

FINAL

RAVENNA ARMY

AMMUNITION PLANT

Army Cleanup Program

FY 2018 Installation Action Plan

Printed: December 2018

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ACRONYMS

ACM	Asbestos Containing Material
AEDB-R	Army Environmental Database - Restoration
AOC	Area of Concern
AST	Aboveground Storage Tank
bgs	Below Ground Surface
BRAC	Base Realignment and Closure
CC	Compliance-Related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
COC	Contaminants of Concern
CR	Compliance Restoration
DD	Decision Document
DFFO	Directors Final Findings and Orders
DLA	Defense Logistic Agency
DQO	Data Quality Objectives
EE/CA	Engineering Evaluation and Cost Analysis
EPA	Environmental Protection Agency
FS	Feasibility Study
ft	feet
FWGWMP	Facility-wide Groundwater Monitoring Program
FY	fiscal year
GSA	General Services Administration
HRR	Historical Records Review
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LTM	Long-Term Management
LUC	Land Use Control
MC	Munitions Constituents

Acronym	Definition
MEC	Munitions and Explosives of Concern
MDAS	Material Documented as Safe
mm	Millimeter
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MR	Munitions Response
MRS	Munitions Response Site
MRSP	Munitions Response Site Prioritization Protocol
NACA	National Advisory Committee on Aeronautics
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
OB	Open Burning
OD	Open Detonation
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PP	Proposed Plan
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy-In-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RVAAP	Ravenna Army Ammunition Plant

Acronym	Definition
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TCRA	Time-Critical Response Actions
TD	Transferred
TNT	Trinitrotoluene
TRC	Technical Review Committee
UE	Unlimited Exposure
USACE	US Army Corps of Engineers
UST	Underground Storage Tank
UU	Unrestricted Use
WBS	Work Breakdown Structure
WS	Wet Storage
WWII	World War II

PHASE TRANSLATION TABLE

HQAES Phase ID	CERCLA Phase	RCRA Phase	RCRA UST Phase
.01	Preliminary Assessment (PA)	RCRA Facility Assessment (RFA)	Initial Site Characterization (ISC)
.02	Site Inspection (SI)	Confirmation Sampling (CS)	Investigation (INV)
.03	Remedial Investigation/ Feasibility Study (RI/FS)	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)	Corrective Action Plan (CAP)
.04	Remedial Design (RD)	Design (DES)	Design (DES)
.05	Interim Remedial Action (IRA)	Interim Measure (IM)	Interim Remedial Action (IRA)
.06	Remedial Action Construction) (RA(C))	Corrective Measures Implementation (CMI(C))	Implementation (Construction) (IMP(C))
.07	Remedial Action (Operation) (RA(O))	Corrective Measures Implementation (Operation) (CMI(O))	Implementation (Operations) (IMP(O))
.08	Long-Term Management (LTM)	Long-Term Management (LTM)	Long-Term Management (LTM)

SITE ALIAS LIST

WBS Element	AEDB-R Reference	Site Alias
39747.1001	RVAAP-01_RAMSDHELL QUARRY LANDFILL	RVAAP-01
39747.1003	RVAAP-03_OPEN DEMOLITION AREA #1	RVAAP-03
39747.1005	RVAAP-05_WINKLEPECK BURNING GROUNDS	RVAAP-05
39747.1006	RVAAP-06_C BLOCK QUARRY	RVAAP-06
39747.1008	RVAAP-08_LOAD LINE 1	RVAAP-08
39747.1009	RVAAP-09_LOAD LINE 2	RVAAP-09
39747.1010	RVAAP-10_LOAD LINE 3	RVAAP-10
39747.1011	RVAAP-11_LOAD LINE 4	RVAAP-11
39747.1012	RVAAP-12_LOAD LINE 12	RVAAP-12
39747.1019	RVAAP-19_LANDFILL NORTH OF WINKLEPECK BURN GRND	RVAAP-19
39747.1029	RVAAP-29_UPPER AND LOWER COBBS PONDS	RVAAP-29
39747.1034	RVAAP-34_SAND CREEK DISPOSAL ROAD LANDFILL	RVAAP-34
39747.1038	RVAAP-38_NACA TEST AREA	RVAAP-38
39747.1040	RVAAP-40_LOAD LINE 7	RVAAP-40
39747.1041	RVAAP-41_LOAD LINE 8	RVAAP-41
39747.1042	RVAAP-42_LOAD LINE 9	RVAAP-42
39747.1043	RVAAP-43_LOAD LINE 10	RVAAP-43
39747.1044	RVAAP-44_LOAD LINE 11	RVAAP-44
39747.1045	RVAAP-45_WET STORAGE AREA	RVAAP-45
39747.1046	RVAAP-46_BUILDING F-15 AND F-16	RVAAP-46
39747.1050	RVAAP-50_ATLAS SCRAP YARD	RVAAP-50
39747.1051	RVAAP-51_DUMP ALONG PARIS-WINDHAM ROAD	RVAAP-51
39747.1057	RVAAP-063-R-01_GROUP 8 MRS	--
39747.1058	RVAAP-061-R-01_BLOCK D IGLOO -TD	--
39747.1059	RVAAP-016-R-01_FUZE AND BOOSTER QUARRY	--
39747.1060	RVAAP-002-R-01_ERIE BURNING GROUNDS	--
39747.1061	RVAAP-004-R-01_OPEN DEMOLITION AREA #2	--
39747.1062	RVAAP-060-R-01_BLOCK D IGLOO	--

WBS Element	AEDB-R Reference	Site Alias
39747.1063	RVAAP-050-R-01_ATLAS SCRAP YARD	--
39747.1065	RVAAP-032-R-01_40MM FIRING RANGE	--
39747.1067	RVAAP-019-R-01_LANDFILL NORTH OF WINKLEPECK	--
39747.1070	RVAAP-001-R-01_RAMSDALL QUARRY AREA 2 (SOUTH)	--
39747.1072	RVAAP-66_FACILITY-WIDE GROUNDWATER	--
39747.1073	RVAAP-67_FACILITY-WIDE SEWERS	--
39747.1074	RVAAP-001-R-02_RAMSDALL QUARRY AREA 1 (NORTH)	--
39747.1076	CC RVAAP-68_ELECTRIC SUBSTATIONS (E,W,NO. 3)	RVAAP-68
39747.1077	CC RVAAP-69_BUILDING 1048 - FIRE STATION	RVAAP-69
39747.1078	CC RVAAP-70_EAST CLASSIFICATION YARD	RVAAP-70
39747.1080	CC RVAAP-73_FACILITY-WIDE COAL STORAGE	RVAAP-73
39747.1081	CC RVAAP-74_BLDG 1034 MOTOR POOL HYDRAULIC LIFT	RVAAP-74
39747.1083	CC RVAAP-76_DEPOT AREA	RVAAP-76
39747.1086	CC RVAAP-78_QUARRY POND SURFACE DUMP	RVAAP 78
39747.1087	CC RVAAP-79_DLA ORE STORAGE SITES	RVAAP 79

RAVENNA ARMY AMMUNITION PLANT

INSTALLATION RESTORATION PROGRAM SITES

RVAAP-01 RAMSDELL QUARRY LANDFILL

WBS Element: 39747.1001

Alias: RVAAP-01

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 3/15/2015

RC Date: 3/15/2015

RC Reason: All Required Cleanup(s) Completed

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$1,225,951.50

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
RI/FS	6/30/2003	10/31/2009
RD	6/30/2007	9/30/2012
IRA	--	--
RA(C)	6/30/2010	3/15/2015
RA(O)	--	--
LTM	3/15/2015	2/15/2048

Site Narrative

RVAAP-01 (Ramsdell Quarry Landfill) is located in the eastern section of the Ravenna Army Ammunition Plant (RVAAP) facility and is approximately 14 acres. The landfill portion is 4 acres. The quarry was excavated to the underlying Sharon Sandstone/Conglomerate. The depth of the soil in the remaining portion of the quarry varies from zero to several feet. A pool of water is intermittently present at the bottom of the quarry at approximately 10.7 meters (35 feet) below ground surface (bgs).

This landfill was used from 1941 to 1989. During the period of 1946 to 1950 the site was used as a land-surface burning site to thermally destroy waste explosives from Load Line 1 and napalm bombs. From 1976 to 1989, a portion of the site was used strictly as a nonhazardous solid waste landfill. No historical information has been located for 1950 to 1976. The landfill ceased operation in September 1989. Closure of the landfill was completed in September 1990 under state of Ohio solid waste regulations.

Landfilled material consists of variable domestic, commercial, industrial, and solid wastes including but not limited to explosives (Trinitrotoluene TNT), Composition B), napalm, gasoline, acid dip liquor, annealing residue (sulfuric acid, shell casings, sodium ortho silicate, chromic acid and alkali), aluminum chloride, and inert material. The volume of landfilled material is unknown (Jacobs Engineering 1989).

Five groundwater monitoring wells were installed around the landfill perimeter in 1987. These wells were decommissioned under regulatory guidelines in 2006. New wells were installed in 1998 to further investigate the nature and extent of groundwater contamination at the landfill. A report of findings was published in October 1998.

Installation of additional wells and the acquisition of soil, sediment, and surface water samples taken in fall 2003 further determined the nature and extent of the contamination of the Comprehensive Environmental Reponse, Compensation and Liability Act of 1980 (CERCLA) portion of the quarry. The new wells are monitored on a regular basis as part of the facility-wide groundwater-monitoring program. Low levels of explosives and metals have been detected in groundwater. The groundwater unit transferred from the Resource Conservation and Recovery Act (RCRA) solid waste program to CERCLA in June 2004. A Performance Based Contract (PBC) was awarded in 2005 to complete the investigation and any required remediation in accordance with the Defense Planning Guidance. A final Remedial Investigation/Feasibility Study (RI/FS) was completed and approved in April 2007. A Record of Decision (ROD) was signed by the Army and Ohio Environmental Protection Agency (EPA) in October 2009. The approved remediation consisted of removing Polycyclic Aromatic Hydrocarbon (PAH) contamination

within an 18- inch soil depth that encompassed 2.5 acres of the quarry bottom. The remediation was immediately curtailed in July 2010 by the discovery of buried transite, an asbestos containing material (ACM). By August 2010, all disturbed ACM was removed.

An Engineering Evaluation/Cost Analysis (EE/CA) was prepared and accepted by the Ohio EPA in September 2011. A proposed plan (PP) was completed in November 2012. A signed ROD Amendment was completed in August 2013. In June 2014 the Remedial Design (RD) was approved by the Ohio EPA. In October 2014, the remedial action was completed. Munitons and Explosives of Concern (MEC) is being addressed under the Military Munitons Response Program (MMRP) site RVAAP- 001-R-01.

Cleanup Strategy

The remedial action includes Land Use Controls (LUCs) consisting of personnel briefing, inspections, asbestos signage, and access and digging restrictions.

Installation-wide five-year review requirements are carried at this site. Groundwater monitoring requirements are carried in RVAAP-66.

RVAAP-03 OPEN DEMOLITION AREA #1

WBS Element: 39747.1003

Alias: RVAAP-03

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: - -

RC Date: 10/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$364,789.18

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	10/31/1999	10/15/2019
RD	--	--
IRA	10/31/1999	9/30/2003
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

RVAAP-03 (Open Demolition Area 1), consisting of approximately six acres, was used to thermally treat munitions by Open Burn/Open Detonation (OB/OD). The site now consists of a circular one foot berm surrounding a grassed area of approximately 1.5 acres. The entire Area of Concern (AOC) is located within the National Advisory Committee on Aeronautics (NACA) Test Area. Contaminants of Concern (COCs) include explosive compounds and metals. The 1989 report from Jacobs Engineering indicates that munition fragments including scrap metal, small arms primers, and fuzes were found outside the bermed area and that the area was operational from 1941 through 1949.

In July 2001 a Base Realignment and Closure (BRAC)-funded Interim Remedial Action (IRA) involving removal of approximately six acres of surface hot spots containing high levels of metals and explosives was completed. In December 2001, a Final Phase I RI report was completed. Site closeout documentation was initiated in Fiscal Year (FY)03. Concern remained over potential MEC kick-outs and push-out material beyond the IRA area. Because this site is located on the Operational Range Inventory System, the area is considered an active range, and therefore ineligible for MMRP.

A geophysical investigation was conducted in FY10 to investigate the potential MEC kick-outs/push-outs outside the IRA area. Results of the geophysical investigation were received in the fourth quarter of FY10 and the final report was published in January 2011. A Draft RI/FS was completed in August 2012. The RI was completed in 2016.

Groundwater monitoring is being conducted under the Facility-Wide Groundwater Monitoring Program (FWGWMP). This area is currently signed and Siebert staked.

Cleanup Strategy

A probability assessment will be completed in FY19. An No Further Action (NFA) PP and ROD will be completed.

RVAAP-05 WINKLEPECK BURNING GROUNDS

WBS Element: 39747.1005

Alias: RVAAP-05

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 4/15/2018

RC Date: 4/15/2018

RC Reason: All Required Cleanup(s) Completed

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$254,979.60

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
RI/FS	10/31/1994	9/15/2015
RD	9/15/2014	9/15/2015
IRA	8/31/2006	12/15/2009
RA(C)	2/15/2015	4/15/2018
RA(O)	--	--
LTM	4/15/2018	3/15/2048

Site Narrative

The Winklepeck Burning Grounds (RVAAP-05), consisted of approximately 216 acres and, operated from 1948 to 1998. Prior to 1980, there were open-burning activities performed in unlined pits, pads, and sometimes on the roads within the 216-acre area. Materials that were burned included: Cyclotrimethylenetrinitramine, antimony sulfide, Composition B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes, explosively contaminated wastes (e.g. rags, papers, cardboard) and small amounts of laboratory chemicals. The pre-1980 burning was conducted on bare ground and resulting ash was abandoned in-place. Munitions, munitions debris (primarily scrap metal) and explosive constituents are present at the site. From 1980-1998, burning of scrap explosives, propellants, and explosively contaminated materials was conducted within raised refractory-lined trays located within a 1.5-acre area.

In 1994, the Army notified Ohio EPA of their intent to withdraw the Part B permit application. The burn trays along with the 90-day storage unit, Building 1601, were closed in accordance with Ohio EPA guidance in 1998.

The deactivation furnace soils were transferred from the RCRA to the CERCLA program under the Director's Final Findings and Orders (DFFOs) in June 2004. The management of groundwater monitoring is under the FWGWMP.

A limited MEC clean-up took place within various portions of the site during 2004, 2005, 2008, and 2009. A PP was finalized in 2006.

A September 2008 contract was awarded to conduct a Data Quality Objectives (DQO) study for MEC and chemical contaminants remaining within the AOC. The DQO report was completed in 2010. A Work Plan for additional sampling was finalized in 2012. Additional sampling was conducted in Fall 2012 in support of the upcoming multi-purpose machine gun range.

Additional sampling results and analysis of the previously selected remedy with additional soil excavation was documented in the RI/FS Supplement.

An Explanation of Significant Differences and RD work was completed in 2015. The removal action was completed in 2017.

Cleanup Strategy

Future LUCs will include no residential use and a potable groundwater use restriction. Installation-wide five-year review costs are carried at RVAAP-01.

RVAAP-06 C BLOCK QUARRY

WBS Element: 39747.1006

Alias: RVAAP-06

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 4/15/2020

RC Date: 4/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$224,340.04

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
RI/FS	8/31/2004	4/15/2019
RD	4/15/2019	8/15/2019
IRA	--	--
RA(C)	8/15/2019	4/15/2020
RA(O)	--	--
LTM	5/15/2020	4/15/2050

Site Narrative

RVAAP-06 (C Block Quarry) is an abandoned quarry, approximately 0.3 acres. It was used as a disposal area for annealing process wastes (chromic acid) for a short time during the 1950s. Liquid wastes were reported to have been dumped in the pit bottom. The site is now heavily forested with trees of one foot diameter or larger. The Installation Restoration Program (IRP) COC is metals.

This site is currently in the RI/FS phase.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of the RI/FS followed by removal of surficial asbestos and implementation of LUCs. Anticipated LUCs will include access restrictions and personnel briefings on potential hazards and safety precautions (related to asbestos). Long-Term Management (LTM) will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-08 LOAD LINE 1

WBS Element: 39747.1008

Alias: RVAAP-08

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2021

RC Date: 8/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$515,035.97

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	10/31/1994	10/15/2019
RD	10/15/2018	6/15/2020
IRA	9/30/2003	7/31/2008
RA(C)	6/15/2020	8/15/2021
RA(O)	--	--
LTM	8/15/2021	7/15/2051

Site Narrative

Load Line 1 (RVAAP-08) was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. Wash-down water and wastewater from the load line operations was collected in concrete sumps, pumped through sawdust filtration units, and then discharged to a settling pond, known as Criggy's Pond. Wash-down water from the melt-pour buildings would, in some instances, be swept out through doorways onto the ground surrounding the buildings. The load line also was used for the demilitarization of projectiles and the production and reconditioning of anti-tank mines from 1973 -1974.

COCs at this site are explosive compounds, Semi-Volatile Organic Compounds (SVOCs), and heavy metals. The media of concern include soils, surface water, sediment, and groundwater. The following remedial actions have occurred at the site:

1. Structures underwent demolition between FY00 and FY09. Demolition activities were completed as BRAC Division projects. Environmental controls were implemented during all demolition activities to prevent/mitigate potential migration of contaminants from the buildings to the ground surface. Elevated walkways between buildings remain in place.
2. A PBC was awarded in September 2003 to complete an interim soil and dry sediment removal action at Load Lines 1, 2, 3 and 4 (RVAAP-08, 09, 10, and 11).
3. The final Interim ROD addressing only soil and dry sediment was signed by the Army and Ohio EPA in July 2007.
4. Additional contract action was initiated in December 2007 to sample the soils within the former building slab footprints (building slabs were left in place during the initial investigation, and were then removed). A January 2008 change memorandum to the interim ROD was prepared by the Army and submitted to the Ohio EPA describing additional removal actions. Underslab sampling reports associated with this action were finalized in March 2010.
5. Contaminated soils were removed from Load Line 1 and transported off-site for disposal in September 2010 and from Load Lines 2 and 3 in June 2010. The Final Remediation Completion Report for Load Line 1 was approved on March 25, 2011. The Final Remediation Completion Report for Load Lines 2 and 3 was approved on January 11, 2011. No additional remediation was required at Load Line 4.

6. Underslab subsurface incremental sampling was conducted in August 2010. The sampling report documenting this sampling and the US Army Corps of Engineers (USACE)-led 2009 sampling event was finalized in March 2011.

7. Additional characterization sampling was completed in July 2011. RVAAP-008-R-01 is collocated within a portion of this AOC.

An RI/FS Supplement will be completed in FY17.

Cleanup Strategy

The anticipated exit strategy for this site includes soil excavation to achieve commercial/industrial use of the property. A ROD amendment will be completed prior to any additional remediation.

LTM will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-09 LOAD LINE 2

WBS Element: 39747.1009

Alias: RVAAP-09

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2021

RC Date: 8/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$115,947.20

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	10/31/1994	10/15/2019
RD	10/15/2018	6/15/2020
IRA	9/30/2003	7/31/2008
RA(C)	6/15/2020	8/15/2021
RA(O)	--	--
LTM	8/15/2021	7/15/2051

Site Narrative

Load Line 2 (RVAAP-09) was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. Wash-down water and wastewater from the load line operations was collected in concrete sumps, pumped through sawdust filtration units, and then discharged to a settling pond. Wash-down water from the melt-pour buildings would, in some instances, be swept out through doorways onto the ground surrounding the buildings. The settling pond, known as Kelley's Pond, was an unlined triangular-shaped pond approximately one acre in size with an average depth of four feet. Water from the impoundment discharged to a stream that ultimately exited the installation.

COCs at this site are explosive compounds, SVOCs, and heavy metals. The media of concern include soils, surface water, sediment, and groundwater. The following remedial actions have occurred at the site:

1. Structures underwent demolition between FY00 and FY09. Demolition activities were completed as BRAC Division projects. Environmental controls were implemented during all demolition activities to prevent/mitigate potential migration of contaminants from the buildings to the ground surface. Elevated walkways between buildings remain in place.
2. A PBC was awarded in September 2003 to complete an interim soil and dry sediment removal action at Load Lines 1, 2, 3 and 4 (RVAAP-08, 09, 10, and 11).
3. The final Interim ROD addressing only soil and dry sediment was signed by the Army and Ohio EPA in July 2007.
4. Additional contract action was initiated in December 2007 to sample the soils within the former building slab footprints (building slabs were left in place during the initial investigation, and were then removed). A January 2008 change memorandum to the interim ROD was prepared by the Army and submitted to the Ohio EPA describing additional removal actions. Underslab sampling reports associated with this action were finalized in March 2010.
5. Contaminated soils were removed from Load Line 1 and transported off-site for disposal in September 2010 and from Load Lines 2 and 3 in June 2010. The Final Remediation Completion Report for Load Line 1 was approved on March 25, 2011. The Final Remediation Completion Report for Load Lines 2 and 3 was approved on Jan. 11, 2011. No additional remediation was required at Load Line 4.

6. Underslab subsurface incremental sampling was conducted in August 2010. The sampling report documenting this sampling and the USACE-led 2009 sampling event was finalized in March 2011.
7. Additional characterization sampling was completed in July 2011.

An RI/FS Supplement was completed in FY17.

Cleanup Strategy

The anticipated exit strategy for this site includes soil excavation to achieve commercial/industrial use of the property. A ROD amendment will be completed prior to any additional remediation.

LTM will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-10 LOAD LINE 3

WBS Element: 39747.1010

Alias: RVAAP-10

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2021

RC Date: 8/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$420,452.96

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	10/31/1994	10/15/2019
RD	10/15/2018	6/15/2020
IRA	9/30/2003	7/31/2008
RA(C)	6/15/2020	8/15/2021
RA(O)	--	--
LTM	8/15/2021	7/15/2051

Site Narrative

Load Line 3 (RVAAP-10) was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. Wash-down water and wastewater from the load line operations was collected in concrete sumps, pumped through sawdust filtration units, and then discharged to a settling pond. Wash-down water from the melt-pour buildings would, in some instances, be swept out through doorways onto the ground surrounding the buildings. Water from the impoundment discharged to a stream that flowed in a northerly direction and ultimately discharged into RVAAP-29 Cobbs Pond.

The COCs at this site are explosive compounds, SVOCs, and heavy metals. The media of concern include soils, surface water, sediment, and groundwater. The following remedial actions have occurred at the site:

1. Structures underwent demolition between FY00 and FY09. Demolition activities were completed as BRAC Division projects. Environmental controls were implemented during all demolition activities to prevent/mitigate potential migration of contaminants from the buildings to the ground surface. Elevated walkways between buildings remain in place.
2. A PBC was awarded in September 2003 to complete an interim soil and dry sediment removal action at Load Lines 1, 2, 3 and 4 (RVAAP-08, 09, 10, and 11).
3. The final Interim ROD addressing only soil and dry sediment was signed by the Army and Ohio EPA in July 2007.
4. Additional contract action was initiated in December 2007 to sample the soils within the former building slab footprints (building slabs were left in place during the initial investigation, and were then removed). A January 2008 change memorandum to the interim ROD was prepared by the Army and submitted to the Ohio EPA describing additional removal actions. Underslab sampling reports associated with this action were finalized in March 2010.
5. Contaminated soils were removed from Load Line 1 and transported off-site for disposal in September 2010 and from Load Lines 2 and 3 in June 2010. The Final Remediation Completion Report for Load Line 1 was approved on March 25, 2011. The Final Remediation Completion Report for Load Lines 2 and 3 was approved on Jan. 11, 2011. No additional remediation was required at Load Line 4.

6. Underslab subsurface incremental sampling was conducted in August 2010. The sampling report documenting this sampling and the USACE-led 2009 sampling event was finalized in March 2011.
7. Additional characterization sampling was completed in July 2011.

An RI/FS Supplement was completed in FY17.

Cleanup Strategy

The anticipated exit strategy for this site includes soil excavation to achieve commercial/industrial use of the property. A ROD amendment will be completed prior to any additional remediation.

LTM will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-11 LOAD LINE 4

WBS Element: 39747.1011

Alias: RVAAP-11

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2021

RC Date: 8/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$197,627.19

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	10/31/1994	10/15/2019
RD	10/15/2018	6/15/2020
IRA	9/30/2003	7/31/2008
RA(C)	6/15/2020	8/15/2021
RA(O)	--	--
LTM	8/15/2021	7/15/2051

Site Narrative

Load Line 4 (RVAAP-11) was used between 1941 and 1971 to melt and load TNT and Composition B into large-caliber projectiles. Workers would periodically use steam and hot water to hose down equipment and the floors and walls of buildings contaminated with explosive dust, spills, and vapors. Wash-down water and wastewater from the load line operations was collected in concrete sumps, pumped through sawdust filtration units, and then discharged to a settling pond. Wash-down water from the melt-pour buildings would, in some instances, be swept out through doorways onto the ground surrounding the buildings. The on-site settling pond, known as Load Line 4 Pond, was an unlined earthen impoundment approximately one acre, based on a Geographic Information Systems approximation. Water from the impoundment discharged to a stream that ultimately exited through the southern side of the installation.

The COCs at this site are explosive compounds, SVOCs, and heavy metals. The media of concern include soils, surface water, sediment, and groundwater. The following remedial actions have occurred at the site:

1. Structures underwent demolition between FY00 and FY09. Demolition activities were completed as BRAC Division projects. Environmental controls were implemented during all demolition activities to prevent/mitigate potential migration of contaminants from the buildings to the ground surface. Elevated walkways between buildings remain in place.
2. A PBC was awarded in September 2003 to complete an interim soil and dry sediment removal action at Load Lines 1, 2, 3 and 4 (RVAAP-08, 09, 10, and 11).
3. The final Interim ROD addressing only soil and dry sediment was signed by the Army and Ohio EPA in July 2007.
4. Additional contract action was initiated in December 2007 to sample the soils within the former building slab footprints (building slabs were left in place during the initial investigation, and were then removed). A January 2008 change memorandum to the interim ROD was prepared by the Army and submitted to the Ohio EPA describing additional removal actions. Underslab sampling reports associated with this action were finalized in March 2010.
5. Contaminated soils were removed from Load Line 1 and transported off-site for disposal in September 2010 and from Load Lines 2 and 3 in June 2010. The Final Remediation Completion Report for Load Line 1 was approved on March 25, 2011. The Final Remediation Completion Report for Load Lines 2 and 3 was approved on Jan. 11, 2011. No additional remediation was required at Load Line 4.

6. Underslab subsurface incremental sampling was conducted in August 2010. The sampling report documenting this sampling and the USACE-led 2009 sampling event was finalized in March 2011.
7. Additional characterization sampling was completed in July 2011.

An RI/FS Supplement was completed in FY17.

Cleanup Strategy

The anticipated exit strategy for this site includes soil excavation to achieve commercial /industrial use of property. A ROD amendment will be completed prior to any additional remediation.

LTM will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-12 LOAD LINE 12

WBS Element: 39747.1012

Alias: RVAAP-12

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2021

RC Date: 8/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$167,059.35

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
RI/FS	10/31/1999	10/15/2019
RD	10/15/2018	6/15/2020
IRA	9/15/2003	7/15/2008
RA(C)	6/15/2020	8/15/2021
RA(O)	--	--
LTM	8/15/2021	7/15/2051

Site Narrative

From 1941-1943 and 1946-1950, ammonium nitrate was produced at Load Line 12 (RVAAP-12). From 1949 to 1993, munitions were periodically demilitarized at this AOC. Building wash-down water and wastewater from the bomb melt out facility operations was collected in a house gutter system, and flowed through a piping system to two stainless steel tanks. The first tank was used for settling, and the second tank was used for filtration. Prior to the 1980s, the water leaked under the building and ponded there. Building wash-down water from Building F-904 was also swept out through doorways onto the ground surrounding the building. After 1981, the water was treated in the Load Line 12 wastewater treatment system, which discharged to an on-site pond then discharged to a receiving stream that ultimately entered into RVAAP-29, Cobbs Ponds.

The COCs at this site include explosive compounds, nitrates and heavy metals. Media of concern include soil, surface water, sediment and groundwater. The National Pollutant Discharge Elimination System (NPDES) permit for the original pink water treatment plant located at Building F-904 was terminated May 1, 2000. The treatment plant is considered formally closed under the NPDES permit.

In 2000, a composting pilot study was conducted using soils contaminated with explosives from the area of Building F-904. This pilot project was successful for the bioremediation of explosives.

Under PBC05 an RI/FS was completed in 2006 for soil and dry sediment. A PP was completed in May 2007. The PP recommended soil and dry sediment removal. Public review of the PP was completed in January 2009, The ROD was signed by the Ohio EPA and the US Army in October 2009, and the RD was finalized in the first quarter of FY10. A removal action was completed in the fourth quarter of FY10.

Additional characterization sampling was conducted in June - July 2011. An RI Supplement was completed for sediment and surface water in 2017.

The RI/FS supplement was completed in FY17.

Cleanup Strategy

The anticipated exit strategy for this site includes soil excavation to achieve commercial/industrial use of the property. A ROD amendment will be completed prior to any additional remediation.

LTM will include inspections and annual reporting.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-19 LANDFILL NORTH OF WINKLEPECK BURN GRND

WBS Element: 39747.1019

Alias: RVAAP-19

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2018

RC Date: 10/15/2018

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
RI/FS	8/31/2004	10/15/2018
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

RVAAP-19 is a 2.5-acre non-regulated solid waste disposal unit, which operated from 1969 to 1976 and is located upgradient of a wetland. Waste types possibly associated with this area include booster cups, aluminum liners, municipal waste, explosive and munitions waste and ash, and scrap metal from the Winklepeck Burning Grounds (RVAAP-05).

Potential COCs at this site include metals, explosives, and SVOCs.

This site is currently in the RI/FS phase. RVAAP-019-R-001 will address MEC concerns.

Cleanup Strategy

A NFA PP and ROD will be completed.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-29 UPPER AND LOWER COBBS PONDS

WBS Element: 39747.1029

Alias: RVAAP-29

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 1/15/2019

RC Date: 1/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	6/30/1989	6/30/1989
R/FS	1/31/2001	1/15/2019
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Upper and Lower Cobbs Ponds AOC is located in the east-central portion of Camp Ravenna. The AOC is located east of Paris-Windham Road and south of Remalia Road, north of Load Line 12, and northwest of Load Line 3. The AOC is approximately 39 acres and is comprised of approximately 18 acres of pond banks and the following surface water features:

Backwater Area, 5.2 acres.

Upper Cobbs Pond, 9.4 acres, ranges from 3–8 feet (ft) in depth, and is also called Big Cobbs Pond or South Cobbs Pond.

Lower Cobbs Pond, 6.4 acres, 2–7 ft in depth, and is also called Little Cobbs Pond or North Cobbs Pond.

Upper Cobbs Pond and Lower Cobbs Pond were constructed in 1940–1941, expanding a natural drainage conveyance to receive effluent discharge and to serve as the unlined sedimentation basins for Load Lines 3 and 12. The ponds were utilized as unlined sedimentation basins after improvements, such as flow control structures, were constructed throughout the complex. The Backwater Area did not exist when the facility was operational, rather it is a product of beaver dam construction activity (Jacobs 1989). Flow between the Backwater Area and Upper Cobbs Pond is controlled through a culvert located under the Track 33 and Load Line 3 Road crossings. Surface water in Lower Cobbs Pond discharges to a dam overflow spillway adjacent to the intersection of Remalia and Paris Windham Roads.

From 1941–1971, the ponds received effluent from the Load Lines 3 and 12 sawdust filtration units, wash water, storm water runoff, and surface water runoff. Rinsate from demilitarization operations at Load Lines 3 and 12 was initially allowed to flow out of buildings and directly onto the ground or to drainage ditches which ultimately discharged to Upper Cobbs Pond and Lower Cobbs Pond. Load Line 12 was formerly utilized for producing ammonium nitrate from 1941–1943 and 1946–1950. From 1951–1961, explosive melt-out and demilitarization activities occurred at Load Line 12. Since there were no wash water collection tanks or settling ponds in Load Line 12 during these operations, all residues, dusts, and spills were washed into the drainage system that eventually discharged into Upper Cobbs Pond.

During Load Line 3's operational history, 6.5 million munitions were produced that generated approximately 79,248 gallons of pink water each month when the facility was operating at full capacity. The contaminated pink water washout at Load Lines 3 and 12 was collected in concrete settling sumps

and treated through sawdust filters before being discharged into Upper Cobbs Pond through surface drainage channels.

From 1965–1967, Hercules Alcor, Inc. leased Building FF-19 in Load Line 12 for producing aluminum chloride. On Nov. 15, 1966, a fish kill occurred at Lower Cobbs Pond as a result of improper handling of aluminum chloride during manufacturing operations. The bulk of the aluminum chloride was collected and disposed at Ramsdell Quarry Landfill (RVAAP-01). The pond, receiving the contaminating waste from drainage ditches, was settled, drained, and the contaminants were removed to Ramsdell Quarry. Contaminated metals were flashed at a burning ground to a 5X condition. The Army terminated the lease early on 30 Dec. 3, 1967 due to environmental concerns related to air emissions and wastewater discharges to Upper and Lower Cobbs Ponds.

Cleanup Strategy

A NFA PP and ROD will be completed. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

WBS Element: 39747.1034

Alias: RVAAP-34

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2020

RC Date: 12/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$104,384.81

Phases	Start	End
PA	7/31/1994	2/29/1996
SI	7/31/1994	6/30/1999
R/FS	9/30/2004	12/15/2020
RD	--	--
IRA	9/15/2002	12/15/2019
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

RVAAP-34 was reported by former workers at RVAAP to have been an open dump for materials including, but not limited to, concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris was disposed at the surface, but became covered by vegetation. The site is approximately 1 acre and located adjacent to Sand Creek. The dates of operation of this site are unknown, but believed to be between 1950 and 1960.

A surface soil and debris removal (IRA) was completed in summer 2003. The IRA was documented in a report submitted in April 2004. An FY08 DQO study was awarded to determine data gaps for the FY03 IRA. Following the DQO study, the recommended geophysical magnetometer study and soil sampling were conducted in the fourth quarter of FY10 and first quarter of FY11. A Draft RI was submitted to Ohio EPA in 2012.

This site used to carry the facility-wide non-groundwater LTM and programmatic support requirements. These requirements are now carried in Program Management and RVAAP-66.

Cleanup Strategy

An EE/CA, Action Memorandum, and Non Time Critical Removal Action will be completed followed by a NFA PP and ROD.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-38 NACA TEST AREA

WBS Element: 39747.1038

Alias: RVAAP-38

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2019

RC Date: 12/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$44,866.78

Phases	Start	End
PA	8/31/1995	2/29/1996
SI	8/31/1995	12/31/1998
RI/FS	9/30/1999	4/15/2019
RD	9/15/2017	5/15/2019
IRA	--	--
RA(C)	9/15/2017	12/15/2019
RA(O)	--	--
LTM	--	--

Site Narrative

NACA Test Area is located west of Greenleaf Road at the southern end of Demolition Road in the southwestern portion of Camp Ravenna. The AOC is approximately 47 acres. This AOC was designed and used by NACA from 1947–1953. The site was used to conduct experimental crash tests of excess military aircraft in order to develop explosion-proof fuel tanks and fuel for aircraft. Excess airplanes were flown to the former RVAAP under their own power, taxied along installation roads, and staged at NACA Test Area. Seventeen excess aircraft were used during NACA Test Area operations. The planes were fueled and then propelled under their own power on a guide monorail. The planes were crashed into a concrete barrier at speeds from 80–105 miles per hour. During the tests, high-speed films were made to study fuel spillage, generation of ignition sources, flame front progression, and toxic gas generation, among other parameters. Combustible liquids involved in testing activities included 100/130 octane aviation fuels, low-volatility fuel, flame retardants, lubricating oil, coolant compounds, hydraulic fluids, alcohol, and brake fluid. Estimates of aviation fuel consumed are approximately 17,850 gallons. However, the amounts of other liquids potentially released are not known. Fluids from the burning airplanes were generally found in a fan-shaped area beginning at the crash barrier and extending out in front of the airplane up to 400 ft. Some aircraft were completely consumed by fire. Aircraft that were significantly damaged during testing were stripped of instrumentation and salvageable parts, and all of the aircraft were removed from the site.

Site features associated with NACA Test Area include an east-west trending runway or crash strip approximately 1,625 ft long. The crash area was located at the east end of the strip. The total crash area is approximately 12 acres. The bulldozed plane area is located east of the crash area. An unpaved access road circles the AOC. Many of the AOC features, including the crash barrier, utilities, and buildings (i.e., observation towers, fuel shack, storage sheds) have been removed. Remaining AOC features include the concrete crash strip and pad, a small man-made reservoir southeast of the former crash barrier, and an out-of-service water well and associated concrete well pit northeast of the reservoir. Currently, the AOC is forested around the perimeter. The interior of the AOC, which includes the crash strip, is relatively open and occasionally mowed. Hinkley Creek is located south/southwest of the AOC.

The site is currently in the RI/FS phase.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of a PP and ROD followed by soil treatment. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-40 LOAD LINE 7

WBS Element: 39747.1040

Alias: RVAAP-40

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 8/15/2019

RC Date: 8/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
RI/FS	8/31/2004	10/15/2018
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Load Line 7, formerly known as Booster Line #1, is a 37-acre fenced AOC. From 1941 to 1945, Load Line 7 operated at full capacity to produce booster charges for artillery projectiles. No bulk handling of explosives occurred at Load Line 7, as all primary explosive products were delivered to Load Line 7 as sealed, finished sub-assemblies. At the end of World War II (WWII), Load Line 7 was deactivated, and the process equipment was removed. From 1969 to 1970, Load Line 7 was reactivated for producing M-406 High Explosive and M-407A1 practice 40 millimeter (mm) projectiles. During this time, 16,000,000 40mm projectiles were assembled and produced at Load Line 7. No bulk handling of the primary explosives associated with the 40mm production occurred, as the products were received as finished sub-assemblies. Historical records indicate several solvents, including isobutyl acetate, isobutyl alcohol, toluene, xylenes, and isopropyl alcohol were used in the 40mm projectile production at Load Line 7. In 1970, the load line was deactivated and the process equipment was removed. From 1989 to 1993, the Load Line 7 Treatment Plant (designated as AOC RVAAP-30) was a pink water treatment plant in operation. This AOC was closed in January 2000. Buildings and foundations were demolished in 2007.

The RI/FS was completed in August 2016.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of a NFA PP and ROD. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-41 LOAD LINE 8

WBS Element: 39747.1041

Alias: RVAAP-41

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 5/15/2018

RC Date: 5/15/2018

RC Reason: Study Completed, No Cleanup Required

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete:

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
R/FS	8/31/2004	5/15/2018
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Load Line 8, formerly known as Booster Line #2, is a 44-acre fenced AOC. From 1941 to 1945, Load Line 8 operated at full capacity to produce booster charges for artillery projectiles. At the end of WWII, Load Line 8 was deactivated, and the process equipment was removed. Load Line 8 has not been used since 1945. Building foundations were demolished and removed in 2006.

The RI was completed in July 2016. The PP was completed in May 2017.

A NFA ROD was completed in FY18.

RVAAP-42 LOAD LINE 9

WBS Element: 39747.1042

Alias: RVAAP-42

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2019

RC Date: 12/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$36,231.59

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
RI/FS	8/31/2002	10/15/2018
RD	9/15/2017	5/15/2019
IRA	--	--
RA(C)	9/15/2017	12/15/2019
RA(O)	--	--
LTM	--	--

Site Narrative

Load Line 9 (RVAAP-42) was used to produce fuze components for artillery projectiles from 1941 to 1945. The buildings and foundations were demolished in 2003. Basements for several buildings were demolished in place to 3 feet below grade.

The site is currently in the RI/FS phase.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of the PP and ROD followed by soil treatment. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-43 LOAD LINE 10

WBS Element: 39747.1043

Alias: RVAAP-43

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 5/11/2017

RC Date: 5/11/2017

RC Reason: Study Completed, No Cleanup Required

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete:

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
R/FS	8/31/2004	5/11/2017
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Load Line 10 (RVAAP-43) operated as an initiator blending and loading line from 1941 to 1945. The line was reactivated in the 1950s and 1960s to produce primers for artillery. The buildings and foundations were demolished in 2007.

The RI recommending NFA was finalized in August 2015. The PP was finalized in September 2016. The NFA ROD was completed in May 2017.

RVAAP-44 LOAD LINE 11

WBS Element: 39747.1044

Alias: RVAAP-44

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: - -

RC Date: 10/15/2018

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
R/FS	10/31/1999	9/15/2018
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Load Line 11 is a 48-acre fenced AOC formerly utilized for the production of artillery primers and fuzes. From 1941 to 1945, Load Line 11 operated at full capacity for artillery primers and artillery projectile production. Load Line 11 was placed on standby status in 1945. From 1951 to 1957, Load Line 11 reactivated to produce primers and from 1969 to 1971 to produce fuzes. No historical data or information exist to indicate Load Line 11 was used for any process other than primer and fuze production.

The removal of lead/asbestos-lined sumps, lead-contaminated sediments, and solvent-contaminated soils occurred during an IRA in 2001. The Final IRA report was completed in April 2004. Several of the sewer lines were intentionally plugged with grout to prevent migration of contaminants.

The buildings and foundations were demolished in 2007. Footers were removed down to a minimum depth of 4 feet bgs. The RI was completed in August 2017. The PP was completed in May 2017.

Cleanup Strategy

A NFA ROD will be completed in FY18. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-45 WET STORAGE AREA

WBS Element: 39747.1045
Alias: RVAAP-45
Regulatory Driver: CERCLA
RRSE: Not assigned
MRSP: Not assigned
RIP Date: 12/15/2019
RC Date: 12/15/2019
RC Reason: Not assigned
Program: ENV Restoration, Army
Subprogram: IR
Cost-to-Complete: \$36,622.61

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
RI/FS	9/30/2004	10/20/2018
RD	9/15/2017	5/15/2019
IRA	--	--
RA(C)	9/15/2017	12/15/2019
RA(O)	--	--
LTM	--	--

Site Narrative

Wet Storage Area is a 36-acre fenced AOC located directly northwest of the intersection of George Road and Newton Falls Road. From 1941 through 1945, Wet Storage (WS) Area was used to store highly explosive primary explosives, including lead azide, mercury fulminate, and tetryl. During storage activities, explosive material was containerized, covered with water within drums, and stored separately in six igloos at the AOC. WS-1 and WS-1A were used to store lead azide, WS-2 and WS-2A were used to store mercury fulminate, and WS-3 and WS-3A were used to store tetryl. Since the Wet Storage Area igloos were used for storage of primary explosives, four igloos (WS-1, WS-1A, WS-2, and WS-2A) were remediated for explosives contamination through thermal decomposition prior to demolition. Thermal decomposition activities occurred in February 2002, demolition of the igloos was initiated in November 2003, and activities were complete in July 2004. Prior to demolition, the lead floor liners within the igloos were removed and recycled off-site. All above-grade concrete structures and floor slabs were removed from the four igloos, and any foundations were removed to 1 ft bgs. All concrete from the demolition of the four igloos was transported to the clean hard-fill area in Load Line 1. The two remaining igloos (WS-3 and WS-3A) were refurbished. Remnant infrastructure within the eastern part of Wet Storage Area consists of refurbished igloos WS-3 and WS-3A. At the western portion of the AOC, the earthen mounds that backed the four demolished igloos are still visible. With the exception of those areas within the AOC consisting of access roads and the former and extant igloos, Wet Storage Area is forested.

The RI/FS was completed in March 2017.

Cleanup Strategy

The anticipated exist strategy for this site includes completion of the PP and ROD followed by soil treatment.

RVAAP-46 BUILDING F-15 AND F-16

WBS Element: 39747.1046

Alias: RVAAP-46

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 3/15/2019

RC Date: 3/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$3,213.44

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
RI/FS	12/31/2003	3/15/2019
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Former buildings F-15 and F-16 were located west of Block D and east of Slagle Road in the west central portion of the facility. Railroad tracks oriented in a 12 north-south direction are located east of the buildings. The AOC, which is the combined operational areas for both Buildings F-15 and F-16, is approximately 5.4 acres. The defined AOC area does not include the forested area between the two buildings. The former Buildings F-15 and F-16 were used for surveillance testing during WWII, the Korean War, and the Vietnam War. The number of tests conducted on miscellaneous explosives and propellants, the quantities of material tested, and the exact dates of testing are unknown. From 1951 to 1957, the AOC was also used for a proving ground as well as for the demilitarization of ammunition and components. No additional information exists to indicate the AOC was used for any other processes. Historical facilities at the AOC included five process and support buildings. All buildings, slabs and foundations were demolished, except Building U-17, in 2009.

The site is currently in the RI/FS phase.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of the RI. An NFA PP and ROD will be completed. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RVAAP-50 ATLAS SCRAP YARD

WBS Element: 39747.1050

Alias: RVAAP-50

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 3/15/2021

RC Date: 3/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$4,136,478.42

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
RI/FS	8/31/2004	10/15/2019
RD	4/15/2019	5/15/2020
IRA	--	--
RA(C)	10/15/2019	3/15/2021
RA(O)	--	--
LTM	3/15/2021	2/15/2051

Site Narrative

In the 1940s, RVAAP-50 (Atlas Scrap Yard) contained a complex of buildings including barracks type housing that supported the principal construction and engineering company staff and included barracks type housing. After WWII, a majority of the Atlas building complex was demolished leaving the remaining portion of structures to support the installation roads and grounds maintenance staff and equipment as well as a large contingent of railroad maintenance personnel. The post WWII structures stood until after the Vietnam War at which point all remaining buildings were demolished and the site became a storage/stockpile yard for various types of bulk materials used in the day-to-day installation operations such as gravel, railroad ballast, sand, culvert pipe, railroad ties, and telephone poles. In the mid to late-1980s, the southeastern portion of the old Atlas area became a staging area for salvaged ammunition boxes from the demilitarization of defunct Vietnam War era munitions.

This site is currently in the RI/FS phase.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of the RI/FS followed by a removal action/treatment with LUCs. Inspections and five year reviews will also be completed.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-51 DUMP ALONG PARIS-WINDHAM ROAD

WBS Element: 39747.1051

Alias: RVAAP-51

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 2/15/2019

RC Date: 2/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$149,322.91

Phases	Start	End
PA	2/28/1998	6/30/1998
SI	7/31/1998	7/31/1998
R/FS	9/30/2001	6/15/2018
RD	6/15/2018	7/15/2018
IRA	9/30/2002	9/30/2004
RA(C)	6/15/2018	2/15/2019
RA(O)	--	--
LTM	2/15/2019	1/15/2049

Site Narrative

RVAAP-51 (Dump Along Paris-Windham Road) is adjacent to the Sand Creek flood plain and was used as an open dump for miscellaneous materials, including transite siding. The dates of operation for the landfill are unknown.

Collection and analyses of surface water, sediment and biological samples occurred in Sand Creek adjacent to the site. There were no detections above background levels identified in the RVAAP-specific surface water and sediment. Biological samples collected in Sand Creek under a separate initiative and in the vicinity of the dump reflected excellent stream quality.

Debris removal was completed in January 2004. Confirmation sampling detected PAHs and asbestos close to the road within the embankment. No attempt was made to remove remaining debris within the roadbed embankment as it would have compromised the stability of Paris-Windham Road.

The Final Site Characterization Focused FS report was approved in March 2015. The PP was finalized in October 2016.

Cleanup Strategy

A ROD will be finalized in FY18. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

LUCs will include signage, inspections and reporting.

Installation-wide five-year review requirements are carried at RVAAP-01.

RVAAP-66 FACILITY-WIDE GROUNDWATER

WBS Element: 39747.1072

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 2/15/2023

RC Date: 2/15/2053

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$7,815,004.35

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	5/31/1988	6/30/1989
RI/FS	10/31/1999	2/15/2021
RD	3/15/2021	2/15/2022
IRA	10/31/2011	3/15/2016
RA(C)	3/15/2022	2/15/2023
RA(O)	3/15/2023	2/15/2053
LTM	--	--

Site Narrative

Groundwater is managed through a facility-wide approach called the FWGWMP under RVAAP-66. The FWGWMP is a component of the DFFO, June 2004. The FWGWMP now consists of 284 wells facility wide.

Both shallow aquifers and deeper regional aquifers are being monitored. Several contaminant of potential concern have been identified in the shallow aquifers that exceed drinking water standards and facility-wide cleanup goals. Some of the source areas are known but nature and extent is not yet established. Site-related constituents have been identified at low concentration and are still being evaluated in the deeper aquifers.

Three wells were installed in 2013 along the facility boundary. Fifteen wells were installed in 2016. The RI work plan was finalized in March 2017.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of the RI/FS. Facility-wide groundwater monitoring will continue until the RI/FS is completed. Monitored Natural Attenuation is the assumed remedial action.

RVAAP-67 FACILITY-WIDE SEWERS

WBS Element: 39747.1073

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2019

RC Date: 12/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: IR

Cost-to-Complete: \$82,178.94

Phases	Start	End
PA	2/29/1988	4/30/1988
SI	5/31/1988	6/30/1989
R/FS	10/31/1999	12/15/2019
RD	--	--
IRA	5/15/2016	12/15/2018
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The RVAAP started operations in 1941 and continued intermittently until the late-1970s either loading or demilitarizing ammunition. Plant operations required processing large quantities of secondary explosives and lesser quantities of primary explosives. Periodic cleaning of the process areas resulted in explosive residues in the sanitary and storm sewers and settling ponds. Facility-wide sewers are addressed by RVAAP-67.

Sewers thought to have transported explosive residues during plant operations are believed to be limited to the 12 process areas and Buildings 1037 (laundry) and 1039 (laboratory) in the administrative area of the plant. The sanitary sewers (approximately 28,500-feet) are assembled from either vitreous clay tile that has been lined with resin or cast iron. Storm sewers (estimated at 30,000-feet) are fabricated from either vitreous clay or corrugated galvanized steel.

Sewers were installed in trenches lined with washed gravel then covered by about six-inches of gravel and backfilled with the removed soil, generally heavy clay. If the sewers leaked contaminants they should be in the gravel fill, trapped by the clay backfill. The main sources of explosives in sanitary sewers are change houses within the various load lines where coveralls were removed and people showered prior to leaving the facility, the laundry where the clothes were washed and the laboratory where small quantities of explosives were tested.

Storm sewers within the load lines were subject to contamination by virtue of wash-down procedures where explosive residue and dusts were scrubbed from the floors and washed through doorways onto the surrounding grounds and which could then migrate to the storm water drain system. Explosives could also enter the storm system from explosive filter effluent traveling to settling ponds.

Lakeshore Engineering was contracted to determine the explosive residues in sewers and make recommendations as recorded in its report, Explosive Evaluation of Sewers, dated November 2007. The Lakeshore Engineering study was done under safety qualification parameters; not to quantify the presence of any explosive deposits. The Corps of Engineers Research Laboratory performed a similar investigation of explosive contamination in the sewer system in a letter report dated 15 June 2007 which has been included in the Lakeshore report as an appendix.

Following an Ohio EPA approved work plan, Tier I (sediment and liquids) surveys/investigation were completed in the second quarter of FY10 with Tier II video analyses of critical area load, assemble and pack production area sewers completed in September FY11. A Draft RI/FS report was submitted to Ohio EPA in 2012.

An EE/CA was completed in March 2017.

Cleanup Strategy

The anticipated exit strategy for this site includes completion of an Action Memo followed by soil removal. The RI will recommend NFA. A NFA PP and ROD will be completed. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

CC RVAAP-68 ELECTRIC SUBSTATIONS (E,W,No. 3)

WBS Element: 39747.1076

Alias: RVAAP-68

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 5/31/2017

RC Date: 5/31/2017

RC Reason: Not Eligible For ER,A/BRAC Funding

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete:

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	2/28/2010
R/FS	3/31/2010	5/31/2017
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Electricity for the installation was purchased from the Ohio Edison Company. The electricity was supplied from Newton Falls and Garrettsville, Ohio. Distribution occurred through three substations, each having approximately 24,000 volts. Three of these substations are included in CC RVAAP-68.

The East Substation is located close to the intersection of Remalia Road and Load Line No. 2 Road. The substation comprises an area of approximately 12,300 square feet, which includes the land surrounding Building 25-27. There are no documented releases. However, stained concrete was noted in the building during the historical records review. Target analytes noted in the Historical Records Review (HRR) included Target Analyte List (TAL) metals, Polychlorinated Biphenyls (PCBs), and SVOCs.

The West Substation is located west of Load Line 5 on Fuze & Booster Service Road. The substation comprises an area of approximately 3,000 square feet, which includes the area north/northeast of Building 28-28 This AOC excludes building 28-28. One spill of approximately 500 gallons of transformer fluid occurred on the north side of the building. The impacted area was cleaned up by Emerald Environmental in 1997. Possible impacted soils may exist outside the building around the former transformers. No visual evidence of impacts was noted during the historical records review, Target analytes noted in the HRR included TAL metals, PCBs, and SVOCs.

Substation No. 3 is located in the Fuze & Booster area between Load Lines 10 and 11. The substation comprises an area of approximately 10,000 square feet. The substation and all transformer equipment have been removed from the site. There are no documented releases and no visual evidence of impacts was noted during the historical records review. Target analytes noted in the HRR included TAL metals, PCBs, and SVOCs.

An HRR was completed in December 2011. The RI was completed in August 2015. The PP was finalized in October 2016. The NFA ROD was finalized in May 2017.

CC RVAAP-69 BUILDING 1048 - FIRE STATION

WBS Element: 39747.1077

Alias: RVAAP-69

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 1/15/2021

RC Date: 1/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$20,247.40

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	2/28/2010
R/FS	3/31/2010	1/15/2021
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Building 1048 Fire Station (CC RVAAP-69) AOC was located in the former plant administration area in the northwest quadrant of the intersection of George Road and South Service Road. In 1968, the fire station was referred to as the Fire and Guard Building, and consisted of 12,130 square feet. The fire station building was demolished in late 2008, and the site currently remains undeveloped. The AOC consists of the ground area located west/northwest of the former building. The area is currently marked with Siebert stakes.

Reportedly, it was common practice for the fire department to clean out fire extinguishers behind the west side of the fire building, and to allow the contents of the fire extinguishers (carbon tetrachloride) to spill onto the ground surface. The area of potential impact (ground surface west of the building) is approximately 28,000 square feet.

An HRR was completed in December 2011. This site is currently undergoing an RI.

Cleanup Strategy

Groundwater monitoring wells will be installed as part of the RI and sampled for four initial quarters after which, Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

The anticipated exit strategy for the site includes completion of the RI /FS and a NFA PP and ROD.

CC RVAAP-70 EAST CLASSIFICATION YARD

WBS Element: 39747.1078

Alias: RVAAP-70

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$169,650.36

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	10/31/2018
R/FS	10/15/2017	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The RVAAP was originally equipped with east and west classification yards during its early operational years. The classification yards were used for the switching and maintenance of railroad cars.

The East Classification Yard (CC RVAAP-70) is located east of Load Line 1 in close proximity to the intersection of Ramsdell Road and Irons Road. The rail-yard reportedly consisted of 18 tracks with a 750 car capacity, and 3 Hi-X tracks with a 120 car capacity, which also included the washrack south of the main track area.

This yard was equipped with a locomotive repair building (Round House), an herbicide storage shed, several outbuildings, a washrack area, and a storage tank area. The herbicide shed contained a mobile herbicide tank. The AOC area consists of the following areas within the East Classification Yard: storage tank area, herbicide shed, Round House building, and former washrack area.

An HRR was completed in December 2011. According to the HRR, a heating oil fuel spill occurred in 1986 within the vicinity of the storage tank area. The area was reportedly cleaned up; however, no final cleanup report was found. This area is now overgrown with vegetation. Staining from past operations was found within the Round House building. No visible evidence of impacts (stained soil, stressed vegetation) was noted in the vicinity of the herbicide shed or washrack. The HRR recommended further investigation for all four areas within the East Classification Yard.

The Site Inspection (SI) is currently underway.

Cleanup Strategy

The anticipated exit strategy for the site includes completion of the SI. It is assumed a RI will be completed followed by a NFA PP and ROD.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

CC RVAAP-73 FACILITY-WIDE COAL STORAGE

WBS Element: 39747.1080

Alias: RVAAP-73

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 11/15/2018

RC Date: 11/15/2018

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	2/28/2010
R/FS	3/31/2010	11/15/2018
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Installation records document the former presence of 17 coal storage locations at Ravenna Army Ammunition Plant, all of which are included in CC RVAAP-73. Coal was historically used to fuel powerhouses and various other buildings at the site. Typically, coal storage consisted of placing the coal on the ground surface as surface piles or in railcars adjacent to the subject buildings. The total area of potentially impacted media associated with the coal consists of approximately 222,500 square ft (about five acres). Coal storage occurred at the following locations at RVAAP: 1) Load Line 1 Powerhouse 2) Load Line 2 Powerhouse 3) Load Line 4 Powerhouse 4) Load Line 12 Powerhouse 5) Building F-15 6) Building F-16 7) Atlas Scrap Yard 8) North Line Road Coal Tipple 9) Sand Creek Coal Tipple 10) East Classification Yard Round House 11) Administration Area 12) Depot Area Building U-5 13) Depot Area Building U-14 14) Fuze and Booster Road Powerhouse No. 5 15) Fuze and Booster Road Inert Storage No. 2F-N21 16) Fuze and Booster Service Road Powerhouse 17) Area 6 Inert Storage

During a property visit conducted as part of the HRR, visual evidence of previously undocumented coal storage was found approximately 2,000 feet south of the East Classification Yard and at the Building U-16 boiler house in the Depot Area. Available historical aerial photographs and site observations indicate that coal residue may still remain on or at the ground surface at the above-described locations. As such, the surface soils may be impacted by typical coal contaminants (PAHs, metals).

A HRR was completed in December 2011 and included investigation into the 17 documented coal storage sites and the additional two undocumented sites. Remnants of coal were noted at the following locations during the historical records review: North Line Coal Tipple, Sand Creek Coal Tipple, Building U-16, and the undocumented coal location south of the East Classification Yard.

Stressed vegetation was noted at the North Line Coal Tipple. No remnants or stressed vegetation was noted at any other coal sites. Further investigation was recommended for the following coal sites: North Line Coal Tipple, Sand Creek Coal Tipple, Building U-16 coal area, and the undocumented coal storage area south of the East Classification Yard.

The RI was completed in March 2017.

Cleanup Strategy

The NFA PP and ROD will be completed.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater..

CC RVAAP-74 BLDG 1034 MOTOR POOL HYDRAULIC LIFT

WBS Element: 39747.1081

Alias: RVAAP-74

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 1/15/2021

RC Date: 1/15/2021

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$62,841.67

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	12/15/2011
RI/FS	3/31/2010	12/31/2020
RD	--	--
IRA	9/30/2017	12/31/2019
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

An in-ground hydraulic floor lift system located at Building 1034 has been identified and included in CC RVAAP-74. The hydraulic floor lift system is depicted in a 1969 drawing as a twin-post lift system constructed of metal. The below-grade system consists of a cast in concrete L-shaped pit measuring approximately 12 feet in length and four feet in length, three feet in width, and four feet in height. The pit is reportedly buried at depths ranging from four feet bgs to approximately eight feet bgs. The twin-post lift reportedly has a clearance of six feet between the floor surface and the bottom of the lift (height in the air). The floor lift system remains in place, and has reportedly exhibited a slow leak of hydraulic fluids for an extended period of time. The potential COCs associated with the floor lift system are total petroleum hydrocarbons, PAHs, and PCBs.

A HRR was completed in December 2011. The review investigated the oil water separator and the former degreasing activities related to Building 1034. No documentation related to spills or release from the oil water separator was found. Interviews revealed that approximately 300 gallons of hydraulic oil were added to the lift unit over approximately 10 years. Hydraulic oil was observed within the unit. The report recommended further investigation for the hydraulic lift. No sampling was recommended in conjunction with the former degreasing activities at the site.

The RI is currently underway.

Cleanup Strategy

Groundwater monitoring wells will be installed as part of the RI and sampled for four initial quarters after which, Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

The anticipated exit strategy for the site includes completion of the RI. Once the RI/FS is completed future actions will be evaluated. At this time there isn't sufficient documentation to plan for future actions.

CC RVAAP-76 DEPOT AREA

WBS Element: 39747.1083

Alias: RVAAP-76

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2019

RC Date: 1/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$38,711.44

Phases	Start	End
PA	9/30/2008	4/30/2009
SI	5/31/2009	2/28/2010
RI/FS	3/31/2010	10/15/2018
RD	9/15/2017	5/15/2019
IRA	--	--
RA(C)	9/15/2017	12/15/2019
RA(O)	--	--
LTM	--	--

Site Narrative

The Depot Area (CC RVAAP-76) consists of multiple historical support buildings used for former operations including: fueling stations, locomotive repair shop, motor repair shop, petroleum storage building, solid waste incinerator, demilitarization activities at Building U-10, service station and an aboveground storage tank (AST) associated with Building U-5. The steel 400 gallon AST located between Depot Buildings U-5 and U-4 has been removed, but the soils beneath and around the former tank are stained. The tank sat on crushed slag next to the motor oil storage shed. Waste oil from the motor pool area was stored in the AST until it was removed by an oil reclaimer. The AST was in operation from 1983 through 1993. In 1993, the contents of the AST were removed and the tank remained inactive until its removal (after 1996).

A HRR was completed in December 2011. The report indicated that demilitarization activities occurred at Building U-10. It also indicated that the AST had been removed but its concrete supports still remain. No visual evidence of impacts (stained soil, stressed vegetation) was observed at the former AST site. Interviewees noted a historical spill from a Buffalo Tank containing waste oil which was cleaned up within a day. No documentation related to this spill was identified. A spill report was found documenting the discovery of 12 paint cans during an UST investigation. The cans were removed in 1991. Various maintenance activities occurred throughout the Depot Area. No documentation regarding spills related to maintenance activities was found. Eleven USTs were formerly operated at the Depot Area. These will be evaluated as part of CC-RVAAP-72. The following sites within the Depot Area were recommended for further investigation: Building U-4 POL Area, Building U-5 Locomotive Repair Shop, Building U-20 Incinerator, Building U-10 (demilitarization activities), Building A-3 Service Garage, Building U-3 Service Station (Kerosene UST), Building A-2 Motor Repair Facility, Bolton Barn (Tank Maintenance) Paint Can Burial Area, and ditch lines within the operational areas.

The RI/FS was finalized in January 2017.

Cleanup Strategy

The PP and ROD are underway. Soil removal will be completed.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

CC RVAAP-78 QUARRY POND SURFACE DUMP

WBS Element: 39747.1086

Alias: RVAAP 78

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: - -

RC Date: 10/15/2019

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$3,213.44

Phases	Start	End
PA	4/30/2009	6/30/2009
SI	7/31/2009	8/15/2016
R/FS	4/30/2010	10/15/2019
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Quarry Pond Surface Dump (CC RVAAP-78) consists of an area of former dumping along a small topographic ridge located north and northeast of the northern-most quarry pond within the Fuze and Booster Quarry. The potentially impacted area consists of approximately 8,750 (250 feet by 35 feet) square feet. The debris pile appears to have an average thickness of about five feet (where present). Contents of the debris pile appear to consist of potential ACM, construction debris, scrap metal, and other unknown materials. A former burn location is also present along the northeastern portion of the surface dump and is characterized by ground charring.

The Quarry Pond Surface Dump appears to be a possible northern extension of the existing Fuze and Booster Quarry AOC (RVAAP-16), which operated from 1945 through 1993.

Constituents of concern include explosives, propellants, volatile organic compounds, SVOCs, metals, asbestos, and PCBs in soil and groundwater.

The RI is currently underway.

Cleanup Strategy

The anticipated exit strategy for the site includes completion of the RI. Once the RI is completed future actions will be evaluated. At this time there isn't sufficient documentation to plan for future actions.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

CC RVAAP-79 DLA ORE STORAGE SITES

WBS Element: 39747.1087

Alias: RVAAP 79

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 1/15/2020

RC Date: 1/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: CR

Cost-to-Complete: \$11,189.76

Phases	Start	End
PA	4/30/2009	6/30/2009
SI	7/31/2009	9/30/2009
R/FS	10/31/2010	1/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

Various ores were historically stored (stock-piled) at this facility for the General Services Administration (GSA). The Defense Logistics Agency (DLA), Defense National Stockpile Center leased space at the Ravenna facility for the storage of the ore materials on the ground and in ASTs, which are addressed by CC RVAAP-79. The ASTs were referred to as strategic material tanks. Many of the ASTs were constructed without floors; therefore, the ores were allowed to make direct contact with the underlying soils.

The following GSA materials were stock-piled on the ground surface: brass ingots, chemical chrome ore, copper ingots, ferrochrome ore, ferro manganese ore, and metallurgical manganese ore.

The following GSA materials were stored in Strategic Material Tanks: magnesium, kyanite, antimony sulfide, asbestos (raw), cobalt rutile sand, cobalt zircon sand, monazite sand, nickel cathodes, rutile sand, silicon carbide, talc, and zircon sand ore. The monazite sand contained radioactive element Thorium 232.

Ore storage occurred at the following primary locations on the Ravenna property: DLA Load Line 3 Tank Storage and Building 803, DLA Route 80 Tank Farm, DLA Main Ore Pile Storage Area, DLA Area 8 Inert Storage, Building 841, and DLA Area 2 Ammunition Storage Area. The total area of potentially impacted media associated with the ore storage consists of approximately 333,582 square yards (about 68.92 acres).

This site also includes the former Ore Pile Retention Pond (RVAAP-31) constructed in the mid 1950s. The pond was constructed to control potentially contaminated surface water runoff from the adjacent manganese and chrome stock piles from entering a receiving stream. There remains the potential for releases of contaminants from this unit to the surrounding soils, groundwater, surface water and sediment.

Available aerial photographs and site observations indicate that ores still remain on the ground surface at several locations. As such, the surface soils may be impacted by these materials.

The RI is currently underway.

Cleanup Strategy

The anticipated exit strategy for the site includes completion of the RI. Once the RI is completed future actions will be evaluated. At this time there isn't sufficient documentation to plan for future actions.

Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

RAVENNA ARMY AMMUNITION PLANT

MILITARY MUNITIONS RESPONSE PROGRAM SITES

RVAAP-063-R-01 GROUP 8 MRS

WBS Element: 39747.1057

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/31/2025

RC Date: 12/31/2025

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$1,296,227.10

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	4/30/2010	12/15/2019
RD	1/1/2020	12/31/2020
IRA	--	--
RA(C)	1/1/2021	12/31/2025
RA(O)	--	--
LTM	--	--

Site Narrative

The Group 8 (RVAAP-063-R-01) munitions response site (MRS) consists of most of the area between Buildings 846 and 849 and may have been used for debris and rubbish burning. An SI was completed for the site in 2008. The SI recommended 2.65 acres be evaluated for MEC and munitions constituents (MC).

In July 2009, Performance Based Acquisition (PBA)09 was awarded to characterize the nature and extent of MEC and MC contamination at the Group 8 (RVAAP-063-R-01) MRS. The option for this site was exercised in FY10. The RI was completed in 2015.

The RI Report concluded that a release of MEC had not occurred at the site. However, MC was detected at the site at concentrations that posed an unacceptable risk to potential receptors. In addition, significant amounts of Material Potentially Presenting an Explosive Hazard (MPPEH) were observed during the RI. The RI Report recommends retaining the 2.65 acre MRS, and recommends remedial alternatives be evaluated in a feasibility study for the site. The remedy for the site is currently unknown, but most likely will include a remedial action for MC and land-use controls due to the presence of MPPEH (munitions debris).

Cleanup Strategy

The exit strategy for this site includes completion of an FS followed by a PP and Decision Document (DD). A MEC removal action will be completed to achieve unrestricted use/unlimited exposure (UU/UE) at this site. Following the completion of the removal action a NFA Explosives Safety Submittal will be completed.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-061-R-01 BLOCK D IGLOO -TD

WBS Element: 39747.1058

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
RI/FS	4/30/2010	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Block D Igloo - Transferred (TD) (RVAAP-061-R-01) MRS is the offsite portion of the Block D site. This site was the result of an explosion that occurred at Igloo 7-D-15 ("D" Block) on March 24, 1943 where debris was found off the installation. A munitions response was conducted by Explosives Ordnance Disposal Team and a follow-on site assessment was later conducted by Huntsville District to assess the type of munitions stored in the bunker, as well as the size of the debris field created by the explosion. The site assessment identified a 3,000-foot blast radius around the former storage bunker. Part of the blast radius extended beyond the installation boundary. This 19.25 acre site was recommended for further evaluation for potential release of MEC and MC.

An SI was completed for the Block D Igloo - TD site in 2008. The Final SI Report concluded that a release of MEC and MC had not occurred at the site, and the 19.25 acre MRS was recommended for NFA. However, the SI Report recommended that 14.13 dis-contiguous acres located outside the installation boundary be evaluated for MEC and MC.

PBA09 was awarded in June 2009 to complete an RI at the Block D Igloo - TD MRS. The option for this site was exercised in FY10. The investigation determined that a release of MEC and MC did not occur beyond the installation boundary. This determination was based on information/research contained in a technical memorandum demonstrating that the 1943 explosion could not have ejected MEC/MPPEH beyond the installation boundary. Fieldwork conducted in the adjacent Block D Igloo MRS corroborated that MEC/MPPEH had not been released at the site. The technical memorandum was approved by the Ohio EPA on 15 February 2011.

A discussion of the findings for the Block D Igloo - TD (RVAAP-061-R-01) MRS were reported in the Final RI Report for the Block D Igloo (RVAAP-060-R-01) MRS. A separate RI report was not prepared for the Block D Igloo - TD (RVAAP-061-R-01) MRS.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01 RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-016-R-01 FUZE AND BOOSTER QUARRY

WBS Element: 39747.1059

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	4/30/2010	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Fuze and Booster Quarry (RVAAP-016-R-01) site consists of three elongated ponds separated by berms which were constructed within an abandoned rock quarry. The ponds were used for open burning of various types of munitions from 1945 to 1975. The site is co-located with an IRP AOC (RVAAP-16). An SI was completed for the Fuze and Booster Quarry site in 2008. The SI recommended 4.9 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Fuze and Booster Quarry (RVAAP-016-R-01) MRS. The option for this site was exercised in FY10. The RI was completed in 2015.

The RI Report concluded that a release of MEC and MC had not occurred at the site. However MPPEH (confirmed to be munitions debris/ Material Documented as Safe (MDAS)) was identified at the site. The RI Report recommended retaining the MRS acreage as 4.9 acres and recommended remedial alternatives be evaluated in a feasibility study for the site.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01 RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-002-R-01 ERIE BURNING GROUNDS

WBS Element: 39747.1060

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/31/2020

RC Date: 10/31/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	4/30/2010	10/31/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Erie Burning Grounds (RVAAP-002-R-01) MRS was used from 1941 to 1951 to thermally treat bulk, obsolete, off-spec propellants, conventional explosives, rags, and large explosive contaminated items (such as railcars) through open burning on the ground surface. The MRS is co-located with an IRP AOC (RVAAP-02 Erie Burning Grounds). An SI was completed for the Erie Burning Grounds site in 2008. The SI recommended 33.93 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Erie Burning Grounds (RVAAP-002-R-01) MRS. The option for this site was exercised in FY10. The Final RI Report was published in August 2014, and approved by the Ohio EPA in September 2014.

The RI Report concluded that a release of MEC and MC had not occurred at the site. However MPPEH (munitions debris) was identified at the site. The RI Report recommended retaining the MRS acreage as 33.9 acres and recommended remedial alternatives be evaluated in a feasibility study for the site. The presumptive remedy for the site is Land-use controls due to the presence of MPPEH (confirmed to be munitions debris/MDAS).

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01 RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-004-R-01 OPEN DEMOLITION AREA #2

WBS Element: 39747.1061

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2025

RC Date: 10/15/2025

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$280,601.58

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	10/31/2008	10/15/2022
RD	11/15/2021	10/15/2022
IRA	3/15/2015	9/15/2019
RA(C)	11/15/2021	10/15/2025
RA(O)	--	--
LTM	10/15/2025	9/15/2055

Site Narrative

The Open Demolition Area #2 (RVAAP-004-R-01) MRS is a former open burn / open detonation area that was used between 1948 and 1991 for munitions and explosives disposal. The MRS is co-located with an IRP AOC (RVAAP-04). An SI was completed in 2008. The Final SI Report identified the MRS as being 35.4 acres and recommended the site for further evaluation for MEC and MC.

Two Time-Critical Response Actions (TCRAs) have been conducted at ODA #2. In 2008, a TCRA was conducted to address the potential for migration of munitions offsite in Sand Creek. In 2009-2011, a second TCRA was conducted at Rocket Ridge to address MEC and MPPEH contamination along the leading slope of the creek.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the ODA #2 (RVAAP- 004-R-01) MRS. The RI was completed in 2015. The RI Report concluded that the MRS was much larger due to the presence of a significant kickout area. Some MC was detected, but not at levels that presented an unacceptable risk to potential receptors. MEC and MPPEH was confirmed at the site. The MRS was increased to 317.4 acres. The RI Report recommended evaluation of remedial alternatives for MEC in a FS.

A Final Memorandum of Record and a Action Memorandum recommending a TCRA was completed in 2015. A Probability Assessment investigating the munitions risk at the site was completed in May 2015. This information will be used to complete the TCRA.

Cleanup Strategy

An interim removal action is underway to delineate moderate to high probability areas for encountering MEC, conduct surface sweeps for the stream, and to conduct surface and subsurface removal actions for MEC in subject areas.

The exit strategy for this site includes completion of an FS to evaluate remedial alternatives for MEC, followed by a PP and DD (funded). LTM will consist of LUCs and five-year reviews. Following implementation of land use controls a NFA Explosives Safety Submittal will be completed.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-004-R-01 for RVAAP-004-R-01, RVAAP-060-R-01 and RVAAP-063-R-01.

IMPORTANT NOTE: Portions of the ODA2 MRS overlap operational range (MK19 Range). The installation will need to evaluate this overlap and adjust the MRS boundary to remove the operational acreage from the MRS. Any additional work at ODA2 will be evaluated in accordance with Defense Environmental Restoration Program eligibility criteria.

RVAAP-060-R-01 BLOCK D IGLOO

WBS Element: 39747.1062

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 12/15/2025

RC Date: 12/15/2025

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$7,259,563.16

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	10/15/2008	12/15/2019
RD	1/15/2020	12/15/2020
IRA	--	--
RA(C)	1/15/2021	12/15/2025
RA(O)	--	--
LTM	--	--

Site Narrative

The Block D Igloo MRS (RVAAP-060-R-01) was the result of an explosion that occurred at Igloo 7-D-15 ("D" Block) on March 24, 1943. A munitions response was conducted by Explosives Ordnance Disposal team and a follow-on site assessment was later conducted by Huntsville District to assess the type of munitions stored in the bunker, as well as the size of the debris field created by the explosion. The site assessment identified a 3,000-foot blast radius around the former storage bunker. A SI was completed for the Block D Igloo site in 2008. The SI recommended 340.20 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Block D Igloo MRS (RVAAP-060-R-01). The RI was completed in FY15.

The RI Report concluded that a release of MEC had occurred, but the extent of the release was much less than suspected in the SI. Some MC was detected, but not at levels that presented an unacceptable risk to potential receptors. The MRS acreage was reduced to 101.6 acres. The RI Report recommended evaluation of remedial alternatives for MEC in a FS. MPPEH (confirmed munitions debris/MDAS) was confirmed at the site.

Cleanup Strategy

The exit strategy for this site includes completion of an FS followed by a PP and DD. A MEC Removal action will be completed to achieve UU/UE at this site. Following the completion of the removal action a NFA Explosives Safety Submittal will be completed.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-050-R-01 ATLAS SCRAP YARD

WBS Element: 39747.1063

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	7/15/2009	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Atlas Scrap Yard (RVAAP-050-R-01) was used as metal scrap yard and construction camp. The site is co-located with IRP AOC RVAAP-50. A SI was completed for the Atlas Scrap Yard site in 2008. The SI recommended 66 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Atlas Scrap Yard (RVAAP-050-R-01). The RI Report was finalized in August 2014. Ohio EPA approval was received in November 2014.

The RI Report concluded that a release of MEC and MC had not occurred at the site. The RI Report recommended NFA for MEC and MC.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01 RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-032-R-01 40MM FIRING RANGE

WBS Element: 39747.1065

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	4/30/2010	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The 40mm Firing Range (RVAAP-032-R-01) is a former test range for the 40mm cartridge that was used for testing between 1969 and 1971. The site is co-located with an IRP site (RVAAP-32). An SI was completed for the 40mm Firing Range site in 2008. The SI recommended 1.27 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the 40mm Firing Range (RVAAP-032-R-01) MRS. The option for this site was exercised in FY10. The RI was completed in 2015.

The RI Report concluded that a release of MEC and MC had not occurred at the site. However MPPEH (confirmed munitions debris/MDAS) was identified at the site. The RI Report recommended increasing the size of the MRS to 8.55 acres and recommended remedial alternatives be evaluated in a feasibility study for the site.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01 RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-019-R-01 LANDFILL NORTH OF WINKLEPECK

WBS Element: 39747.1067

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/15/2020

RC Date: 10/15/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	10/31/2008	10/15/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Landfill North of Winklepeck MRS (RVAAP-019-R-01) is a former dump area suspected of containing flare canisters and booster cups. RVAAP-19 addresses IR concerns at this location. A SI was completed for the MRS in 2008. The SI recommended 2.3 acres be evaluated for MEC and MC.

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Landfill North of Winklepeck MRS (RVAAP-019-R-01). The RI was completed in 2015. The RI Report concluded that a release of MEC and MC had not occurred at the site. The RI Report recommended NFA for MEC and MC.

RVAAP-19 addresses IR concerns at this location.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-001-R-01 RAMSDELL QUARRY AREA 2 (SOUTH)

WBS Element: 39747.1070

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: 10/31/2020

RC Date: 10/31/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$15,600.29

Phases	Start	End
PA	9/18/2002	12/21/2003
SI	9/30/2005	5/31/2008
R/FS	10/31/2008	10/31/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Ramsdell Quarry (RVAAP-001-R-01) MRS is a former OB/OD area used to thermally treat waste explosives and napalm bombs between 1946 and 1950. A portion of the site was used as a nonhazardous solid waste landfill. The landfill acreage is not part of the MRS. An SI was completed for the Ramsdell Quarry site in 2008. The SI recommended 13.4 acres be evaluated for MEC and MC. Following the RI the site was divided into two separate sites RVAAP-001-R-01 (6.93 acres) and RVAAP-001-R-02 (6.47 acres).

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Ramsdell Quarry (RVAAP-001-R-01) MRS. The RI Report was finalized in January 2015.

The RI Report concluded that a release of MEC had not occurred at the site. Some MC was detected, but not at levels that presented an unacceptable risk to potential receptors. The RI Report recommended decreasing the size of the MRS to 6.93 acres and recommended remedial alternatives be evaluated in a feasibility study for the site. The presumptive remedy for the site is Land-use controls due to the presence of Material Potentially Presenting an Explosive Hazard (MPPEH) (confirmed to be munitions debris / MDAS).

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

RVAAP-001-R-02 RAMSDELL QUARRY AREA 1 (NORTH)

WBS Element: 39747.1074

Alias: None

Regulatory Driver: CERCLA

RRSE: Not assigned

MRSP: Not assigned

RIP Date: - -

RC Date: 10/31/2020

RC Reason: Not assigned

Program: ENV Restoration, Army

Subprogram: MR

Cost-to-Complete: \$0.00

Phases	Start	End
PA	9/15/2002	12/15/2003
SI	9/15/2005	5/15/2008
R/FS	10/15/2008	10/31/2020
RD	--	--
IRA	--	--
RA(C)	--	--
RA(O)	--	--
LTM	--	--

Site Narrative

The Ramsdell Quarry (RVAAP-001-R-01) MRS is a former OB/OD area used to thermally treat waste explosives and napalm bombs between 1946 and 1950. A portion of the site was used as a nonhazardous solid waste landfill. The landfill acreage is not part of the MRS. An SI was completed for the Ramsdell Quarry site in 2008. The SI recommended 13.4 acres be evaluated for MEC and MC. Following the SI the site was divided into two separate sites RVAAP-001-R-01 (6.93 acres) and RVAAP-001-R-02 (6.47 acres).

In July 2009, PBA09 was awarded to characterize the nature and extent of MEC and MC contamination at the Ramsdell Quarry (RVAAP-001-R-01) MRS. The RI Report was finalized in January 2015.

The RI Report concluded that since there is no evidence of MEC/Munitions Debris No Further Action is recommended.

Cleanup Strategy

A NFA PP and DD will be completed. A NFA Explosives Safety Submittal will be completed following DD finalization.

Costs for the NFA Explosives Safety Submittal are tracked at RVAAP-001-R-01 for RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, and RVAAP-061-R-01.

Costs for USACE oversight at RVAAP-001-R-01, RVAAP-001-R-02, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01, RVAAP-019-R-01, RVAAP-032-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01 and RVAAP-063-R-01 are tracked at RVAAP-004-R-01.

SITE CLOSEOUT SUMMARY

Site WBS	Site Name	Site Closeout Date
39747.1002	RVAAP-02_ERIE BURNING GROUNDS	9/30/2008
39747.1004	RVAAP-04_OPEN DEMOLITION AREA #2	1/31/2008
39747.1007	RVAAP-07_BLD 1601 HAZ WST STG	6/30/1989
39747.1013	RVAAP-13_BLDG 1200-DILUTION\SETTLING POND	5/15/2015
39747.1014	RVAAP-14_LOAD LINE 6 EVAPORATION UNIT	6/30/1989
39747.1015	RVAAP-15_LOAD LINE 6 TREATMENT PLANT	1/31/2000
39747.1016	RVAAP-16_FUZE&BOOSTER QUARRY LANDFILL/PONDS	9/30/2010
39747.1017	RVAAP-17_DEACTIVATION FURNACE	6/30/1989
39747.1018	RVAAP-18_LOAD LINE 12 WWT PLANT	3/31/1997
39747.1020	RVAAP-20_SAND CREEK STP	6/30/1989
39747.1021	RVAAP-21_DEPOT STP	6/30/1989
39747.1022	RVAAP-22_GEORGE RD STP	6/30/1989
39747.1023	RVAAP-23_UNIT TRAINING EQUIPMENT SITE US	11/30/1989
39747.1024	RVAAP-24_DEPOT AREA	6/30/1989
39747.1025	RVAAP-25_BLD 1034 MOTOR POOL AST	6/30/1989
39747.1026	RVAAP-26_FUZE BOOSTER AREA SETTLING TANKS	1/31/2000
39747.1027	RVAAP-27_BUILDING 854, PCB STORAGE	6/30/1989
39747.1028	RVAAP-28_MUSTARD AGENT BURIAL SITE	7/27/2017
39747.1030	RVAAP-30_LL 7 TREATMENT PLANT	1/31/2000
39747.1031	RVAAP-31_ORE PILE RETENTION POND	1/31/2000
39747.1032	RVAAP-32_40 MM FIRING RANGE	9/30/2007
39747.1035	RVAAP-35_1037 BUILDING-LAUNDRY WASTEWATER SUMP	9/30/1998
39747.1036	RVAAP-36_PISTOL RANGE	9/30/2005
39747.1037	RVAAP-37_PESTICIDE BUILDING S-4452	2/29/1996
39747.1044	RVAAP-44_LOAD LINE 11	10/15/2018
39747.1047	RVAAP-47_BUILDING T-5301	9/30/2001
39747.1048	RVAAP-48_ANCHOR TEST AREA	4/15/2015

Site WBS	Site Name	Site Closeout Date
39747.1049	RVAAP-49_CENTRAL BURN PITS	7/31/2009
39747.1052	PBC at Ravenna_PBA 2008	7/15/2015
39747.1054	RVAAP-012-R-01_LOAD LINE #12	5/31/2008
39747.1055	RVAAP-064-R-01_Old Hay Field MRS	5/31/2008
39747.1056	RVAAP-046-R-01_BUILDING #F-15 AND F-16	5/31/2008
39747.1064	RVAAP-048-R-01_ANCHOR TEST AREA	5/31/2008
39747.1068	RVAAP-005-R-01_WINKLEPECK BURNING GROUNDS	3/31/2006
39747.1085	PBA@MR Ravenna_MR PBA 2009	9/30/2015
39747.1092	CC RVAAP-71_BARN NO. 5 PETROLEUM RELEASE	2/15/2015

COMMUNITY INVOLVEMENT

Technical Review Committee (TRC) Establishment Date:	None
Community Involvement Plan (Date Published):	3/1/2017
Restoration Advisory Board (RAB) Establishment Date:	10/31/1996
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	N/A
Additional Community Involvement:	<p>The RVAAP RAB was established in 1996 and has 25 members consisting of 23 community members and two noncommunity members. The community members include an appointee from each of the surrounding six townships, one representative appointed by the Trumbull County Commissioners, a representative appointed by the Portage County Commissioners, and 15 members chosen from the general public. One of the community members is elected as a community co-chair by majority vote. The two non-community members include a representative of the Ohio EPA and an Army installation co-chair appointed by the installation. A RAB operating procedure was adopted by all members on Feb. 19, 1997. A copy can be found on the RVAAP web site www.RVAAP.org, as well as in two public repositories (The Reed Memorial Library in Ravenna and the Newton Falls Public Library).</p> <p>The RVAAP RAB generally meets every three or four months. All meetings are open to the public and are rotated among public places within the townships around the installation. Current topics are addressed at the meetings and a speaker is generally featured. The minutes of all RAB meetings are recorded. Meetings are announced in the local media.</p> <p>All IRP records are made available to the RAB members and any other interested parties through the two public repositories. IRP and other RVAAP documents are available at www.RVAAP.org. The RAB receives TAPP.</p> <p>The Community Relations Plan is updated regularly. The plan outlines the many ways that RVAAP involves the community in the restoration activities, including through the RAB, site tours, and the website.</p>

Administrative Record is located at:	Camp Ravenna Environmental Office 1438 State Route 534 SW Newton Falls, OH 44444
Information Repository is located at:	Reed Memorial Library 167 E Main St. Ravenna, OH 44266 Newton Falls Public Library 204 S Canal St Newton Fall, OH
Current Technical Assistance for Public Participation (TAPP):	201109
TAPP Title:	FACILITYWIDE GW MONITORING PRG
Potential TAPP:	N/A

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Review Summary Table

Status	Start	End
Complete	07/01/2011	08/31/2012
Complete	06/12/2017	07/01/2018

ROD/DDs associated with the last Five-Year/Periodic Review

Associated ROD/DD Name	Site WBS	Site Name
Load Line 1-4	39747.1008, 39747.1009, 39747.1010, 39747.1011	RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11
Load Line 12	39747.1012	RVAAP-12
Ramsdell Quarry Landfill	39747.1001	RVAAP-01
Winklepeck Burning Grounds	39747.1005	RVAAP-05

Results, Actions & Plans

Results	Actions	Plans
The remedy at Load Lines 1 – 4 are not protective in the long term.	Determine if unacceptable risk associated with remaining contaminated soils at Load Lines 1 - 4 exists	If there is an unacceptable risk at Load Lines 1 - 4 remediate in a manner consistent with the Interim ROD.

LAND USE CONTROLS (LUC) SUMMARY

LUC Title	Site
DD IN REVIEW	39747.1001
DD IN REVIEW	39747.1003
DD IN REVIEW	39747.1005
DD IN REVIEW	39747.1012
FINAL ACTION MEMORANDUM, TCRA	39747.1061
FINAL REMEDY	39747.1043
FINAL REMEDY	39747.1076
FINAL ROD FOR RVAAP-43 LOAD LINE 10	39747.1043
INTERIM ROD	39747.1012
LOAD LINE 12	39747.1012
LOAD LINE 1-4	39747.1008
LOAD LINE 1-4	39747.1009
LOAD LINE 1-4	39747.1010
LOAD LINE 1-4	39747.1011
LOAD LINE 1-4	39747.1038
LOAD LINE 1-4	39747.1042
LOAD LINE 1-4	39747.1045
LOAD LINE 1-4	39747.1073
LOAD LINE 1-4	39747.1083
PLACEHOLDER ACTION MEMORANDUM	39747.1081
RAMSDELL QUARRY LANDFILL	39747.1001
RVAAP-34, 51 IRA	39747.1034
RVAAP-34, 51 IRA	39747.1051
WINKLEPECK BURNING GROUNDS	39747.1005