HQ = Hazard Quotient
mg/kg = milligram/kilogram
N/A = Not Applicable
ROD = Record of Decision
RSL = Regional Screening Level (Environmental Protection Agency)
TCR = Target Cancer Risk

Table G-7 RVAAP-12 Soil Remedial Goal Option Evaluation
Third Five-Year Review
Camp James A. Garfield Joint Military Training Center

	Industrial RGO							
	2019 ROD Amendment		Third Five-Year Review Evaluation					
COC	Soil Industrial RGO (mg/kg)	Soil Industrial RGO Basis	EPA Soil Industrial Cancer RSL (mg/kg)	EPA Soil Industrial Noncancer RSL (mg/kg)	Soil Industrial RGO Cancer Risk[1]	Soil Industrial RGO Adult HQ[2]	Potential Change in Risk?	Conclusions
Trinitrotoluene, 2,4,6-	510	TCR = 10^{-5} THQ = 1	960	514	5.E-06	1	No	Industrial RGO risk is acceptable.
Dinitrotoluene Mixture, 2,4/2,6-	15	TCR = 10^{-5} THQ = 1	34	-	4.E-06	N/A	No	Industrial RGO risk is acceptable.
Benz[a]anthracene	29	TCR = 10^{-5} THQ = 1	206	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Benzo[a]pyrene	2.9	TCR = 10^{-5} THQ = 1	21	222	1.4E-06	0.013	No	Industrial RGO risk is acceptable.
Benzo[b]fluoranthene	29	TCR = 10^{-5} THQ = 1	211	-	1.E-06	N/A	No	Industrial RGO risk is acceptable.
Dibenz[a,h]anthracene	2.9	TCR = 10^{-5} THQ = 1	21	-	1.4E-06	N/A	No	Industrial RGO risk is acceptable.

Notes:
RSLs have a TCR of 10^{-5} and a THQ of 1.
Risk evaluations are performed per the DERP Manual requirements and use current EPA Industrial RSLs (May, 2021). DERP Manual Encl.3, Section 4.b.(5)(a)3.e specifies that IRIS toxicity values are preferred, and if not available then (in order of preference) EPA provisional peer-reviewed toxicity values, or other EPA and non-EPA toxicity information sources may be used.
[1]Soil Industrial RGO Cancer Risk = (Soil Industrial RGO / EPA Soil Industrial Cancer RSL) * TCR
[2]Soil Industrial RGO Adult HQ = (Soil Industrial RGO / EPA Soil Industrial Noncancer RSL) * THQ
COC = Contaminant of Concern
HQ = Hazard Quotient
mg/kg = milligram/kilogram
N/A = Not Applicable
ROD = Record of Decision
RSL = Regional Screening Level (Environmental Protection Agency)
TCR = Target Cancer Risk

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APPENDIX H

REGULATOR COMMENTS

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

Received June 28, 2022

June 28, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak
Restoration Program Manager
ARNG-ILE Clean up
Camp James A. Garfield JTC
1438 State Route 534
Newton Falls, OH 44444

RE: US Army Ravenna Ammunition
Plt RVAAP
Remediation Response
Project records
Federal Facilities
Five-Year Review
Portage County
267000859274

Subject: Draft Final Third Five-Year Review Report, Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio – Received April 2022 - Ohio EPA Comments

Dear Mr. Sedlak:

On April 29, 2022, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) received the "Draft Final Third Five-Year Review Report" (FYR) for the Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio. This FYR was prepared by the United States Army Corps of Engineers, Louisville District and Dawson Solutions, LLC for the United States Army Environmental Command, Fort Sam Houston, Texas. Below are the Agency's comments and requests for action.

A. COMMENTS

1. Protectiveness:

   The remedy at Load Lines 1 – 4 and 12 is said throughout the document to be "protective" of human health and the environment, or "will be" protective.

Action Item: Please identify if the remedy is protective or not, and verify the protectiveness statement is consistent throughout the document.

2. 2007 Record of Decision (ROD) for Open Demolition Area #2 (ODA2) Soil and Dry Sediment:

Ohio EPA noted the Areas of Concern (AOC) addressing soil and dry sediment covered under the 2007 ROD included the following language, "The Army was to address land use controls for ODA2 under the Military Munitions Response Program (MMRP), as part of future response actions for Munitions and Explosives of Concern (MEC). The Army was to maintain current interim use restrictions at ODA2 until such time that final actions are completed under the MMRP."

Action Item: The referenced 2007 ROD was completed under the Installation Restoration Program (IRP) authority and scope of work. Due to the remaining presence of potential Munitions Potentially Presenting and Explosive Hazard (MPPEH) and corresponding Munitions Constituents (MC), Ohio EPA requests that ODA2 be included in the FYR to verify the current interim use restrictions at ODA2 are being implemented to maintain protectiveness and provide reference to how the interim use restrictions are being maintained.

3. Figure 8:

   Figure 8 appears to be titled incorrectly as RVAAP-12, Load Line 4.

Action Item: Please edit the title accordingly.

4. Perimeter Fencing:

   The text states, "The Camp James A. Garfield (CJAG) perimeter fence is still a Land Use Control (LUC) for RVAAP-12 Load Line 12 (LL-12) and is inspected annually and an annual report prepared by Chenega Tri-Services, LLC (CTS)." Historically, the perimeter fence has identified multiple holes created by poachers/trespassers. These holes are often repaired, and shortly thereafter damaged/cut open again.

Action Item: Please provide documentation to support the that the perimeter fence is intact and operating to prevent/deter trespassers consistent with the LUC for LL-12.

5. Grammatical Edits:

   Ohio EPA recommends a review the document for final grammatical edits be completed to address a few errors discovered in the review of the document (i.e., line 2, "*...disposal at a Toxic Substances Control Act (TS**D**A) and/or...*").

Please provide a response to the comments prior to issuing a final report.

At this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record.

If you have any questions concerning this letter or report, please contact me at (330) 963- 1235 or nicholas.roope@epa.ohio.gov

Sincerely,

Nicholas Roope
Environmental Specialist
Division of Environmental Response and Revitalization

NR/cm

ec: Rebecca Shreffler, Chenega Tri-Services, LLC
Katie Tait, OHARNG RTLS, CJAG
Steve Kvaal, USACE Louisville
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Thomas Schneider, Ohio EPA, SWDO, DERR

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

July 19, 2022

Mr. Nicholas Roope
Environmental Specialist
Ohio Environmental Protection Agency
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087-1924

Subject: Draft Final Third Five-Year Review Report, Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio – Responses to Ohio Environmental Protection Agency comments – Ohio EPA ID # 267000859274

Dear Mr. Roope:

On behalf of the Army National Guard, Dawson Solutions, LLC respectfully submits responses to your comments on the Third Five-Year Review Report for Camp James A. Garfield Joint Military Training Center (CJAG)/Former Ravenna Army Ammunition Plant (RVAAP).

1. **Protectiveness:**

The remedy at Load Lines 1 - 4 and 12 is said throughout the document to be "protective" of human health and the environment, or "will be" protective.

Action Item: Please identify if the remedy is protective or not, and verify the protectiveness statement is consistent throughout the document.

Response: Concur. The protectiveness statement has been updated throughout the document to reflect the remedy as “protective” of human health and the environment.

2. **2007 Record of Decision (ROD) for Open Demolition Area #2 (ODA2) Soil and Dry Sediment:**

Ohio EPA noted the Areas of Concern (AOC) addressing soil and dry sediment covered under the 2007 ROD included the following language, "The Army was to address land use controls for ODA2 under the Military Munitions Response Program (MMRP), as part of future response actions for Munitions and Explosives of Concern (MEC). The Army was to maintain current interim use restrictions at ODA2 until such time that final actions are completed under the MMRP."

Action Item: The referenced 2007 ROD was completed under the Installation Restoration Program (IRP) authority and scope of work. Due to the remaining presence of potential Munitions Potentially Presenting and Explosive Hazard (MPPEH) and corresponding Munitions Constituents (MC), Ohio EPA requests that ODA2 be included in the FYR to verify the current interim use restrictions at ODA2 are being implemented to maintain protectiveness and provide reference to how the interim use restrictions are being maintained.

Response: Respectfully disagree. Currently, there are no land use controls associated with the 2007 and 2019 Records of Decision. The interim use restrictions are required because of the documented MEC presence and are, by definition, interim. The restrictions were already in place at the time of the 2007 ROD and are not part of the ODA2 Soil and Dry Sediment remedy. Definitive land use controls were not developed because 1) the current interim use controls are more restrictive than an administrative institutional control on land use and 2) the final MEC remedy has not been determined. The 2007 Ohio EPA-approved ROD also established that land use controls and periodic review requirements will be addressed under the MMRP, as part of future response actions for MEC. The ODA2 ROD addressing MEC will identify a remedy that is protective of human health and the environment considering risk from residual soil contamination and MEC.

3. **Figure 8:**

Figure 8 appears to be titled incorrectly as RVAAP-12, Load Line 4.

Action Item: Please edit the title accordingly.

Response: Concur. Figure 8 has been edited to read: “RVAAP-12 – Load Line 12”.

4. **Perimeter Fencing:**

The text states, "The Camp James A. Garfield (CJAG) perimeter fence is still a Land Use Control (LUC) for RVAAP-12 Load Line 12 (LL-12) and is inspected annually and an annual report prepared by Chenega Tri-Services, LLC (CTS)." Historically, the perimeter fence has identified multiple holes created by poachers/trespassers. These holes are often repaired, and shortly thereafter damaged/cut open again.

Action Item: Please provide documentation to support the that the perimeter fence is intact and operating to prevent/deter trespassers consistent with the LUC for LL-12.

Response: Respectfully disagree. The last paragraph in Section 6.6.3 (Remedy Implementation) states: “The 2021 Remedial Action Completion Report revised the LUCs for Load Lines 1 – 4 and 12: *LUCs will consist of no residential use, annual inspections and reporting, [and] general LUC training for facility personnel* (CH2M Hill, 2021).” The perimeter fence is no longer included as a LUC for Load Line 12.

For clarification, Section 6.6.3 has been revised to state “The remedial action is complete for Load Lines 1-4 and 12 and met the RAO to reduce risk from COCs in surface and subsurface soil to acceptable levels (RGOs) that are protective of human health and congruent with likely future land use (commercial/industrial). The 2021 Remedial Action Completion Report revised the LUCs for Load Lines 1 – 4 and 12: LUCs will consist of no residential use, annual inspections and reporting, [and] general LUC training for facility personnel (CH2M Hill, 2021). Because the remedial action achieved the RAO, less restrictive LUCs have been implemented, including removal of the requirement to maintain the perimeter fence.”

5. **Grammatical Edits:**

Ohio EPA recommends a review the document for final grammatical edits be completed to address a few errors discovered in the review of the document (i.e., line 2, "...disposal at a Toxic Substances Control Act (TSDA) and/or ...").

Response: Concur. The cited text is a direct quote from the 2007 Interim ROD. For clarification, the

sentence has been updated to read: “Off-site disposal of soils at a permitted solid waste landfill and, as needed, disposal at a Toxic Substances Control Act (TSDA) [sic] and/or Resource Conservation and Recovery Act (RCRA) permitted hazardous waste landfill…”

If you have questions or would like to discuss responses, please contact Mr. Kevin Sedlak at kevin.m.sedlak.ctr@army.mil or (614) 336-6000 ext. 2053.

Sincerely,

SEDLAK.KEVIN.MICHAEL.1254440171

Digitally signed by SEDLAK.KEVIN.MICHAEL.1254440171
Date: 2022.07.19 07:48:16 -04'00'

Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Steve Kvaal, USACE
Katie Tait, OHARNG
Tanner Reliford, USACE
Terrence Oliver, USAEC
Emily McRee, Dawson Solutions
Bob Princic, Ohio EPA
Tom Schneider, Ohio EPA
RVAAP Administrative Record

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

July 22, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak
Restoration Program Manager
ARNG-ILE Clean up
Camp James A. Garfield JT
1438 State Route 534
Newton Falls, OH 44444

RE: US Army Ravenna Ammunition Plt
RVAAP
Remediation Response
Project records
Federal Facilities
Five-Year Review
Portage County
267000859274

Subject: Review of the Response to Ohio EPA Comments - Draft Final Third Five-Year Review Report, Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio – Received July 19, 2022 - Ohio EPA Comments

Dear Mr. Sedlak:

On July 19, 2022, the Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) received the "Response to Ohio EPA comments" pertaining to the review of the Draft Final Third Five-Year Review Report" (FYR) for the Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio. This comment letter was submitted by the Army National Guard, Dawson Solutions, LLC. Below are the Agency's comments and requests for action.

COMMENTS

1. Response to Comment 2:

   Per U.S. EPA's 2001 Five-Year Review (FYR) Memorandum addressing the "Transmittal of the Comprehensive Five-Year Review Guidance" (OSWER 9355.7-03B-P) and the National Contingency Plan (NCP), 40 CFR Part 300.430(f)(4)(ii): "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE), the lead agency shall review such action no less than every five years after the initiation of the selected remedial action." Furthermore, "Unlimited use and unrestricted exposure" means that the selected remedy will place no restrictions on the potential use of land or other natural resources. In general, if the selected remedy relies on restrictions of land and/or ground water use by humans and/or ecological populations to be protective, then the use has been limited and a five-year review should be conducted. For example, if a site is cleaned up to an industrial-use level, and/or other types of uses are restricted (e.g., residential use), then, generally, UU/UE is not met…"

   Ohio EPA referenced text from the 2007 Record of Decision (ROD) stating, "The Army will maintain current interim use restrictions at ODA2 until such time that final actions are completed under the

Military Munitions Response Program (MMRP)." Additional text in the 2007 ROD states, "The extensive presence of (Munitions and Explosives of Concern) MEC prevents most activities at ODA2, including (Ohio Army National Guard) OHARNG training activities, and precludes unrestricted (residential) land use. Consequently, the risk assessment did not evaluate OHARNG training and residential land use receptors." The FYR guidance states, "Consistent with Section 1.2, Regions should conduct a five-year review for a remedy where a no action or no further action ROD leaves hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure."

Action Item: Please include a section of text that includes the interim use controls that are in place to prevent risk of exposure to the acute hazards that may remain at ODA2. Please note, the protectiveness determination can be deferred as the investigation to address the hazardous waste left in place (Munitions Potential Presenting an Explosive Hazard (MPPEH)/MEC) is ongoing. However, it is important to include in the FYR what hazards remain based on recent investigations for a consistent report per the guidance document referenced above and the NCP.

2. Response to Comment 4:

It is unclear how the use of institutional controls (limitation on residential use, annual inspections and reporting, (and) general land use control (LUC) training for facility personnel) is protective of trespassers while potential exposure to acute hazards (MPPEH/MEC) from ongoing investigation(s) remain.

Action Item: Please clarify how the trespasser is addressed by the controls listed above.

Please provide a response to the comments prior to issuing a final report. This letter is an official response from Ohio EPA that will be maintained as a public record. If you have any questions concerning this letter or report, please contact me at (330) 963-1235 or nicholas.roope@epa.ohio.gov.

Sincerely,

Nicholas Roope
Environmental Specialist
Division of Environmental Response and Revitalization

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ec: Rebecca Shreffler, Chenega
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August 3, 2022

Mr. Nicholas Roope
Environmental Specialist
Ohio Environmental Protection Agency
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087-1924

Subject: Draft Final Third Five-Year Review Report, Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio – Responses to Ohio Environmental Protection Agency comments – Ohio EPA ID # 267000859274

Dear Mr. Roope:

The Army National Guard respectfully submits responses to your follow-on comments on the Third Five-Year Review Report for Camp James A. Garfield Joint Military Training Center (CJAG)/Former Ravenna Army Ammunition Plant (RVAAP). The original comments and responses are also provided for context.

2. **2007 Record of Decision (ROD) for Open Demolition Area #2 (ODA2) Soil and Dry Sediment:**

Ohio EPA noted the Areas of Concern (AOC) addressing soil and dry sediment covered under the 2007 ROD included the following language, "The Army was to address land use controls for ODA2 under the Military Munitions Response Program (MMRP), as part of future response actions for Munitions and Explosives of Concern (MEC). The Army was to maintain current interim use restrictions at ODA2 until such time that final actions are completed under the MMRP."

Action Item: The referenced 2007 ROD was completed under the Installation Restoration Program (IRP) authority and scope of work. Due to the remaining presence of potential Munitions Potentially Presenting and Explosive Hazard (MPPEH) and corresponding Munitions Constituents (MC), Ohio EPA requests that ODA2 be included in the FYR to verify the current interim use restrictions at ODA2 are being implemented to maintain protectiveness and provide reference to how the interim use restrictions are being maintained.

Response: Respectfully disagree. Currently, there are no land use controls associated with the 2007 and 2019 Records of Decision. The interim use restrictions are required because of the documented MEC presence and are, by definition, interim. The restrictions were already in place at the time of the 2007 ROD and are not part of the ODA2 Soil and Dry Sediment remedy. Definitive land use controls were not developed because 1) the current interim use controls are more restrictive than an administrative institutional control on land use and 2) the final MEC remedy has not been determined. The 2007 Ohio EPA-approved ROD also established that land use controls and periodic review requirements will be addressed under the MMRP, as part of future response actions for MEC. The ODA2 ROD addressing MEC will identify a remedy that is protective of human health and the environment considering risk from residual soil contamination and MEC.

Follow-On Comment:

Per U.S. EPA's 2001 Five-Year Review (FYR) Memorandum addressing the "Transmittal of the Comprehensive Five-Year Review Guidance" (OSWER 9355.7-03B-P) and the National Contingency Plan (NCP), 40 CFR Part 300.430(f)(4)(ii): "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE), the lead agency shall review such action no less than every five years after the initiation of the selected remedial action." Furthermore, "Unlimited use and unrestricted exposure" means that the selected remedy will place no restrictions on the potential use of land or other natural resources. In general, if the selected remedy relies on restrictions of land and/or ground water use by humans and/or ecological populations to be protective, then the use has been limited and a five-year review should be conducted. For example, if a site is cleaned up to an industrial-use level, and/or other types of uses are restricted (e.g., residential use), then, generally, UU/UE is not met…"

Ohio EPA referenced text from the 2007 Record of Decision (ROD) stating, "The Army will maintain current interim use restrictions at ODA2 until such time that final actions are completed under the Military Munitions Response Program (MMRP)." Additional text in the 2007 ROD states, "The extensive presence of (Munitions and Explosives of Concern) MEC prevents most activities at ODA2, including (Ohio Army National Guard) OHARNG training activities, and precludes unrestricted (residential) land use. Consequently, the risk assessment did not evaluate OHARNG training and residential land use receptors." The FYR guidance states, "Consistent with Section 1.2, Regions should conduct a five-year review for a remedy where a no action or no further action ROD leaves hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure."

Follow-On Action Item: Please include a section of text that includes the interim use controls that are in place to prevent risk of exposure to the acute hazards that may remain at ODA2. Please note, the protectiveness determination can be deferred as the investigation to address the hazardous waste left in place (Munitions Potential Presenting an Explosive Hazard (MPPEH)/MEC) is ongoing. However, it is important to include in the FYR what hazards remain based on recent investigations for a consistent report per the guidance document referenced above and the NCP.

Follow-On Response: Concur. The following paragraph has been added to the end of Section 1.0:

This third Five-Year Review does not include RVAAP-04, the Open Demolition Area #2. A 2007 Record of Decision (ROD) determined that soil and dry sediment at RVAAP-04 required No Further Action. However, interim controls are required due to the presence of munitions and explosives of concern (MEC). The interim controls/Land use Controls (LUCs) have been in place and will be maintained until the current Remedial Investigation, Feasibility Study, Proposed Plan, and ROD addressing MEC are completed, and any remedial action is implemented under the Military Munitions Response Program. The interim controls and restricted access are included in the Property Management Plan for 2021 at the request of the Ohio Environmental Protection Agency (EPA). The restricted access prevents exposure to Munitions Potentially Presenting an Explosive Hazard at RVAAP-04 and is, therefore, protective of human health.

4. **Perimeter Fencing:**

The text states, "The Camp James A. Garfield (CJAG) perimeter fence is still a Land Use Control (LUC) for RVAAP-12 Load Line 12 (LL-12) and is inspected annually and an annual report prepared by Chenega Tri-Services, LLC (CTS)." Historically, the perimeter fence has identified multiple holes

created by poachers/trespassers. These holes are often repaired, and shortly thereafter damaged/cut open again.

Action Item: Please provide documentation to support the that the perimeter fence is intact and operating to prevent/deter trespassers consistent with the LUC for LL-12.

Response: Respectfully disagree. The last paragraph in Section 6.6.3 (Remedy Implementation) states: "The 2021 Remedial Action Completion Report revised the LUCs for Load Lines 1 – 4 and 12: *LUCs will consist of no residential use, annual inspections and reporting, [and] general LUC training for facility personnel* (CH2M Hill, 2021)." The perimeter fence is no longer included as a LUC for Load Line 12.

For clarification, Section 6.6.3 has been revised to state:

"The remedial action is complete for Load Lines 1-4 and 12 and met the RAO to reduce risk from COCs in surface and subsurface soil to acceptable levels (RGOs) that are protective of human health and congruent with likely future land use (commercial/industrial).

The 2021 Remedial Action Completion Report revised the LUCs for Load Lines 1 – 4 and 12: LUCs will consist of no residential use, annual inspections and reporting, [and] general LUC training for facility personnel (CH2M Hill, 2021). Because the remedial action achieved the RAO, less restrictive LUCs have been implemented, including removal of the requirement to maintain the perimeter fence."

Follow-On Comment: It is unclear how the use of institutional controls (limitation on residential use, annual inspections and reporting, (and) general land use control (LUC) training for facility personnel) is protective of trespassers while potential exposure to acute hazards (MPPEH/MEC) from ongoing investigation(s) remain.

Action Item: Please clarify how the trespasser is addressed by the controls listed above.

Follow-On Response: LUCs do not include a requirement to maintain or inspect the perimeter fence for Load Line 12, or any other RVAAP IRP site. As a result, maintenance and repair of the perimeter fence is not discussed in this Five-Year Review. Trespassing is illegal on a military installation. There are security procedures in place to prevent trespassing for security purposes and are not land use controls for environmental sites.

If you have questions or would like to discuss responses, please contact me at kevin.m.sedlak.ctr@army.mil or (614) 336-6000 ext. 2053.

Sincerely,

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Date: 2022.08.03 14:49:45 -05'00'

Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Steve Kvaal, USACE
Katie Tait, OHARNG
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Emily McRee, Dawson Solutions
Bob Princic, Ohio EPA

Tom Schneider, Ohio EPA
RVAAP Administrative Record

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

RECIEVED August 29, 2022

August 26, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin M. Sedlak
Restoration Program Manager
ARNG-ILE Clean up
Camp James A. Garfield JTC
1438 State Route 534
Newton Falls, OH 44444

RE: **US Army Ravenna Ammunition Plt**
RVAAP
Remediation Response
Project records
Federal Facilities
Five-Year Review
Portage County
267000859274

Subject: **Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio - Draft Final Third Five-Year Review Report**
Ohio EPA - Request for Final

Dear Mr. Sedlak:

On August 3, 2022, Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) received the additional "Response to Ohio EPA comments" pertaining to the review of the Draft Final Third Five-Year Review Report" (FYR) for the Camp James A. Garfield Joint Military Training Center, Portage and Trumbull Counties, Ohio.

After review of the response to comments and a conference call to gain further clarification on the responses, Ohio EPA has determined the responses adequately address the concerns of Ohio EPA, and we request a final version of the FYR be submitted for Agency review and concurrence.

This letter is an official response from Ohio EPA that will be maintained as a public record. If you have any questions concerning this letter or report, please contact me at (330) 963-1235 or nicholas.roope@epa.ohio.gov.

Sincerely,

Nicholas Roope
Environmental Specialist
Division of Environmental Response and Revitalization

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