

FY2012

RAVENNA ARMY AMMUNITION PLANT

Installation Action Plan

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear cleanup program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), the US Army Corps of Engineers (USACE) - Louisville District, the Ravenna Army Ammunition Plant (RVAAP), the Ohio Environmental Protection Agency (Ohio EPA), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and tentative budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

Acronyms

ACM	Asbestos Containing Material
AEDB-CC	Army Environmental Database - Compliance-related Cleanup
bgs	below ground surface
CC	Compliance-related Cleanup
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COC	Contaminants of Concern
CR	Compliance Restoration
CTC	Cost-to-Complete
CTT	Closed, Transferred, and Transferring
CWM	Chemical Weapon Munitions
CY	calendar year
DD	Decision Document
DERP	Defense Environmental Restoration Program
DFFO	Director's Final Findings and Orders
DLA	Defense Logistics Agency
DMM	Discarded Military Munitions
DNSC	Defense National Stockpile Center
DPDO	Defense Property Disposal Organization
DQO	Data Quality Objective
EE/CA	Engineering Evaluation/Cost Analysis
ER,A	Environmental Restoration, Army
ESS	Explosive Safety Submittal
FBQ	Fuze and Booster Quarry
FRA	Final Remedial Action
FWGWMP	Facility-wide Groundwater Monitoring Program
FY	Fiscal Year
GO/CO	Government-Owned/Contractor-Operated
GPS	Global Positioning System
ID	Identification
IMP(C)	Implementation (Construction)
IR	Installation Restoration
ISC	Initial Site Characterization
K	thousand
LAP	Load, Assemble, and Pack
lb	pound
LES	Lakeshore Engineering Services, Inc.
LTM	Long-Term Management
LUC	Land Use Control
MD	Munitions Debris
mm	millimeter
MR	Munitions Response
MRS	Munitions Response Site
MRSPP	Munition Response Site Prioritization Protocol
N/A	Not Applicable
NACA	National Advisory Committee on Aeronautics

Acronyms

NGB	National Guard Bureau
OB	Open Burning
ODA	Open Demolition Area
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense for Installations and Environment
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
ORIS	Operational Range Inventory System
OSC	Operations Support Command
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PBA	Performance-Based Acquisition
PCB	Polychlorinated Biphenyl
PI	Physics International
PMP	Project Management Plan
POL	Petroleum, Oil, and Lubricants
PP	Proposed Plan
QA	Quality Assurance
QCP	Quality Control Plan
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RFA	RCRA Facility Assessment
RIP	Remedy-in-Place
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
S&A/R	Supervision and Administration/Review
SAIC	Science Application International Corporation
SRC	Site-Related Constituent
STP	Sewage Treatment Plant
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TCRA	Time-Critical Response Action
TD	Transferred
TNT	Trinitrotoluene
TOW	Tube-launched, Optically-tracked, Wire-guided
TPP	Technical Project Planning
TRC	Technical Review Committee
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command
USATCES	US Army Technical Center for Explosives Safety
USP&FO	United States Property and Fiscal Officer
UST	Underground Storage Tank

Acronyms

VOC Volatile Organic Compounds

WWII World War II

Installation Information

Installation Locale

Installation Size (Acreage): 21,683.28

City: Ravenna

County: Portage and Trumbull

State: Ohio

Other Locale Information

Prior to 2002, the RVAAP was a 21,419 acre installation. In 2003 the property boundary was resurveyed by the Ohio Army National Guard (OHARNG) and the actual acreage was found to be 21,683.289. As of February 2006, a total of 20,423 acres has been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio and licensed to the OHARNG as a military training site. The lead agency for property transfer and cleanup is BRAC. The lead agency for property accountability is the National Guard Bureau (NGB).

The current RVAAP consists of approximately 1,260 acres in several distinct parcels scattered throughout the OHARNG Camp Ravenna. The RVAAP and Camp Ravenna are collocated on contiguous parcels of property. Camp Ravenna is in northeastern Ohio within Portage and Trumbull counties, approximately three miles east-northeast of the city of Ravenna and approximately one mile northwest of the city of Newton Falls. The RVAAP portions of the property are solely located within Portage County. Camp Ravenna (inclusive of the RVAAP) is approximately 11 miles long and 3.5 miles wide and is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east.

The Camp Ravenna is surrounded by several communities. Windham is to the north, Garrettsville is six miles to the northwest, Newton Falls is one mile to the southeast, Charlestown is to the immediate southwest, and Wayland is three miles to the south. When the RVAAP was operational Camp Ravenna did not exist and the entire 21,683 acre parcel was a government owned/contractor-operated (GO/CO) industrial facility. Because the RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP, unless otherwise specifically stated, references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP.

Installation Mission

In fiscal year (FY)93, the mission of RVAAP was changed from inactive-maintained to modified caretaker status (limited mission). The installation mission is twofold. The Base Realignment and Closure (BRAC) mission includes restoration and property transfer. The OHARNG mission is to train and maintain combat ready troops and units in support of the National Military Strategy and to protect life and property and to preserve peace, order, and public safety as ordered by the Governor of the state of Ohio.

Lead Organization

Base Realignment and Closure Division

Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE), Louisville District

Regulator Participation

Federal US Environmental Protection Agency (USEPA)

State Ohio Environmental Protection Agency (Ohio EPA)

National Priorities List (NPL) Status

RAVENNA ARMY AMMUNITION PLANT is not on the NPL

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

RAB established 1996

Installation Information

Installation Program Summaries

IRP

Primary Contaminants of Concern: Asbestos, Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Nitrate/Nitrite, Other (Propellants), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

MMRP

Primary Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

CR

Primary Contaminants of Concern: Asbestos, Explosives, Herbicides, Metals, Other (Propellants), Other (Solid Waste), Other (potassium dichromate), Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

Cleanup Program Summary

Installation Historic Activity

RVAAP is a GO/CO US Army Excess facility. In 1992 RVAAP was declared excess to the Army's needs. Bulk explosives were stored at the facility until 2004. In August 1940 the US government purchased approximately 25,000 acres in the northeastern part of Ohio in Portage and Trumbull counties and in September 1940 construction of the load, assemble, and pack (LAP) facility started. In August 1941, munitions production started. The primary missions of the facility included loading, assembling and packaging of large caliber ammunition and depot storage. The facility changed names several times during its history before being designated the RVAAP in 1961.

From September 1940 until the end of World War II (WWII), when plant operations were turned over to the ordnance department, the Atlas Powder Company operated the facility. From 1946 to 1949, the ammonium nitrate line was operated by the Silas Mason Company for the production of ammonium nitrate fertilizer. In 1950 the facility was placed in standby status and was reactivated during the Korean War for loading and packing large caliber projectiles and components. In August 1957 all production ended. In October 1957, the installation was again placed in a standby condition.

From January 1961 to July 1961, Load Line 12 was used to melt-out and recover explosives from bombs; it was the first operation of this type in the ammunition industry. In May 1968 the RVAAP was once again reactivated to produce munitions on three load lines and two component lines in support of the Vietnam War. These facilities were subsequently deactivated in August 1972. A mission for the demilitarization of various munitions continued on a periodic basis through 1992.

In 1980 RVAAP received a Resource Conservation and Recovery Act (RCRA) Part A permit for the storage and treatment of off-specification munitions and munitions-related waste. In 1992, RVAAP submitted a RCRA Part B permit application for the installation's open burning/open detonation (OB/OD) grounds and a hazardous waste storage building. This application was withdrawn by the installation. It was determined that there was no longer a need for active demolition work. Open demolition area (ODA) No. 2 (RVAAP-04) is now the only active RCRA unit at the RVAAP. All others have been closed.

In May 1999 the Operations Support Command (OSC) transferred control and operation of 16,164 acres to the NGB. In March 2002 an agreement was signed to transfer an additional 3,774 uncontaminated acres to the NGB with the remaining acreage to be transferred as restoration of the sites is completed. As of February 2006 a total of 20,403 acres of the former RVAAP had been transferred to the NGB for use by the OHARNG.

Completion of the IRP, the Military Munitions Response Program (MMRP), the Compliance Restoration (CR) program, and decontamination and demolition of excess buildings for transfer of all property to NGB, with subsequent license to OHARNG, is expected by 2018.

In June 2004, the Army and the Ohio EPA signed the Director's Final Findings and Orders (DFFO) to authorize continued use of ODA No. 2 to support environmental restoration activities (blow in place and emergency demolition actions are authorized without the need to obtain emergency permits). The orders also authorized the investigation of deactivation furnace soils under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and groundwater monitoring at RVAAP-01 and RVAAP-04. The RVAAP will close the ODA No. 2 RCRA unit under the DFFOs when it is no longer needed to support restoration.

In 2006, a decision was made to abandon plans for the thermal decomposition of the explosive-contaminated buildings and use conventional demolition methods with special precautions.

Continued support of all of the stakeholders at RVAAP (including the public) will be needed if schedules, objectives, and cost estimates identified in this IAP are to be met.

RVAAP is not on the USEPA NPL, although it is in the USEPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database. Management of the IRP sites follows CERCLA requirements. There are a number of other regulatory programs addressing other non-IRP sites.

Installation Program Cleanup Progress

Cleanup Program Summary

IRP

Prior Year Progress: RI/FS reports for PBA08 sites were completed. Preparation of proposed plans (PPs) continued. RVAAP-66 monitoring under the Facility-Wide Groundwater Monitoring Program continued and the RI commenced. The RVAAP-01 PP was finalized and a ROD modification and draft of the proposed RA Plan are underway. The RVAAP 08, 09, 10, 11, 12 revised land-use control (LUC) Assessment will be completed in FY12. Completion of remediation and site-closeout are planned for late FY12 to early FY13.

Future Plan of Action: The PBA08 PPs, RODs and RAs will be completed. The RI report, FS report, and PP for RVAAP-66 will be completed. Groundwater monitoring under RVAAP-66 will continue as needed. The RVAAP-01 ROD Modification will be finalized and the RA Plan will be implemented. The RVAAP 08, 09, 10, 11, 12 RAs and site closeouts will be completed.

MMRP

Prior Year Progress: RI work plans and RI fieldwork were initiated for all sites under the PBA09 contract. A Final RI Report for the Base Award sites (RVAAP-004-R-01, 060-R-01, 050-R-01, 001-R-01, 019-R-01, 008-R-01, and 033-R-01) is planned for May 2012. Fieldwork for the Options 1-7 sites (RVAAP-063-R-01, 034-R-01, 016-R-01, 002-R-01, 032-R-01, 062-R-01, and 061-R-01) will be completed in FY12 with a Final RI Report planned for FY13. Time-critical response action (TCRA) fieldwork for Rocket Ridge was completed.

Future Plan of Action: For sites RVAAP-008-R-01 and 033-R-01, PPs and DDs will be prepared to achieve response complete (RC) by May 2014. For the Options 1-7 sites, a final RI Report will be completed by April 2013. For RVAAP-034-R-01 and 062-R-01, PPs, DDs, and RAs will be completed as needed to achieve RC by April FY15.

CR

Prior Year Progress: Stage I RIs were completed for the CR sites. Stage II RIs were initiated for CR sites as needed. Fieldwork for CC RVAAP-76 and 79 was initiated. The CC-RVAAP-78 Phase I RI was completed. The CC-RVAAP-80 fieldwork was completed. The final PMP, SSHP, SAP and QAPP were approved for the 14 CR sites. HRRs were completed for CC-RVAAP-71 and 83. An SI was initiated for CC-RVAAP-83. The SI work plans for CC-RVAAP-70, 72, 75 & 77 and RI work plans for CC-RVAAP-79 and CC-RVAAP-76 were also completed.

Future Plan of Action: Stage 3 RIs will be initiated and IRAs will be completed as needed. The SI reports for CC-RVAAP-70, 72, 75, 77 & 83 will be completed. The RI report for CC-RVAAP-79 will be completed and the FS report for CC-RVAAP-76. The RIs for CC-RVAAP-68, 69, 73, 74, 78 & 79 will be initiated.

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Begin Date	End Date	End FY
Underway	201107	201211	2013

5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
Erie Burning Grounds	RVAAP-02
Fuze and Booster Quarry Landfill / Ponds	RVAAP-16
Interim ROD	RVAAP-12
Load Line 1-4	RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11
Load Line 12	RVAAP-12
Open Demolition Area #2	RVAAP-04
Ramsdell Quarry Landfill	RVAAP-01
Winklepeck Burning Grounds	RVAAP-05

Land Use Control (LUC) Summary

LUC title: Load Lines 1-4

Site(s): RVAAP-08

ROD/DD title: Load Line 1-4

Location of LUC

Load Lines 1-4 (RVAAP-08, RVAAP-09, RVAAP-10, and RVAAP-11). Only RVAAP-08 is selected in AEDB-R because AEDB-R will not allow the selection of other sites since the costs are not carried under the individual sites.

Land Use Restriction: Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Fences, Guards

Types of Institutional Controls: Restrictions on land use

Date in Place: 200707

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Other Army Entity

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: INORGANICS, METALS, NITROAROMATICS, ORGANICS, PAH, PCBs, PESTICIDES, VOC

Additional Information

N/A

LUC title: Winklepeck Brng Grounds

Site(s): RVAAP-05

ROD/DD title: Winklepeck Burning Grounds

Location of LUC

Winklepeck Burning Grounds

Land Use Restriction: Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Guards, Markers, Signs

Types of Institutional Controls: Restrictions on Groundwater Withdrawal, Restrictions on land use

Date in Place: 200808

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Other Army Entity

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews

Contaminants: METALS, NITROAROMATICS, ORGANICS, PAH, PCBs, Unexploded Ordnance(UXO), VOC

Additional Information

N/A

Summary of Parcel Prioritization and Transfer Strategy

Parcel Name: 40MM Test Range/Waterworks Ponds

Parcel Size: 58.00

Associated Sites: RVAAP-032-R-01, RVAAP-016-R-01

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Name: Anchor Test Area

Parcel Size: 2.00

Associated Sites: RVAAP-48

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Name: Building 1039

Parcel Size: .40

Associated Sites:

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:NGB requires a letter from Ohio EPA indicating property acceptable for planned reuse.

Parcel Summary

Parcel Name: Buildings 1026, 1034, 1034A, 1037, 1037A, 1038 etc

Parcel Size: 8.60

Associated Sites:

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: NGB requires a letter from Ohio EPA indicating property acceptable for planned reuse.

Parcel Name: Landfill North of Winklepeck Burning Grounds

Parcel Size: 5.00

Associated Sites: RVAAP-019-R-01, RVAAP-19

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: N/A

Parcel Name: Load Line 1

Parcel Size: 160.00

Associated Sites: RVAAP-08

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property aboveground walkways and foundations are removed in order to facilitate military training needs.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: Load Line 10

Parcel Size: 36.00

Associated Sites: RVAAP-43

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 11

Parcel Size: 47.00

Associated Sites: RVAAP-44

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 12

Parcel Size: 75.00

Associated Sites: RVAAP-12

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: Load Line 2

Parcel Size: 212.00

Associated Sites: RVAAP-09

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until aboveground walkways are removed. Slabs and foundations were removed in 2008.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 3

Parcel Size: 174.00

Associated Sites: RVAAP-10

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until aboveground walkways are removed. Slabs and foundations were removed in 2008.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 4

Parcel Size: 129.00

Associated Sites: RVAAP-11

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until aboveground walkways are removed. Slabs and foundations were removed in 2008.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: Load Line 5

Parcel Size: 39.00

Associated Sites: RVAAP-39

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 6

Parcel Size: 43.00

Associated Sites: RVAAP-33, RVAAP-033-R-01

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 7

Parcel Size: 37.00

Associated Sites: RVAAP-40

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: Load Line 8

Parcel Size: 44.00

Associated Sites: RVAAP-41

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Load Line 9

Parcel Size: 106.00

Associated Sites: RVAAP-42

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: Sewer issues are being addressed as an option in the FY08 PBC.

Parcel Name: Open Demolition Area No. 2

Parcel Size: 25.00

Associated Sites: RVAAP-004-R-01

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer: N/A

Parcel Summary

Parcel Name: Pistol Range

Parcel Size: 20.00

Associated Sites:

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: 20060224

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Name: Ramsdell Quarry Landfill

Parcel Size: 15.00

Associated Sites: RVAAP-01, RVAAP-001-R-01

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Name: Upper and Lower Cobbs Ponds

Parcel Size: 9.00

Associated Sites: RVAAP-29

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Summary

Parcel Name: Wet Storage Area

Parcel Size: 36.00

Associated Sites: RVAAP-45

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

Parcel Name: Winklepeck Burning Grounds

Parcel Size: 20.00

Associated Sites: RVAAP-05

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: N/A

Leases/Permits/Licenses: 20100730

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau / Ohio Army National Guard

Other Issues Affecting Transfer:N/A

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 54/25

Installation Site Types with Future and/or Underway Phases

- 1 Burn Area
(RVAAP-05)
- 1 Chemical Disposal
(RVAAP-28)
- 7 Contaminated Buildings
(RVAAP-33, RVAAP-39, RVAAP-40, RVAAP-41, RVAAP-42, RVAAP-43, RVAAP-44)
- 1 Contaminated Ground Water
(RVAAP-66)
- 1 Contaminated Soil Piles
(RVAAP-48)
- 7 Industrial Discharge
(RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11, RVAAP-12, RVAAP-13, RVAAP-46)
- 3 Landfill
(RVAAP-01, RVAAP-19, RVAAP-34)
- 1 Spill Site Area
(PBC at Ravenna)
- 2 Storage Area
(RVAAP-45, RVAAP-50)
- 3 Surface Disposal Area
(RVAAP-06, RVAAP-38, RVAAP-51)
- 1 Surface Impoundment/Lagoon
(RVAAP-29)
- 1 Waste Lines
(RVAAP-67)

Most Widespread Contaminants of Concern

Asbestos, Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Nitrate/Nitrite, Other (Propellants), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	FRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1990	TBD
RVAAP-47	BUILDING T-5301	FRA	REMOVAL	2001	TBD
RVAAP-03	OPEN DEMOLITION AREA #1	IRA	EX SITU SOIL TREATMENT	2003	TBD
RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	IRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	2004	TBD
RVAAP-51	DUMP ALONG PARIS-WINDHAM ROAD	IRA	WASTE REMOVAL - SOILS	2004	TBD
RVAAP-08	LOAD LINE 1	IRA	WASTE REMOVAL - SOILS	2008	TBD
RVAAP-09	LOAD LINE 2	IRA	REMOVAL	2008	TBD
RVAAP-10	LOAD LINE 3	IRA	REMOVAL	2008	TBD
RVAAP-11	LOAD LINE 4	IRA	REMOVAL	2008	TBD
RVAAP-49	CENTRAL BURN PITS	IRA	WASTE REMOVAL - SOILS	2009	TBD
RVAAP-16	FUZE&BOOSTER QUARRY LANDFILL/PONDS	FRA	REMOVAL	2010	TBD
RVAAP-12	LOAD LINE 12	IRA	REMOVAL	2011	TBD

IRP Summary

Duration of IRP

Year of IRP Inception: 198802

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201609/201609

Date of IRP completion including Long Term Management (LTM): 204609

IRP Contamination Assessment

Contamination Assessment Overview

The contamination at RVAAP originated from past industrial activities associated with the assembly and demilitarization of large caliber projectiles, general-purpose bombs, and parts for these munitions. RVAAP produced munitions during WWII, and the Korean and Vietnam Wars. The industrial operations at RVAAP consisted of 12 production areas known as load lines. Load Lines 1 through 4 (melt-pour lines) were the primary sources of secondary explosives contamination such as trinitrotoluene (TNT), Cyclotetramethylenetetranitramine (HMX), and Cyclotrimethylenetrinitramine (RDX), which were melted and poured into projectiles and bombs. Load Line 1 and 12 were used for demilitarization of projectiles. Load Line 1 was used to produce and recondition anti-tank mines. Workers would periodically use steam and hot water to hose down equipment, plus the floors and walls of buildings contaminated with explosive dust, spills, and vapors. The explosive-contaminated water from the cleaning, known as pink water, then drained out doorways and through floor drains onto the soils surrounding the buildings or was discharged into open ditches or ponds after being filtered through sawdust to remove suspended explosives. Waste explosives from the melt pour lines were routinely disposed of by OB/OD at other sites on the installation.

Load Lines 5 through 11 (fuze and booster) were used to assemble fuzes, primers, and boosters while Load Line 12 housed the ammonium nitrate plant. Potential contaminants in Lines 5 through 11 include lead azide, mercury fulminate, lead styphnate, black powder, heavy metals, TNT, and Composition B. The amount of explosives used at the fuze and booster lines was much less than that used at the melt-pour lines because of the types of small munitions components made there. Also, the operations did not create as much waste and were cleaner due to the special handling procedures needed when working with the shock and heat sensitive primary explosives. Load Line 12 recrystallized ammonium nitrate for explosives, fertilizers, and aluminum chloride. It also was periodically used for demilitarization projects involving the melt-out of TNT and other secondary explosives from the bombs and projectiles. As in the other melt pour lines, these activities resulted in pink water being released to the soils, ditches, and ponds in and around the line. Other types of contaminated sites associated with past industrial activities at RVAAP include landfills, testing facilities, dumps, munitions burial sites, a pistol range, storage facilities, a scrap yard, and decontamination buildings. Although not present at every one of these sites, the contaminants of potential concern (COPC) include primary and secondary explosives, propellants, heavy metals, VOCs and SVOCs, PAHs, and asbestos. Industrial activities ceased in 1992 when RVAAP was declared excess.

A Phase I RI examined 11 high priority sites identified as RVAAP-03, RVAAP-04, RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11, RVAAP-12, RVAAP-13, RVAAP-18, RVAAP-19, and RVAAP-29. A final RI report was issued in 1997. The study concluded that Load Lines 1 through 4 and 12 appeared to be the most contaminated, and contaminants were probably not migrating far from the sources in significant concentrations. The report recommended further study.

For the most part, results from more recent studies have confirmed that explosives and heavy metals are the most common contaminants and are generally located immediately around buildings in the load lines and in the ditches and ponds draining the sites. Less common contaminants include PAHs, SVOCs, and propellants. These same contaminants have been detected in the water and sediment within the storm and sanitary sewers. Installation monitoring wells located to the southeast of Load Line 2 near the perimeter have shown trace amounts of explosives. Surface water and sediment samples do not indicate that significant levels of contaminants are migrating from the installation.

Cleanup Exit Strategy

The Army will complete restoration of the sites at RVAAP under the performance-based contracts (PBCs), which are now known as performance-based acquisition (PBA) contracts. In March 2005 all high relative risk sites were placed under contract. The PBA contract awarded in FY08 is intended to achieve remedy-in-place(RIP)/RC at the remaining medium relative risk and low relative risk sites. Long-term management (LTM) will be performed on both a facility-wide and a site-by-site basis. The appropriate remedy at all of the sites will be achieved as required to ensure adequate risk mitigation for the proposed future use by the OHARNG. See individual sites for specific strategies.

IRP Previous Studies

	Title	Author	Date
1978	Installation Assessment of Ravenna Army Ammunition Plant. Report No. 132	United States Army Toxic and Hazardous Materials Agency	NOV-1978
1989	Hazardous Waste Management Study No. 37-26-0442-84: Phase 2 of AMC Open Burning/Open Detonation Groundwater Evaluation	United States Army Environmental Hygiene Agency	OCT-1989
	Ravenna Army Ammunition Plant RCRA Facility Assessment Draft RR/VSJ Report	Jacobs Engineering Group, Inc	OCT-1989
1995	Installation Action Plan RVAAP- FY 1995	Mason and Hanger Corp.	JAN-1995
1996	Preliminary Assessment for the Ravenna Army Ammunition Plant	SAIC	FEB-1996
	Facility-Wide Safety and Health Plan	SAIC	FEB-1996
	Preliminary Assessment for the Characterization of Areas of Contamination	SAIC	FEB-1996
	Installation Action Plan RVAAP- FY 1996	Mason and Hanger Corp.	MAR-1996
	Action Plan for the Ravenna Army Ammunition Plant	SAIC	MAR-1996
	Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant	SAIC	APR-1996
	Phase 1 Remedial Investigation Site Safety and Health Plan Addendum for High Priority Areas of Concern for RVAAP	SAIC	JUL-1996
	Phase 1 Remedial Investigation Sampling and Analysis Plan Addendum for High Priority Areas of Concern for RVAAP	SAIC	JUL-1996
	Final Facility-Wide Sampling and Analysis Plan, SAIC	SAIC	AUG-1996
	Interim Measures Plan for the Open Detonation (OD) Grounds Hazardous Waste Treatment Unit	SAIC	AUG-1996
	Installation Restoration Program Management Plan	USAEC	DEC-1996
1997	Public Meeting Briefing - Phase I RI of High Priority Sites at the RVAAP	USACE	SEP-1997
1998	Quality Control Plan for the Phase II RI for Winklepeck Burning Grounds at RVAAP	USACE	JAN-1998
	Installation Action Plan RVAAP- FY 1998	Mason and Hanger Corp.	FEB-1998
	Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP	SAIC	APR-1998
	Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP	SAIC	APR-1998
	Site Safety and Health Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility -Wide	SAIC	APR-1998

IRP Previous Studies

1998	Title	Author	Date
	Background at RVAAP		
	Sampling and Analysis Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01)	SAIC	JUN-1998
	Site Safety and Health Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	JUN-1998
1999	Installation Action Plan RVAAP- FY 1999	Mark Patterson	MAR-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	JUL-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-1999
	Environmental Information Management Needs Assessment at RVAAP	SAIC	SEP-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area 1 (RVAAP-03)	SAIC	OCT-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area #1 (AOC-03) at RVAAP	SAIC	OCT-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase 1 Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	OCT-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	OCT-1999
	Scope of Work for the Interim Removal Action and Decontamination & Demolition of Building T-5301 (RVAAP-47)	MKM Engineers, Inc.	DEC-1999
2000	Installation Action Plan RVAAP- FY 2000	USACE	MAR-2000
	Installation Action Plan RVAAP- FY 2001	USACE	MAR-2000
	Final Report on the Groundwater Investigation of the Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	AUG-2000
	Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-2000
	Installation Action Plan RVAAP- FY 2001	USACE	AUG-2000
	Sampling and Analysis Plan Addendum No. 2 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	SEP-2000
	Sampling and Analysis Plan Addendum No. 1 for the Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP	SAIC	OCT-2000
	Site Safety and Health Plan Addendum No. 1 for the	SAIC	OCT-2000

IRP Previous Studies

2000	Title	Author	Date
	Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP		
	Installation Action Plan RVAAP- FY 2001	USACE	DEC-2000
2001			
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line 11 (RVAAP-44)	MKM Engineers, Inc.	JAN-2001
	Facility-Wide Sampling and Analysis Plan for Environmental Investigations	SAIC	MAR-2001
	Technical Memorandum Human Health and Ecological Risk Assessment Approach for the Load Line 1 (AOC-08) and Load Line 12 (AOC-12) Phase II Remedial Investigations at RVAAP	SAIC	MAR-2001
	Summary and Technical Assumptions for Area, Volume, and Cost Estimations for the Winklepeck Burning Grounds (AOC-05) Strategic Plan Ravenna Army Ammunition Plant	SAIC	MAR-2001
	Phase II Remedial Investigation Report for the Winklepeck Burning Ground (AOC-05) at RVAAP	SAIC	APR-2001
	Final Sampling & Analysis Plan Addendum for the Remedial Landfill Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Site-specific Safety and Health Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Workplan for the Remedial Design/Removal Action at Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Sampling & Analysis Plan Addendum for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Site-Specific Safety and Health Plan for the Remedial Design/Removal Action at the Paris Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Work Plan for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Work Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29)	MKM Engineers, Inc.	JUN-2001
	Final Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29)	MKM Engineers, Inc.	JUL-2001
	Final Site-Specific Safety and Health Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29)	MKM Engineers, Inc.	JUL-2001
	Final Site-Specific Safety and Health Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna	MKM Engineers, Inc.	AUG-2001
	Final Work Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna Army Ammunition Plant	MKM Engineers, Inc.	AUG-2001
	Groundwater Assessment Plan for the Ramsdell Quarry Landfill (AOC-01)	MKM Engineers, Inc.	SEP-2001
	Geophysical Survey Results Suspected Mustard Agent Burial Site RVAAP	SAIC	OCT-2001
	Phase I Remedial Investigation Report for the Erie	SAIC	DEC-2001

IRP Previous Studies

Year	Title	Author	Date
2001	Burning Grounds (AOC-02) at RVAAP		
	Phase I Remedial Investigation Report for the Demolition Area #1 (AOC-03) at RVAAP	SAIC	DEC-2001
	Final Work Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	SAIC	DEC-2001
	Phase 1 Remedial Investigation Report for NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	DEC-2001
2002	Installation Action Plan RVAAP- FY 2002	Mark Patterson	FEB-2002
	Sampling and Analysis Plan Addendum No. 3 for the Biological Measurements at Winklepeck Burning Grounds (AOC-05) at the Ravenna Army Ammunition Plant	SAIC	MAY-2002
	Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2	SpecPro	JUN-2002
	Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2	SpecPro	JUN-2002
	Investigation-Derived Waste Characterization and Disposal Plan	SpecPro	NOV-2002
	Installation Action Plan RVAAP- FY 2003	Mark Patterson	DEC-2002
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	DEC-2002
	Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP-28)	SpecPro	DEC-2002
2003	Final Compliance Monitoring Program for the Open Demolition Area #2 (RVAAP-04)	MKM Engineers, Inc.	JAN-2003
	Report on the Biological Field-Truthing Effort at Winklepeck Burning Grounds (AOC-05)	SAIC	MAR-2003
	RVAAP Applied Dried Paints at Load Lines 6 (AOC-33) and 9 (AOC-42) GCMS PCB Results	MKM Engineers, Inc.	APR-2003
	RVAAP Facility Wide Ecological Risk Work Plan	USACE	APR-2003
	Phase II Remedial Investigation Report for the Load Line 1(RVAAP-08) at RVAAP	SAIC	APR-2003
	Installation Action Plan RVAAP- FY 2004	Mark Patterson	JUN-2003
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	JUN-2003
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	JUN-2003
	Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42)	MKM Engineers, Inc.	JUL-2003
	Community Relations Plan	USACE	SEP-2003
	Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #6 (RVAAP-33)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #9 (RVAAP-42)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry	SAIC	OCT-2003

IRP Previous Studies

2003

Title	Author	Date
Landfill (AOC-01) at RVAAP		
Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill	SAIC	OCT-2003
Sampling and Analysis Plan Addendum No 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (RVAAP-02)	SAIC	OCT-2003
Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	OCT-2003
Final Work Plan and Sampling and Analysis Plan Addenda for the Phase I/Phase II Remedial Investigation of the Fuze and Booster Quarry Landfill/Ponds at RVAAP	SpecPro	OCT-2003
Sand Creek Dump (AOC-34) Cleanup Project Weekly Reports August - October 2003	MKM Engineers, Inc.	OCT-2003
Paris-Windham Dump (AOC-51) Clean Up Project Weekly Reports, Photos, Misc Data April-October 2003	MKM Engineers, Inc.	OCT-2003
Decon-Demo Load Lines 6 (AOC-33) and 9 (AOC-42) Misc Corres, Reports, Photos at RVAAP	Unknown	DEC-2003

2004

OE/UXO Removal & Interim Removal Action Report For The Open Demolition Area #1 (RVAAP-03)	MKM Engineers, Inc.	MAR-2004
Remedial Design/Removal Action Plan for Sand Creek Dump (AOC-34)	MKM Engineers, Inc.	MAR-2004
Final Report Interim Removal Action at Load Line 11 (AOC-44)	MKM Engineers, Inc.	MAR-2004
Interim Removal Action Report for Load Line #11 (AOC-44) Vol 1 Main Text - Appendices A-G	MKM Engineers, Inc.	MAR-2004
Interim Removal Action Report for Load Line #11 (AOC-44) Vol 2 Appendices H-I	MKM Engineers, Inc.	MAR-2004
Final Report for Remedial Design/Removal Action at Paris-Windham Road Dump (AOC-51) at Ravenna Army Ammunition Plant	MKM Engineers, Inc.	MAR-2004
Installation Action Plan RVAAP- FY 2005	Mark Patterson	MAY-2004
Facility-Wide Biological and Water Quality Study 2003	USACE	JUN-2004
Supplemental Baseline Human Health Risk Assessment	Shaw/SAIC	JUL-2004
Phase II Remedial Investigation Report for the Load Line 2 (AOC-09) at the Ravenna Army Ammunition Plant, Volume 1 - Main Text	Shaw/SAIC	JUL-2004
Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 1 - Main Text	Shaw/SAIC	JUL-2004
Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 2 - Appendices A-S	Shaw/SAIC	JUL-2004
Work Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05)	USATCES/MK	AUG-2004
Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant Volume 1 - Main Text	Shaw/SAIC	SEP-2004
Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant	Shaw/SAIC	SEP-2004

IRP Previous Studies

2004	Title	Author	Date
	Volume 2 - Appendices A-S		
	Facility-Wide Groundwater Monitoring Program Plan, Portage	Shaw	SEP-2004
	Proposed Remedial Goal Options for Soil at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP	Shaw	SEP-2004
	Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling and Security, Emergency Response and Contingency Plan and Safety, Health and Emergency Response Plan for the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP	Shaw	OCT-2004
	Final Sampling and Analysis Plan Addendum for the Characterization of 14 RVAAP AOCs at RVAAP	MKM Engineers, Inc.	OCT-2004
	Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling in Support of the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP	Shaw	OCT-2004
	Final Site Safety and Health Plan Addendum for the Characterization of 14 RVAAP AOCs	MKM Engineers, Inc.	OCT-2004
2005	Final November 2004 Sampling Completion Report for Load Lines 1 - 4	Shaw	FEB-2005
	Focused Feasibility Study for the Winklepeck Burning Grounds (AOC-05) at RVAAP	SAIC	FEB-2005
	Phase I MEC Density Survey After Action Report At Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP	SAIC	MAR-2005
	Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP	USACE	MAR-2005
	Final Work Plan for Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Final Site Safety and Health Plan for the Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Winklepeck Burning Grounds AutoCAD Figures for Phase I After Action Report	MKM Engineers, Inc.	MAR-2005
	Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP	Shaw	MAY-2005
	Final Focused Feasibility Study for the Remediation of Soils at LLs 1-4, RVAAP	Shaw	MAY-2005
	Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP	Shaw	MAY-2005
	Phase I Remedial Investigation December 2004 Follow-On Groundwater Sampling at the Ramsdell Quarry Landfill (AOC-01)	SAIC	JUN-2005
	Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28) - Main	SpecPro	JUL-2005

IRP Previous Studies

2005

Title	Author	Date
Report and Appendices A-H		
Installation Action Plan RVAAP- FY 2006-Non Public Version	Mark Patterson	JUL-2005
Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005
Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005
Final Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11)	Shaw	JUL-2005
Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11)	Shaw	JUL-2005
Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005
Final Report Facility Wide Groundwater Monitoring Program April 2005 Sampling Event Report - Main Report and Appendices A-D	SpecPro	AUG-2005
Final Report Facility Wide Groundwater Monitoring Program Sampling Event Report - Main Report and Appendices A-D	SpecPro	AUG-2005
Site Safety and Health Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	AUG-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event -Vol 1- Main Report	SpecPro Inc.	AUG-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Vol 2- Appendices A-C	SpecPro Inc.	AUG-2005
RVAAP/Ohio EPA Cooperative Agreement (CA) Work Plans	Various	AUG-2005
Installation Action Plan RVAAP- FY 2006	Mark Patterson	SEP-2005
Final Work Plan Containing Addendums(SAP,QAPP,SSHP,UXO) for Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (AOC-28)	SpecPro, Inc.	SEP-2005
Final Remedial Investigation Report Central Burn Pits (RVAAP-49)	SAIC/MKM	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44)	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 3	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 4	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 5	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 1	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2	MKM Engineers, Inc.	SEP-2005

IRP Previous Studies

2005

Title	Author	Date
Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill at RVAAP	SAIC	SEP-2005
Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	SEP-2005
Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 1	MKM Engineers, Inc.	SEP-2005
Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 2	MKM Engineers, Inc.	SEP-2005
Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 3	MKM Engineers, Inc.	SEP-2005
Final Phase II Remedial Investigation Report for the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	SEP-2005
Final Phase II Remedial Investigation Report for the Open Demolition Area #2 (AOC-4) Vol 2	SpecPro/SAIC	SEP-2005
Final Proposed Plan for the Winklepeck Burning Grounds	SAIC	OCT-2005
Facility-Wide Biological and Water Quality Study 2003, Part 1-Streams, Part 2-Ponds	USACE	NOV-2005
Final Phase II Remedial Investigation Supplemental Report for Load Line 12 (AOC-12)	SAIC	NOV-2005
Final Phase II Remedial Investigation Supplemental Report for Load Line 12 at RVAAP	SAIC	NOV-2005
Final Sampling and Analysis Plan Addendum No. 1 Supplemental Phase II Remedial Investigations (RVAAP-04) ODA#2, (RVAAP-16) F&BQL/P, and (RVAAP-49) CBPs	SAIC	NOV-2005
Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume One - Main Report	SpecPro/SAIC	NOV-2005
Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume Two - Appendices A-K	SpecPro/SAIC	NOV-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Main Report and Appendices A-C	SpecPro	NOV-2005
Final Proposed Plan for the Winklepeck Burning Grounds	SAIC	DEC-2005
Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	DEC-2005
Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	DEC-2005

2006

Sampling and Analysis Plan Addendum No. 2 for the Winklepeck Burning Grounds Feasibility Study at RVAAP	SAIC	FEB-2006
Final FS for Ramsdell Quarry Landfill	SAIC	JUL-2006
Final FS for Load Line 12	SAIC	JUL-2006
Final FS for Fuze-Booster Quarry Pond Landfill	SAIC	JUL-2006
Facility-Wide Ground Water Sampling Event #1	SpecPro	AUG-2006
Revised Eco Field Truthing Report	SAIC	SEP-2006
Final RI Addendum for ODA#2	SAIC	SEP-2006
Final RI Addendum for Erie Burning Grounds	SAIC	SEP-2006
Final P&A After Action Report for Ramsdell Quarry	SAIC	SEP-2006

IRP Previous Studies

2006

Title	Author	Date
Landfill		
Facility-Wide Ground Water Sampling Event #2	SpecPro	OCT-2006

2007

Final EE/CA for Central Burn Pits	SAIC	JAN-2007
Final Structural Analysis Report for Load Lines 1 through 4	Shaw	JAN-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP--2 Erie Burning Grounds	SAIC	FEB-2007
Facility-Wide Ground Water Sampling Event #3	SpecPro	MAR-2007
Final Report of the Characterization of 14 Areas of Concern	MKM Engineers, Inc.	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-12 Load Line 12	SAIC	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	SAIC	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill	SAIC	MAR-2007
Final Facility Wide Groundwater Monitoring Program Report on the October 2006 Sample Event	SpecPro, Inc.	MAR-2007
Final Facility Wide Groundwater Monitoring Program Report on the July 2006 Sampling Event No. 3	SpecPro, Inc.	MAR-2007
Final Remedial Action Work Plan Remediation of Soils at RVAAP- 08, 09, 10, and 11 Load Lines 1- 4	Shaw Environmental	APR-2007
Final Work Plan for the DLA Storage Area Reclamation-Route 80 Tank Farm and East Ore Yard Culvert Replacement	SpecPro, Inc.	APR-2007
Final Facility Wide Groundwater Monitoring Program Annual Report for 2006	SpecPro, Inc.	MAY-2007
Final Interim Record of Decision for Load Lines 1-4	Shaw	JUN-2007
Final Action Memorandum for RVAAP-49 Central Burn Pits	SAIC	JUN-2007
Final Facility-Wide Groundwater Monitoring Program Report on the January 2007 Sampling Event (#1)	SpecPro, Inc.	JUL-2007
Final Stormwater Pollution Prevention Plan for the Remediation of Soils at RVAAP- 08, 09, 10, and 11 Load Lines 1- 4	Shaw Environmental	JUL-2007
Final Sampling and Analysis Plan and the Site Safety and Health Plan for the Exposed Soil Sampling and Characterization After Slab and Foundation Removals at RVAAP-39 Load Line 5, RVAAP-40 Load Line 7, RVAAP-41 Load Line 8, and RVAAP-43 Load Line 10	United States Army Corps of Engineers	AUG-2007
Final Construction Completion Report on the Munitions Response for the Demolition of RVAAP-41 and RVAAP-43, Load Lines 8 and 10	PIKA International, Inc.	AUG-2007
Final Report for the Phase I Remedial Investigation of RVAAP-33 Load Line 6	MKM Engineers, Inc.	AUG-2007
Final Removal Action Work Plan for RVAAP-49 Central Burn Pits	SAIC	AUG-2007
Final Record of Decision for Soil and Dry Sediment at the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	SAIC	SEP-2007
Final Record of Decision for Soil and Dry Sediment at the RVAAP-02 Erie Burning Grounds	SAIC	SEP-2007

IRP Previous Studies

2007	Title	Author	Date
	Final Record of Decision for Soil and Dry Sediment at the RVAAP-02 Open Demolition Area #2	SAIC	SEP-2007
	Final Report for the Phase I Remedial Investigation at RVAAP-42 Load Line 9, Volume 1	MKM Engineers, Inc.	OCT-2007
	Draft Proposal to Update the Facility-Wide Groundwater Monitoring Program	United States Army Corp of Engineers	OCT-2007
	Preliminary Draft Remedial Investigation Addendum No. 1 for the RVAAP-49 Central Burn Pits	SAIC	NOV-2007
	Final Work Plan for the Geophysical Investigation of the Suspected RVAAP-28 Mustard Agent Burial Site	Environmental Quality Management/John M. Miller, John Vanderlaan	NOV-2007
	Draft Project Completion Report for the DLA Storage Reclamation-Route 80 Tank Farm and East Ore Yard Culvert Replacement	SpecPro Inc.	NOV-2007
	Final Report on the Disposal of Munitions and Explosives of Concern (MEC), Discarded Military Munitions (DMM) and Munitions Constituents (MC)	PIKA International, Inc.	NOV-2007
	Final Facility-Wide Groundwater Monitoring Program April 2007 Sampling Event	Environmental Quality Management, Inc.	NOV-2007
	Final Project Completion Report for the Munitions Response for Demolition of Load Lines 5, 7, Building 1039, and Transite Removal at Building T-1604	Lakeshore Engineering Services, Inc.	DEC-2007
	Draft Facility-Wide Groundwater Monitoring Program Annual Report for 2007	Environmental Quality Management, Inc.	DEC-2007
2008	Installation Action Plan RVAAP - FY2007	Mark Patterson	JAN-2008
	Final Propellant Removal Summary Report for MEC Support for RVAAP- 08 Load Line 1	Shaw Environmental, Inc.	JAN-2008
	Final Remedial Investigation Report Addendum No. 1 for the RVAAP-49 Central Burn Pits	SAIC	JUN-2008
	Final ROD for Soil and Dry Sediment at RVAAP-05, Winklepeck Burning Grounds	SAIC	AUG-2008
	Final Proposed Plan for Soil and Dry Sediment at the RVAAP-49 Central Burn Pits	SAIC	OCT-2008
2009	Draft Remedial Design for RVAAP-16, Fuze and Booster Quarry Landfill Ponds	SAIC	FEB-2009
	Final ROD for Soil and Dry Sediment at RVAAP-49, Central Burn Pits	SAIC	FEB-2009
	Final ROD for Soil and Dry Sediment at RVAAP-01, Ramsdell Quarry Landfill	SAIC	MAR-2009
	Final ROD for Soil and Dry Sediment at RVAAP-12, Load Line 12	SAIC	MAR-2009
	Final Facility Wide Groundwater Monitoring Program Annual Report 2008	EQM	MAR-2009
	Preliminary Draft Remedial Design for RVAAP-12, Load Line 12	SAIC	MAR-2009
	Final ROD for Soil and Dry Sediment at RVAAP-49 Central Burn Pits	SAIC	APR-2009
	Final DQO Report for RVAAP-28 Mustard Agent Burial Site	Shaw	JUN-2009
	Final Facility Wide Groundwater Monitoring Program October 2008 Sampling Event	EQM	JUN-2009

IRP Previous Studies

2009

Title	Author	Date
Final Remedial Design for RVAAP-16 Fuze and Booster Quarry Landfill	SAIC	JUN-2009
Final Remedial Design for RVAAP-12 Load Line 12	SAIC	JUL-2009
Final Facility Wide Groundwater Monitoring Program January 2009 Sampling Event	EQM	JUL-2009
Final DQO Report for RVAAP-34 Sand Creek Disposal Landfill	Shaw	JUL-2009
Final PBA 08 LL 1-4 Sub Slab Sampling Short Report	URS	SEP-2009
Final Remedial Design Approval for RVAAP-12 Load Line 12	SAIC	OCT-2009
Final DQO Report for RVAAP-03 Open Demo Area 1	Shaw	OCT-2009
Final ROD Signoff for Soil and Dry Sediment at RVAAP-12 Load Line 12	SAIC	OCT-2009
Final ROD Signoff for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill	SAIC	OCT-2009
Final Remedial Action Closeout Report for RVAAP-05 Winklepeck Burning Grounds	MKM	NOV-2009
Final Facility Wide Groundwater Monitoring Program April 2009 Sampling Event	EQM	NOV-2009
Final TCRA Closeout Report for RVAAP-04 ODA 2 Rocket Ridge	PIKA	DEC-2009
Final Multi-Increment Sampling and Analysis of Soils Below Floor Slabs at RVAAP-09 Load Line 2, RVAAP-10 Load Line 3, and RVAAP- 11 Load Line 4	URS	DEC-2009

2010

Final Facility Wide Groundwater Monitoring Program July 2009 Sampling Event	EQM	JAN-2010
Final Remedial Design Approval for RVAAP-01 Ramsdell Quarry Landfill	SAIC	JAN-2010
Draft Facility Wide Groundwater Monitoring Program October 2009 Sampling Event	EQM	FEB-2010
LL 1-4 Sub Slab Final Field Sampling Report	URS	MAR-2010
Final Facility Wide Human Health Cleanup Goals	SAIC	MAR-2010
Pre-Draft Six Sharon Conglomerate Wells Monitoring Report	SAIC	MAR-2010
Final Remedial Action Closeout Report for RVAAP-16 Fuze and Booster Quarry Landfill	SAIC	MAR-2010
Final Facility Wide Groundwater Monitoring Program Annual Report 2009	EQM	MAR-2010
Draft Facility Wide Groundwater Monitoring Program Metals Report 2010	EQM	MAR-2010
Final Geophysical Prove-out Report for Environmental Services at RVAAP- 34 Sand Creek Disposal Road Landfill, RVAAP- 03 Open Demolition Area #1, And RVAAP- 28 Mustard Agent Burial Site, Version 1.0	Shaw	MAR-2010
Final Project Management Plan for the Performance-Based Acquisition of Six Environmental Areas of Concern, Revision 1	SAIC	MAR-2010
Draft ESS Report for RVAAP-01 Ramsdell Quarry Landfill	SAIC	MAR-2010
Final Facility Wide Groundwater Monitoring Program October 2009 Sampling Event	EQM	APR-2010

IRP Previous Studies

2010

Title	Author	Date
Final Monitoring Report for the Deep Bedrock Well Installation in the Basal Sharon Conglomerate	SAIC	MAY-2010
Final Quality Control Plan for the Geochemical Evaluation of Metals in Groundwater	Shaw	MAY-2010
Final Facility-Wide Groundwater Monitoring Program Report on the 2009 Metals Sampling Event	EQM	JUN-2010
Revised Final Remedial Design for the RVAAP- 01 Ramsdell Quarry Landfill	SAIC	JUN-2010
Load Lines 2 & 3 Excavation Soil Removal	URS	JUL-2010
Final Facility-Wide Groundwater Monitoring Program Report on the January 2010 Sampling Event	EQM	JUL-2010
Final Quality Control Plan for the Revision of the Facility-Wide Environmental Documents	SAIC	JUL-2010
Final Work Plan for Sampling & Closure of Load Lines 1, 2, 3, 4, and 12 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11, RVAAP-12) and other Areas of Concern	Prudent	JUL-2010
Final Project Management Plan for Sampling & Closure of Load Lines 1, 2, 3, 4, 12 (RVAAP-08, 09, 10, 11, and 12) and other Areas of Concern	Prudent	JUL-2010
Geochemical Evaluation Of Metals In Groundwater Draft Geochem Report	Shaw	AUG-2010
Final Remedial Action Report for the RVAAP-12 Load Line 12	SAIC	AUG-2010
Final Site Characterization and Focused Feasibility Study Work Plan for the RVAAP- 51 Dump Along Paris-Windham Road at Ravenna Army Ammunition Plant	SAIC	AUG-2010
Removal Load Line 1 Excavation Soil	URS	SEP-2010
Final Sampling and Analysis of Soils Below Floor Slabs at RVAAP- 08 Load Line 1 and Other Building Locations	URS	SEP-2010
ISSUE FINAL COMPLETION REPORT (LL2, 3, & 4)	URS	DEC-2010
LL 1-4 ISSUE FINAL COMPLETION REPORT (LL2, 3, & 4)	URS	DEC-2010

2011

FINAL GEOPHYSICAL REPORT	Shaw	JAN-2011
RVAAP-01 DRAFT Eng Eval REPORT	SAIC	JAN-2011
RVAAP-28 FINAL GEOPHYSICAL REPORT	Shaw	JAN-2011
RVAAP-34 FINAL GEOPHYSICAL REPORT	Shaw	JAN-2011
RVAAP-51 DRAFT FEASIBILITY STUDY REPORT	SAIC	JAN-2011
Facility-wide Task 16 - Issue Final (SAP/QAPP/HASP)	SAIC	FEB-2011
RVAAP-13 DRAFT RI/FS REPORT	SAIC	FEB-2011
ISSUE FINAL COMPLETION REPORT (LL1)	URS	MAR-2011
LL 1-4, 12, AND OTHER SAMPLING AND CLOSURE Issue Final MI Sampling Report	Prudent	MAR-2011
RVAAP-04 Final WHITE PHOSPHORUS Workplans Submittal	TOLT	MAR-2011
LL 1 -4 ISSUE FINAL COMPLETION REPORT (LL1)	URS	MAR-2011
LL 1-4, 12 Issue Final MI Sampling Report	Prudent	MAR-2011
RVAAP-48 DRAFT RI/FS REPORT	SAIC	MAR-2011

IRP Previous Studies

2011

Title	Author	Date
RVAAP-66 FWGW FINAL ANNUAL REPORT	EQM	MAR-2011
FINAL DQO REPORT	Shaw	JUN-2011
Geochemical Evaluation of Metals in Groundwater FINAL GEOCHEM REPORT	SHAW	JUN-2011
RVAAP-05 FINAL DQO REPORT	Shaw	JUN-2011
RVAAP-28 (FS) Prelim Draft FEASIBILITY REPORT	Shaw	JUL-2011
RVAAP-66 DRAFT FWGWMP PMP/QASP	EQM	AUG-2011
RVAAP-66 PRE DRAFT FWGWMP SHP/SAP/QAPP	EQM	AUG-2011
RVAAP-05 DRAFT FINAL PROPERTY MANAGEMENT PLAN	AAA	SEP-2011

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Installation Restoration Program

Site Descriptions

Site ID: PBC at Ravenna
Site Name: PBA 2008

STATUS

Parcel: NONE
Regulatory Driver: CERCLA
RRSE: MEDIUM
Contaminants of Concern: Explosives, Metals
Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	200308.....	200308
RI/FS.....	200807.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409
RIP Date:	N/A	
RC Date:	201409	

SITE DESCRIPTION

This site includes work for PBC 2005 and PBA 2008. It no longer carries funding requirements (all requirements were funded) for USACE oversight of the PBC 2005. PBC 2005 was awarded to Science Applications International Corporation. The RA at Ramsdell Quarry Landfill (RVAAP-01) has been delayed due to the discovery of asbestos-containing materials at RVAAP-01. The RA approach was reevaluated under an engineering evaluation cost analysis (EE/CA). The revised project is now scheduled for completion by September 2012. The PBC 2005 sites include RVAAP-01, 02, 04, 12, 16 and 49.

PBA 2008 was awarded in July 2008 (tasks 1 through 4). Optional Task 5 was awarded in October 2010. The PBA 2008 now has a projected expiration of March 2015. This PBA includes portions or all of RVAAP-06, 12, 13, 19, 29, 33, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, and 67. USACE oversight costs for PBA 2008 are carried in this site.

CLEANUP/EXIT STRATEGY

Cleanup strategies are addressed in the individual sites. Completion of the PBC 2005 work (RVAAP-01, 02, 04, 12, and 49) is anticipated in September 2012. The PBA 2008 work on the following is expected to continue until March 2015: RVAAP-06, 12, 13, 19, 29, 33, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, and 67

Site ID: RVAAP-01

Site Name: RAMSDELL QUARRY LANDFILL

STATUS

Parcel: Ramsdell Quarry Landfill (15 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200306.....	200910
RD.....	200706.....	201209
RA(C).....	201006.....	201509

RIP Date: N/A

RC Date: 201509

SITE DESCRIPTION

RVAAP-01 (Ramsdell Quarry Landfill) is located in the eastern section of the RVAAP facility and is a four-hectare (10-acre) unlined landfill, with a 5.5 to 6.1 meters [18 to 20 feet (ft)] depth, in part of an abandoned quarry. 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 ft) 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 May 1990 under state of Ohio solid waste regulations. Because this unit is unlined, there is potential for releases from the landfill to surrounding soils and groundwater.

Landfilled material consists of variable domestic, commercial, industrial, and solid wastes including but not limited to explosives (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 1988. 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 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 RCRA solid waste program to CERCLA in June 2004. A PBC was awarded in 2005 to complete the investigation and any required remediation in accordance with the Defense Planning Guidance. A final RI/FS was completed and approved in April 2007. A ROD was signed by the Army and Ohio EPA in October 2009. The approved remediation consisted of removing Polycyclic Aromatic Hydrocarbons (PAHs) 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, asbestos containing material (ACM). By August 2010, all disturbed ACM was removed.

An EECA was prepared and accepted by the Ohio EPA in September of 2011. A proposed plan was partially completed before expiration of the PBC 2005 contract. The project was on standby from September 2011 to January 2012 when existing funds were re-programmed to complete the remediation. MEC is suspected at the site and is being addressed under the MMRP site RVAAP-

Site ID: RVAAP-01
Site Name: RAMSDELL QUARRY LANDFILL

001-R-01.

CLEANUP/EXIT STRATEGY

The anticipated additional remedial action for soil and dry sediment will include LUCs consisting of perimeter fencing, personnel training/briefing, asbestos signage, and access and digging restrictions (funded under PBC 2005). A moderate soil excavation might be required, also under PBC 2005. Groundwater monitoring requirements are carried in RVAAP-66. The reasonably anticipated future land use is Restricted Access OHARNG Military Use and Training Land Use.

Site ID: RVAAP-05

Site Name: WINKLEPECK BURNING GROUNDS

STATUS

Parcel: Winklepeck Burning Grounds (20 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199410.....	201609
IRA.....	200608.....	201609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The Winklepeck Burning Grounds (RVAAP-05), consisted of approximately 200 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 200-acre area. Materials that were burned included: RDX, 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 & Orders in June 2004. The management of groundwater monitoring is under the Facility-wide Groundwater Monitoring Program (FWGWMP).

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

The Army transferred approximately 180 acres to the NGB in 2006 for the construction of a Mark 19 grenade machine gun range. The remaining 20 acres containing four burn-pad locations were remediated based on a ROD dated August 2008 and signed by the Army and Ohio EPA. The additional remediation was completed in the summer of 2009. Ohio EPA approved the final completion report during the first quarter of FY10. The 20 acres were transferred in June 2010 and combined with the NGB 180 acre parcel.

A September 2008 contract was awarded to conduct a Data Quality Objectives (DQO) study for MEC and chemical contaminants remaining within the AOC. This DQO study is scheduled as an RI/FS phase in Army Environmental Database-Restoration (AEDB-R). Additional cleanup consisting of soil excavation will be required to support construction of a multi-purpose machine gun range which will partially overlap with the existing Mark 19 range. This is an active range, and as such is not eligible for MMRP.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes an IRA consisting of significant soil excavation with off-site disposal followed by completion of the RI/FS. All groundwater issues will be addressed under RVAAP-66, Facility-wide Groundwater.

Site ID: RVAAP-05

Site Name: WINKLEPECK BURNING GROUNDS

The Army currently restricts access and digging. Future LUCs (as part of the MPMG range development) will likely include a requirement for MEC construction support for digging activities and a digging restriction at four feet bgs. LUC costs for installation restoration (IR) sites are carried in Program Management.

The reasonably anticipated future land use is Small Arms Range-OHARNG Military Use and Training Land Use.

Site ID: RVAAP-06

Site Name: C BLOCK QUARRY

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

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-ft diameter or larger. IRP constituents of concern include metals, SVOCs, VOCs and propellants.

In May 1999, the Army transferred this site to the NGB. This was one of 14 sites investigated in an FY04-FY05 investigation to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by removal of surficial asbestos and implementation of LUCs to be protective of the representative receptor (Security Guard/Maintenance Worker) under the FY08 PBA. Anticipated LUCs will include access restrictions and personnel training/briefings on potential hazards and safety precautions (related to asbestos). The remedial alternative will include five-year reviews and monitoring as COCs will remain in place for unrestricted use and subsurface asbestos will remain. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Restricted Access OHARNG Military Use and Training Land Use.

Site ID: RVAAP-08
Site Name: LOAD LINE 1

STATUS

Parcel: Load Line 1 (160 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199410.....	200707
RD.....	200510.....	201010
IRA.....	200309.....	200807
RA(C).....	200309.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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.

Contaminants of Concern (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 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 USACE-led 2009 sampling event was finalized in March 2011.
7. Additional characterization sampling was completed in July 2011. A revised Preliminary Draft LUC Assessment is scheduled for the second quarter of FY12.

RVAAP-008-R-01 is collocated within a portion of this AOC.

Site ID: RVAAP-08
Site Name: LOAD LINE 1

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes further characterization and moderate soil excavation with off-site disposal under an existing contract. A ROD revision/addendum will be completed prior to remediation (to be awarded in FY12) and will address surface water and wet sediments as well as soils and dry sediment. Site closeout will follow. This work covers remediation at RVAAP-08, 09, 10, 11, and 12. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. The Army currently restricts access and digging.

Site ID: RVAAP-09
Site Name: LOAD LINE 2

STATUS

Parcel: Load Line 2 (212 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199410.....	200707
RD.....	200510.....	201010
IRA.....	200309.....	200807
RA(C).....	200309.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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.

Contaminants of concern (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. A revised Preliminary Draft LUC Assessment is scheduled for the second quarter of FY12.

Site ID: RVAAP-09
Site Name: LOAD LINE 2

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes further characterization and moderate soil excavation with off-site disposal under an existing contract. A ROD revision/addendum will be completed prior to remediation (to be awarded in FY12) and will address surface water and wet sediments as well as soils and dry sediment. Site closeout will follow. This work covers remediation at RVAAP-08, 09, 10, 11, and 12. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. The Army currently restricts access and digging.

Site ID: RVAAP-10
Site Name: LOAD LINE 3

STATUS

Parcel: Load Line 3 (174 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199410.....	200707
RD.....	200510.....	201010
IRA.....	200309.....	200807
RA(C).....	200309.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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. A revised Preliminary Draft LUC Assessment is scheduled for the second quarter of FY12.

Site ID: RVAAP-10
Site Name: LOAD LINE 3

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes further characterization and moderate soil excavation with off-site disposal under an existing contract. A ROD revision/addendum will be completed prior to remediation (to be awarded in FY12) and will address surface water and wet sediments as well as soils and dry sediment. Site closeout will follow. This work covers remediation at RVAAP-08, 09, 10, 11, and 12. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. The Army currently restricts access and digging.

Site ID: RVAAP-11
Site Name: LOAD LINE 4

STATUS

Parcel: Load Line 4 (129 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199410.....	200707
RD.....	200510.....	201010
IRA.....	200309.....	200807
RA(C).....	200309.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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 GIS 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. A revised Preliminary Draft LUC Assessment is scheduled for the second quarter of FY12.

Site ID: RVAAP-11
Site Name: LOAD LINE 4

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes further characterization and moderate soil excavation with off-site disposal under an existing contract. A ROD revision/addendum will be completed prior to remediation (to be awarded in FY12) and will address surface water and wet sediments as well as soils and dry sediment. Site closeout will follow. This work covers remediation at RVAAP-08, 09, 10, 11, and 12. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. The Army currently restricts access and digging.

Site ID: RVAAP-12
Site Name: LOAD LINE 12

STATUS

Parcel: Load Line 12 (75 acres)

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	199910.....	201309
RD.....	200707.....	201309
IRA.....	200807.....	201010
RA(C).....	200807.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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.

Results from all sampling events will be used to complete a LUC assessment. The goal of this project will be to minimize restrictions at these sites and possibly obtain a Unrestricted OHARNG Military Use and Training. Additional characterization sampling was conducted in June-July 2011. A revised Preliminary Draft LUC Assessment is scheduled for the second quarter of FY12.

Groundwater is being addressed under RVAAP-66, Facility-wide Groundwater. Surface water and wet sediment are being addressed under PBA08.

CLEANUP/EXIT STRATEGY

Site ID: RVAAP-12
Site Name: LOAD LINE 12



The anticipated exit strategy for this site includes further characterization and moderate soil excavation with off-site disposal under an existing contract. A ROD revision/addendum will be completed prior to remediation (to be awarded in FY12) and will address surface water and wet sediments as well as soils and dry sediment. Site closeout will follow. This work covers remediation at RVAAP-08, 09, 10, 11, and 12. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. The Army currently restricts access and digging.

Site ID: RVAAP-13

Site Name: BLDG 1200-DILUTION\SETTLING POND

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

From approximately 1941 to 1971, ammunition was demilitarized by steaming out munitions rounds at building 1200 (RVAAP-13). The steam decontamination generated pink water, which drained to a man-made ditch. The ditch discharged into a 0.5-acre sedimentation pond, and the overflow from this pond discharged into Sand Creek.

Potential COCs at this site are explosive compounds, propellants and metals. Media of concern include soil, surface water, sediment and groundwater.

This site was transferred to NGB in May 1999. The buildings were demolished, and all foundations and footings were removed.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use is Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-19

Site Name: LANDFILL NORTH OF WINKLEPECK BURN GRND

STATUS

Parcel: Landfill North of Winklepeck Burning Grounds (5 acres)

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-19 is a 2.5-acre unlined and unpermitted landfill (a non-regulated solid waste disposal unit), which operated from 1969 to 1976 and is located upgradient of a wetland. The general appearance of the site suggests that a trench and fill method type of operation was used for waste disposal. Waste types possibly associated with this landfill include booster cups, aluminum liners, municipal waste, explosive and munitions waste and ash, and scrap metal from the Winklepeck Burning Grounds (RVAAP-05). The landfill was covered with soil in 1978.

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

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase. RVAAP-019-R-001 will address MEC concerns.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by surficial debris removal, installation of a vegetative cover over the disturbed area, and implementation of LUCs under the FY08 PBA to prevent direct contact with residual surface debris. LUCs will likely include restricted access and disturbance restrictions related to the landfill cover. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Restricted Access OHARNG Military Use and Training Land Use.

Site ID: RVAAP-28
Site Name: MUSTARD AGENT BURIAL SITE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200306.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-28 consists of three potential disposal areas:

Area 1: Records indicate that in 1969 an Explosive Ordnance Disposal Unit excavated a suspected mustard agent burial site near the west end of the NACA crash strip. Recovered from the site in 1969 were one 190-liter (50 gallon) drum and seven rusty canisters. All recovered items were empty and no evidence of contamination was found.

Area 2: Another suspected area, located to the southwest across Hinckley Creek, is presently marked by reflective Seibert stakes. Surface soil samples collected in 1996 as part of the RRSE conducted by USACHPPM contained no thiodiglycol (mustard agent breakdown product). There were two non-intrusive geophysical surveys (EM-31, and EM-61) completed in 1998. The two surveys identified the demarcated area with positive metallic responses. Many responses may be related to artificial features (e.g. rusted fencing) at or near the ground surface.

Groundwater samples were collected in 2004 and no mustard agent or mustard agent breakdown products were found. Groundwater monitoring is ongoing. The site was transferred to NGB in May 1999.

In 2006, additional wells were installed and sampled for mustard agent and associated breakdown products. The chemical analysis reported no detections of mustard agent or breakdown products. An additional groundwater monitoring event was conducted in October 2011, also with no detections reported

Area 3: An additional potential burial area located at the west end of the NACA crash strip was suggested by a member of the public and investigated in FY08. The geophysical investigation detected unidentified anomalies. A follow-on FY08 contract was awarded to perform a DQO study and an additional geophysical survey that included areas on the north and south sides of the test crash strip. The geophysical survey work and report were completed in the fourth quarter of FY10 and the study detected additional unidentified anomalies.

An additional groundwater monitoring event was conducted at the second area in October 2011, and groundwater samples were analyzed for the mustard agent degradation products. No mustard agent degradation products were detected in the groundwater samples.

To date, the existing data for all three areas have not provided definitive confirmation of the presence or absence of mustard gas or CAIS kits with mustard gas. Due to the lack of positive data and the anecdotal nature of the reports of the burial of chemical agent, the probability that mustard agent exists at these sites is considered to be low. Additional site characterization is pending.

Site ID: RVAAP-28

Site Name: MUSTARD AGENT BURIAL SITE

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site is completion of the RI including additional investigation activities to determine if the subsurface anomalies represent chemical agent. This confirmation analysis is expected to indicate that no further action is needed for this site beyond the Remedial Investigation/Feasibility Phase. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

Currently, the land use is Restricted Access due to the suspected presence of mustard agent at this site. Current LUCs consist of access and digging restrictions including Siebert stakes and signage. This site is not currently used or accessible. The desired reasonably anticipated future land use is Dismounted Training-Digging OHARNG Military Use and Training. LUC costs for IR sites are carried in Program Management.

Site ID: RVAAP-29

Site Name: UPPER AND LOWER COBBS PONDS

STATUS

Parcel: Upper and Lower Cobbs Ponds (9 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Surface Water

Phases	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI/FS.....	200101.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-29 is comprised of approximately five acres (Upper Cobbs Pond) and four acres (Lower Cobbs Pond). The Upper and Lower Cobbs Ponds are unlined ponds that contain abundant fish and wildlife. A ponded area known as "a backwater area" is located south of Upper Cobbs Pond. This area, approximately one acre, was created by beaver activity and was not present during facility operations.

The Upper and Lower Cobbs Ponds were used as sedimentation basins for Load Line 12 (RVAAP-12) and Load Line 3 (RVAAP-10) wastewater effluent from 1941 to 1971 and storm water runoff. Waste types associated with this site include, but are not limited to, TNT, RDX, HMX, Composition B, lead, chromium, mercury, and aluminum chloride.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase. Currently, there are catch and release fishing restrictions on this AOC.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by LUCs under the FY08 PBA. LUCs will likely include personnel briefings and catch and release fishing restrictions. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use is Recreational Land Use.

Site ID: RVAAP-33
Site Name: LOAD LINE 6

STATUS

Parcel: Load Line 6 (43 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199407.....	199602
SI.....	199407.....	199901
RI/FS.....	200207.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

Load Line 6 (RVAAP-33) is approximately 45 acres and operated primarily as a fuze assembly line from 1941 to 1945. Demolition of all Load Line 6 buildings was completed July 2006.

A portion of the AOC was reactivated in 1950 when the Firestone Defense Products Division became a tenant which lasted until the late-1980s. During this time frame Firestone sold its Defense Products Division to Physics International. Three years later, Physics International became a subsidiary of Olin Corporation and Olin remained as a tenant until early-1993. Throughout the history of the tenant occupancy the work regimen remained the same. As reported by former workers at RVAAP, Load Line 6 was a classified experimental test facility for munitions. Shaped charges were constructed and tested under contract for the Department of Defense. The site consisted of a pond (underwater test chamber), two above ground test-firing chambers, and several buildings. The test chamber foundation and the concrete blocks around the test pond remain at the site. No original file documentation exists for this site.

The contaminants of potential concern are explosives and metals.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. The Phase I RI investigation was completed in the last quarter of FY07. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase. MMRP issues will be addressed separately under RVAAP-033-R-01.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-34

Site Name: SAND CREEK DISPOSAL ROAD LANDFILL

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199407.....	199602
SI.....	199407.....	199906
RI/FS.....	200409.....	200810
RD.....	201110.....	201309
IRA.....	200209.....	200409
RA(C).....	201210.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

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 2.7 acres and located adjacent to Sand Creek. The dates of operation of this site are unknown, but believed to be between 1950 and 1960.

Sediment and surface water samples indicated metals and SVOCs were leaching into Sand Creek, which is a state resource water.

The site was transferred to the NGB in May 1999. 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. Findings from the latter investigations will provide the basis for additional IRP actions.

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. MMRP issues will be addressed separately under RVAAP-034-R-01.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by moderate soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Small Arms Range-OHARNG Military Use and Training Land Use. LUCs will likely include personnel training/briefings and access and digging restrictions. LUC costs for IR sites are carried in Program Management.

Site ID: RVAAP-38
Site Name: NACA TEST AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199508.....	199602
SI.....	199508.....	199812
RI/FS.....	199909.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-38 (NACA Test Area), an approximately 69-acre site, was previously used as an aircraft test area by NACA. Surplus military aircraft crashed into constructed barriers, using a fixed rail attached to the aircraft landing gear, in an attempt to develop crash-worthy fuel tanks and/or high flashpoint aviation fuel. Burial of some demolished aircraft occurred at the site after the tests. Open Demolition Area 1, RVAAP-03, is surrounded by RVAAP-38.

This site was transferred to the NGB in May 1999. In the late-1990s, soil analyses detected low levels of metals and organics and dry sediment analyses detected nitrocellulose. As such, it was determined that additional study was needed of the area, and a SI/Phase 1 RI, for the site was completed in 2002.

Twelve groundwater monitoring wells were installed and sampled in 2004. Analytical results indicated metals and low levels of SVOCs.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by moderate soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use. LUCs will likely include personnel training/briefing and a digging restriction at seven feet bgs.

Site ID: RVAAP-39
Site Name: LOAD LINE 5

STATUS

Parcel: Load Line 5 (39 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-39 (Load Line 5) operated from 1941 to 1945 to produce fuzes for artillery projectiles. Load Line 5 was deactivated and its equipment was removed in 1945.

Since 1978, Load Line 5 has been included in various assessments and investigations. A key evaluation was conducted in conjunction with the removal of buildings, including slabs and foundations in FY07. An underslab soil and dry sediment survey was completed by USACE during this effort and the report was finalized in 2009. The findings indicated that of all 13 process buildings evaluated for surface soil contamination, only two required additional evaluation for contaminant releases. Buildings 1F-12 (the fuze testing building) had the SVOC, benzo (a) anthracene identified as a COPC and Building 1F-10 (the detonator service magazine) had chromium identified as a COPC. As a result of these findings and the results from prior investigations, Load Line 5 was recommended for an RI/FS.

Load Line 5 is one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-40
Site Name: LOAD LINE 7

STATUS

Parcel: Load Line 7 (37 acres)

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200803.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-40 (Load Line 7) was used to assemble booster charges for artillery projectiles between 1941 and 1945. Load Line 7 was deactivated and the equipment was removed in 1945. Load Line 7 was used again in 1969 and 1970 to produce 40 millimeter (mm) projectiles. The site was reactivated between 1989 and 1993 under a tenant contract operated by an Olin Corporation subsidiary, Physics International (PI), for the manufacture of large caliber conventional weaponry. The PI Load Line 7 munitions process constructed and utilized a carbon-adsorption filtration plant to treat process wastewaters contaminated with explosives. The plant was closed in May 2000 with the termination of the NPDES permit.

An earlier site investigation indicated the presence of metals, VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater above agreed upon screening levels.

Removal of buildings, including slabs and foundations, was completed in FY07. An FY08 USACE underslab soil and dry sediment survey was completed.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-41
Site Name: LOAD LINE 8

STATUS

Parcel: Load Line 8 (44 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-41 (Load Line 8) was used to assemble booster charges for artillery projectiles between 1941 and 1945. Load Line 8 was deactivated and the equipment was removed in 1945.

An earlier site investigation indicated the presence of metals, VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater above agreed upon screening levels.

Removal of buildings, including slabs and foundations, was completed in FY07. An FY08 USACE underslab soil and dry sediment survey was completed.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-42
Site Name: LOAD LINE 9

STATUS

Parcel: Load Line 9 (106 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200208.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-42 (Load Line 9) operated from 1941 to 1945 to produce detonators. Load Line 9 was deactivated and its equipment removed in 1945.

Limited samples collected and analyzed in 2000 indicated low levels (below 2 percent) of lead azide in sediment and surface water in the sumps. The removal of buildings, including slabs and foundations, was completed in FY07.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A Phase I RI investigative survey was completed in the last quarter FY06. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by moderate soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-43
Site Name: LOAD LINE 10

STATUS

Parcel: Load Line 10 (36 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-43 (Load Line 10) operated from 1941 to 1945 to produce percussion elements. Load Line 10 went on standby status in 1945. From 1951 to 1957, Load Line10 produced primers and percussion elements. From 1969 to 1971, Load Line10 was reactivated, and produced munitions primers. The load line has been inactive since that time frame.

An earlier site investigation indicated the presence of metals, VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater above screening levels.

Removal of buildings, including slabs and foundations, was completed in FY07. An FY08 USACE underslab soil and dry sediment survey was completed.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-44
Site Name: LOAD LINE 11

STATUS

Parcel: Load Line 11 (47 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	199910.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-44 (Load Line 11) operated from 1941 to 1945 to produce primers for artillery projectiles. Load Line 11 was placed on standby in 1945. From 1951 to 1957, Load Line 11 was used to produce primers and fuzes.

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 SI/Phase I RI was completed in FY05 prior to demolition of the buildings. The complete removal of buildings, including slabs and foundations, occurred in FY05.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were completed awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-45

Site Name: WET STORAGE AREA

STATUS

Parcel: Wet Storage Area (36 acres)

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200409.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-45 (Wet Storage Area) was used from 1941 to 1945 to store primary explosives in water-filled tanks and metal carboys. There is no documentation of any spills in the area.

The COCs at this site include metals and explosives. Four of the six igloos were demolished in spring 2003-2004.

This is one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-46

Site Name: BUILDING F-15 AND F-16

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)

Media of Concern: Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200312.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

RVAAP-46 (Building F-15 and F-16) was used during World War II, the Korean Conflict and Vietnam War to test disassembly processes and munitions surveillance. Quantities and types of materials utilized as well as exact dates of testing are unknown.

The site was transferred to NGB in May 1999. An SI/Phase I RI (CY 2005-2006) found metals, explosives, SVOCs in soil and surface water above the agreed upon screening criteria. The Phase I RI did not investigate groundwater.

All buildings, foundations, and slabs were removed from both sites in the fourth quarter of FY09. Following removal, confirmation sampling within and outside the buildings footprints was completed in the first quarter of FY10. Analytical results were evaluated in FY11 to determine any cleanup strategy (e.g. soil removal, clean closure, no further action).

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use.

Site ID: RVAAP-48
Site Name: ANCHOR TEST AREA

STATUS

Parcel: Anchor Test Area (2 acres)

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

RVAAP-48 (Anchor Test Area) is located in the central part of the installation. Limited information is known about this research and development area, including dates of operation. It is believed that the site was used for testing explosively driven soil anchoring devices. It currently consists of several dirt mounds with a nearby sand pit (approximately six by 30 feet). There is metal debris in the area.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. Metals were found in soil above agreed upon screening levels. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Dismounted Training- Digging OHARNG Military Use and Training Land Use. However, based on the RI/FS findings, this site achieved residential cleanup standards. No LUCs are anticipated.

Site ID: RVAAP-50
Site Name: ATLAS SCRAP YARD

STATUS

Parcel: NONE
Regulatory Driver: CERCLA
RRSE: MEDIUM
 Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC)
 Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200408.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409
RIP Date:	N/A	
RC Date:	201409	

SITE DESCRIPTION

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 was transferred to NGB in May 1999.

This was one of 14 sites investigated in FY04-FY05 to provide data for a future contract. Under an earlier SI/phase 1 RI, analyses found explosives, SVOCs, and metals present in soils, sediment, surface water and groundwater above agreed upon screening levels. A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

MEC issues are covered under RVAAP-050-R-01.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by a treatment study to determine if chemical oxidation (either in situ or ex situ) can be implemented to remediate the soil. If the treatment study is not successful, then moderate soil excavation with off-site disposal under the FY08 PBA will be implemented. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Small Arms Range-OHARNG Military Use and Training Land Use. LUCs will likely include a disturbance restriction at four feet bgs, access restrictions, and personnel training/briefing.

Site ID: RVAAP-51

Site Name: DUMP ALONG PARIS-WINDHAM ROAD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Asbestos, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	199802.....	199806
SI.....	199807.....	199807
RI/FS.....	200109.....	201309
IRA.....	200209.....	200409

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

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.

A focused feasibility study (FFS) was awarded in the fourth quarter of FY09 to address remaining Ohio EPA concerns. The draft FFS work plan has been reviewed by stakeholders and the final FFS work plan, fieldwork, and FS report are to be completed by FY12.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the Site Characterization and Focused FS (funded). Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. LUCs will likely include personnel training/briefing, access controls, signage and Siebert stakes, and digging restrictions due to residual asbestos. The reasonably anticipated future land use is Small Arms Range-OHARNG Military Use and Training Land Use.

Site ID: RVAAP-66

Site Name: FACILITY-WIDE GROUNDWATER

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA.....	198802.....	198804
SI.....	198805.....	198906
RI/FS.....	199910.....	201609
IRA.....	201110.....	201606
LTM.....	201609.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

Groundwater issues at RVAAP are managed through a facility-wide approach called the Facility-wide Groundwater Monitoring Program (FWGWMP) under RVAAP-66. The FWGWMP is a component of the DFFO, June 2004. Soil issues are addressed at the individual sites. The FWGWMP at RVAAP now consists of 243 wells and includes all IR and MR sites at RVAAP. The FWGWMP was approved in 2004 and monitoring was initiated in 2005 with 36 wells. A review of the FWGWMP was completed in 2007 and 2010. The 2007 review resulted in an increase in monitoring, which was then reduced as a result of the 2010 review. The program has been expanded to include all 243 monitoring wells at RVAAP.

Both shallow aquifers and deeper regional aquifers are being monitored. Several COPCs 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 in the deeper aquifers but concentrations are below applicable screening criteria are still being evaluated as COPCs and not COCs.

All of the sites will remain in the RI stage for characterization of groundwater in RVAAP-66 until 2013, followed by an FS in 2014. The 2014 FS will address all sites at RVAAP. Some sites may require remediation for groundwater and others may not. Monitored Natural Attenuation (MNA) is assumed for all of the sites.

The groundwater PBA 2011 was awarded in FY11 to address the RI/FS, PP, and ROD requirements of RVAAP-66. The PBA 2011 award also addresses the continuing groundwater monitoring requirements of the FWGWMP Plan through completion of an approved ROD. The contract was fully funded and will extend into FY16.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS under the FY11 PBA followed by LTM consisting of groundwater monitoring (MNA) and five-year reviews, which address all IR and CR sites. USACE technical support will be provided in the IRA phase. LUCs will likely include potable water source restrictions in some areas on the facility. LUC costs for IR sites are carried in Program Management.

Site ID: RVAAP-67

Site Name: FACILITY-WIDE SEWERS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

RRSE: LOW

Contaminants of Concern: Explosives

Media of Concern: Soil

Phases	Start	End
PA.....	198802.....	198804
SI.....	198805.....	198906
RI/FS.....	199910.....	201309
RD.....	200807.....	201309
RA(C).....	200807.....	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

The Ravenna Army Ammunition Plant 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-ft) are assembled from either vitreous clay tile that has been lined with resin or cast iron. Storm sewers (estimated at 30,000-ft) 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 LAP production area sewers completed in September FY11. An approved ROD is anticipated by September 2012.

A PBA was awarded in FY08 and will address all investigation and cleanup through RC for this site. Tasks 1 through 4 (investigations) were awarded in FY08. Task 5 (remediation) was awarded in FY10. This site is currently in the RI phase.

Site ID: RVAAP-67

Site Name: FACILITY-WIDE SEWERS

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by moderate soil excavation with off-site disposal under the FY08 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater.

IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
RVAAP-02	ERIE BURNING GROUNDS	200809	An NFA ROD for soil and dry sediment was signed by Ohio EPA in January 2008. Any MEC issues at the site are being covered under RVAAP-002-R-01.
RVAAP-03	OPEN DEMOLITION AREA #1	201202	
RVAAP-04	OPEN DEMOLITION AREA #2	200801	An NFA ROD for soil and dry sediment was signed by Ohio EPA in January 2008. Any MEC issues at the site are being covered under RVAAP-004-R-01.
RVAAP-07	BLD 1601 HAZ WST STG	198906	Closure plan approval letter from Director of Ohio EPA, dated Feb. 12, 1998 (with modifications). Letter from RVAAP responded with modified pages June 26, 2000. Closed under RCRA.
RVAAP-14	LOAD LINE 6 EVAPORATION UNIT	198906	Operational from 1987-1993. Not eligible for ER,A funding. Closure letter from Ohio EPA dated Jan. 20, 2003
RVAAP-15	LOAD LINE 6 TREATMENT PLANT	200001	Operational from 1987-1993. Not eligible for ER,A funding.
RVAAP-16	FUZE&BOOSTER QUARRY LANDFILL/PONDS	201009	All soil and dry sediment issues are resolved with the state. Any additional issues will be addressed by the MR site RVAAP-016-R-01.
RVAAP-17	DEACTIVATION FURNACE	198906	The DFA building was closed under RCRA. Soils and groundwater were moved over to the CERCLA side of the house under the June 10, 2004 Directors Findings and Orders (see section VI (9) (c). RCRA closure plan submitted Feb. 23, 2001. Soils and GW are covered under Winklepeck (RVAAP-05)
RVAAP-18	LOAD LINE 12 WWT PLANT	199703	Operational until 1983. Termination of NPDES permit effective May 1, 2000.
RVAAP-20	SAND CREEK STP	198906	Operational until 1993. NPDES permit terminated May 1, 2000.
RVAAP-21	DEPOT STP	198906	Operational until 1983. NPDES was terminated May 1, 2000.
RVAAP-22	GEORGE RD STP	198906	Activities for this site are carried under CC RVAAP-75.
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	198911	Closeout Letter from OSFM BUSTR dated Feb. 5, 2003.
RVAAP-24	DEPOT AREA	198906	Activities for this site are carried under CC RVAAP-76.
RVAAP-25	BLD 1034 MOTOR POOL AST	198906	Not eligible for ER,A funding.
RVAAP-26	FUZE BOOSTER AREA SETTLING TANKS	200001	15 tanks scattered among LL 5 (1 tank), 7 (1 removed in 1988), 9 (2 tanks), 10 (9 tanks-1 AST, 8 USTs), 11 (3 tanks); all tanks emptied, cleaned and covered in 1971. Soils

IRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			are being investigated in conjunction with site-specific media investigation/cleanup. (RVAAP-39, -40, -42, -43, & -44)
RVAAP-27	BUILDING 854, PCB STORAGE	198906	Letter from Ohio EPA dated September 1, 1999 stating NFA.
RVAAP-30	LL 7 TREATMENT PLANT	200001	Operational until 1983. Termination of NPDES permit effective May 1, 2000.
RVAAP-31	ORE PILE RETENTION POND	200001	Termination of NPDES permit effective May 1, 2000.
RVAAP-32	40 MM FIRING RANGE	200709	All concerns are being addressed under MMRP.
RVAAP-35	1037 BUILDING-LAUNDRY WASTEWATER SUMP	199809	Activities for this site are carried under CC RVAAP-77.
RVAAP-36	PISTOL RANGE	200509	Letter from Ohio EPA regarding the delay of clean-up until range no longer used, dated February 14, 2006. Range being used by OHARNG.
RVAAP-37	PESTICIDE BUILDING S-4452	199602	Closure letter from Ohio EPA dated Sept. 19, 2000.
RVAAP-47	BUILDING T-5301	200109	Statement of Basis - signed by RVAAP and Ohio EPA on Dec. 07, 2000. Clean up to background/bedrock. IRA in FY00 left no contaminants in place.
RVAAP-49	CENTRAL BURN PITS	200907	NFA ROD for soil and dry sediment was submitted to and signed by the Army and Director of the Ohio EPA in July 2009.

IRP Schedule

Date of IRP Inception: 198802

Past Phase Completion Milestones

1988

ISC (RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)

RFA (RVAAP-07 - BLD 1601 HAZ WST STG, RVAAP-14 - LOAD LINE 6 EVAPORATION UNIT, RVAAP-17 - DEACTIVATION FURNACE, RVAAP-27 - BUILDING 854, PCB STORAGE)

PA (RVAAP-01 - RAMSDELL QUARRY LANDFILL, RVAAP-02 - ERIE BURNING GROUNDS, RVAAP-03 - OPEN DEMOLITION AREA #1, RVAAP-04 - OPEN DEMOLITION AREA #2, RVAAP-05 - WINKLEPECK BURNING GROUNDS, RVAAP-06 - C BLOCK QUARRY , RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4, RVAAP-12 - LOAD LINE 12, RVAAP-13 - BLDG 1200-DILUTION\SETTLING POND, RVAAP-15 - LOAD LINE 6 TREATMENT PLANT, RVAAP-16 - FUZE&BOOSTER QUARRY LANDFILL/PONDS, RVAAP-18 - LOAD LINE 12 WWT PLANT, RVAAP-19 - LANDFILL NORTH OF WINKLEPECK BURN GRND, RVAAP-20 - SAND CREEK STP, RVAAP-21 - DEPOT STP, RVAAP-22 - GEORGE RD STP, RVAAP-24 - DEPOT AREA, RVAAP-25 - BLD 1034 MOTOR POOL AST, RVAAP-26 - FUZE BOOSTER AREA SETTLING TANKS, RVAAP-28 - MUSTARD AGENT BURIAL SITE, RVAAP-29 - UPPER AND LOWER COBBS PONDS, RVAAP-30 - LL 7 TREATMENT PLANT, RVAAP-31 - ORE PILE RETENTION POND, RVAAP-66 - FACILITY-WIDE GROUNDWATER, RVAAP-67 - FACILITY-WIDE SEWERS)

1989

CS (RVAAP-07 - BLD 1601 HAZ WST STG, RVAAP-14 - LOAD LINE 6 EVAPORATION UNIT, RVAAP-17 - DEACTIVATION FURNACE, RVAAP-27 - BUILDING 854, PCB STORAGE)

SI (RVAAP-01 - RAMSDELL QUARRY LANDFILL, RVAAP-02 - ERIE BURNING GROUNDS, RVAAP-03 - OPEN DEMOLITION AREA #1, RVAAP-04 - OPEN DEMOLITION AREA #2, RVAAP-05 - WINKLEPECK BURNING GROUNDS, RVAAP-06 - C BLOCK QUARRY , RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4, RVAAP-12 - LOAD LINE 12, RVAAP-13 - BLDG 1200-DILUTION\SETTLING POND, RVAAP-15 - LOAD LINE 6 TREATMENT PLANT, RVAAP-16 - FUZE&BOOSTER QUARRY LANDFILL/PONDS, RVAAP-18 - LOAD LINE 12 WWT PLANT, RVAAP-19 - LANDFILL NORTH OF WINKLEPECK BURN GRND, RVAAP-20 - SAND CREEK STP, RVAAP-21 - DEPOT STP, RVAAP-22 - GEORGE RD STP, RVAAP-24 - DEPOT AREA, RVAAP-25 - BLD 1034 MOTOR POOL AST, RVAAP-26 - FUZE BOOSTER AREA SETTLING TANKS, RVAAP-28 - MUSTARD AGENT BURIAL SITE, RVAAP-29 - UPPER AND LOWER COBBS PONDS, RVAAP-30 - LL 7 TREATMENT PLANT, RVAAP-31 - ORE PILE RETENTION POND, RVAAP-66 - FACILITY-WIDE GROUNDWATER, RVAAP-67 - FACILITY-WIDE SEWERS)

INV (RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)

1990

IMP(C) (RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)

1996

SI (RVAAP-37 - PESTICIDE BUILDING S-4452)

PA (RVAAP-32 - 40 MM FIRING RANGE, RVAAP-33 - LOAD LINE 6 , RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-35 - 1037 BUILDING-LAUNDRY WASTEWATER SUMP, RVAAP-36 - PISTOL RANGE, RVAAP-37 - PESTICIDE BUILDING S-4452, RVAAP-38 - NACA TEST AREA)

1997

RI/FS (RVAAP-18 - LOAD LINE 12 WWT PLANT)

SI (RVAAP-32 - 40 MM FIRING RANGE)

1998

IRP Schedule

1998

SI (RVAAP-35 - 1037 BUILDING-LAUNDRY WASTEWATER SUMP, RVAAP-39 - LOAD LINE 5 , RVAAP-40 - LOAD LINE 7 , RVAAP-41 - LOAD LINE 8 , RVAAP-42 - LOAD LINE 9, RVAAP-43 - LOAD LINE 10, RVAAP-44 - LOAD LINE 11, RVAAP-45 - WET STORAGE AREA, RVAAP-46 - BUILDING F-15 AND F-16, RVAAP-47 - BUILDING T-5301, RVAAP-48 - ANCHOR TEST AREA, RVAAP-49 - CENTRAL BURN PITS, RVAAP-50 - ATLAS SCRAP YARD, RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)

PA (RVAAP-39 - LOAD LINE 5 , RVAAP-40 - LOAD LINE 7 , RVAAP-41 - LOAD LINE 8 , RVAAP-42 - LOAD LINE 9, RVAAP-43 - LOAD LINE 10, RVAAP-44 - LOAD LINE 11, RVAAP-45 - WET STORAGE AREA, RVAAP-46 - BUILDING F-15 AND F-16, RVAAP-47 - BUILDING T-5301, RVAAP-48 - ANCHOR TEST AREA, RVAAP-49 - CENTRAL BURN PITS, RVAAP-50 - ATLAS SCRAP YARD, RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)

1999

SI (RVAAP-33 - LOAD LINE 6 , RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-36 - PISTOL RANGE, RVAAP-38 - NACA TEST AREA)

2000

RD (RVAAP-47 - BUILDING T-5301)

2001

RA(C) (RVAAP-47 - BUILDING T-5301)

2003

IRA (RVAAP-03 - OPEN DEMOLITION AREA #1)

PA (PBC at Ravenna - PBA 2008)

2004

IRA (RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)

2005

RI/FS (RVAAP-36 - PISTOL RANGE)

2007

RI/FS (RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4, RVAAP-32 - 40 MM FIRING RANGE)

2008

IRA (RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4)

RI/FS (RVAAP-02 - ERIE BURNING GROUNDS, RVAAP-04 - OPEN DEMOLITION AREA #2, RVAAP-16 - FUZE&BOOSTER QUARRY LANDFILL/PONDS)

2009

RD (RVAAP-16 - FUZE&BOOSTER QUARRY LANDFILL/PONDS)

RI/FS (RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-49 - CENTRAL BURN PITS)

IRA (RVAAP-49 - CENTRAL BURN PITS)

2010

RA(C) (RVAAP-16 - FUZE&BOOSTER QUARRY LANDFILL/PONDS)

RI/FS (RVAAP-01 - RAMSDELL QUARRY LANDFILL)

2011

RD (RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4)

IRP Schedule

2011

IRA (RVAAP-12 - LOAD LINE 12)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
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Final RA(C) Completion Date: 201509

Schedule for Next Five-Year Review: 2012

Estimated Completion Date of IRP at Installation (including LTM phase): 204609

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

 = phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
PBC at Ravenna	PBA 2008	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-01	RAMSDELL QUARRY LANDFILL	RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-05	WINKLEPECK BURNING GROUNDS	RI/FS						
		IRA						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-06	C BLOCK QUARRY	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-08	LOAD LINE 1	RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-09	LOAD LINE 2	RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-10	LOAD LINE 3	RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-11	LOAD LINE 4	RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-12	LOAD LINE 12	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-13	BLDG 1200-DILUTION/SETTLING POND	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURN GRND	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-28	MUSTARD AGENT BURIAL SITE	RI/FS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-29	UPPER AND LOWER COBBS PONDS	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-33	LOAD LINE 6	RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-38	NACA TEST AREA	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-39	LOAD LINE 5	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-40	LOAD LINE 7	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-41	LOAD LINE 8	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-42	LOAD LINE 9	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-43	LOAD LINE 10	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-44	LOAD LINE 11	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-45	WET STORAGE AREA	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-46	BUILDING F-15 AND F-16	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-48	ANCHOR TEST AREA	RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-50	ATLAS SCRAP YARD	RI/FS						
		RD						
		RA(C)						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-51	DUMP ALONG PARIS-WINDHAM ROAD	RI/FS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-66	FACILITY-WIDE GROUNDWATER	RI/FS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-67	FACILITY-WIDE SEWERS	RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 20/5

Installation Site Types with Future and/or Underway Phases

- 2 Disposal Pit/Dry Well
(RVAAP-019-R-01, RVAAP-032-R-01)
- 2 Explosive Ordnance Disposal Area
(PBA@MR Ravenna, RVAAP-034-R-01)
- 4 Open Burn
(RVAAP-001-R-01, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01)
- 7 Unexploded Munitions/Ordnance
(RVAAP-008-R-01, RVAAP-033-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01, RVAAP-062-R-01, RVAAP-063-R-01)

Most Widespread Contaminants of Concern

Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
N/A					

Duration of MMRP

Year of MMRP Inception: 200209

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201609/201609

Date of MMRP completion including Long Term Management (LTM): 204609

MMRP Contamination Assessment

Contamination Assessment Overview

In October 2007 a CERCLA SI was completed at RVAAP to initially assess the munitions response sites (MRSs) at the facility. The MMRP SI activities included historical records reports (HRRs), magnetometer assisted UXO surveys, and sampling and laboratory analysis of surface soils. The results of these activities are presented in Engineering-Environmental Management, Inc. (e2M) Final SI report, dated May 2008.

Nineteen MRSs were originally identified at RVAAP. Two of the MRSs became ineligible for the MMRP because of their redevelopment as active operational ranges. As such, they were not investigated during the SI. The MRSs not eligible for the MMRP include: the Winklepeck Burning Grounds (RVAAP-005-R-01) and the Old Hayfield (RVAAP-064-R-01).

The Winklepeck Burning Ground MRS had also been formerly addressed with BRAC and IRP funding. Chemical contamination at this MRS was addressed under the IRP, whereas BRAC funding was used to address explosive safety.

Overall, only 14 sites were determined to require further investigation by the SI. In addition to the two sites removed from further consideration as describe above, three sites were recommended by the SI for NFA. These sites are: Anchor Test Area (RVAAP-048-R-01), LL12 (RVAAP-012-R-01), and Building F15/F16 (RVAAP-046-R-01).

It is anticipated that contamination from kickout in and around the vicinity of Open Demolition Area #2 (RVAAP-004-R-01) may be an issue.

Cleanup Exit Strategy

The 2009 PBA was awarded. The RIs will be completed at all MMRP sites by 2014, and RIP/RC will be completed at all MMRP sites by 2019.

MMRP Previous Studies

Year	Title	Author	Date
2003	Final US Army Closed, Transferring and Transferred Range/Site Inventory for Ravenna Army Ammunition Plant, Ohio	engineering-environmental Management, Inc.	NOV-2003
2004	Archives Search Report for the Ravenna Army Ammunition Plant	US Army Corps of Engineers	JUN-2004
2007	Military Munitions Response Program Historical Records Review, Ravenna Army Ammunition Plant, Ohio	e2M	JAN-2007
	Final Work Plan for the Military Munitions Response Program, Munitions Response Sites Site Inspection	Engineering-Environmental Management, Inc.	SEP-2007
	Final Work Plan for Sand Creek Survey Rocket Ridge Area of Open Demolition Area #2 Military Munitions Response Program Time Critical Response Action	Engineering-Environmental Management, Inc.	OCT-2007
2008	Final Site Inspection for the Military Munitions Response Program	Engineering-Environmental Management, Inc.	MAY-2008
2009	Final Project Work Plan for the Time Critical Removal Action (TCRA) at Rocket Ridge Area within RVAAP-004-R-01 Open Demolition Area #2 at Ravenna Army Ammunition Plant	PIKA	JUN-2009
	Final Public Involvement Plan Addendum for Rocket Ridge at Ravenna Army Ammunition Plant	PIKA	JUN-2009
	Final Explosives Safety Submission Time Critical Removal (TCRA) at the Rocket Ridge Area of RVAAP-004-R-01 Open Demolition Area #2, Version 6.0	PIKA	JUL-2009
	Addendum to the Final Site Safety and Health Plan, Time Critical Removal Action at the Rocket Ridge Area within RVAAP-004-R-01 Open Demolition Area #2 at Ravenna Army Ammunition Plant	PIKA	JUL-2009
	Final Amendment 1 Explosives Safety Submission Disposal of Material Potentially Presenting an Explosive Hazard	PIKA	AUG-2009
	Operations and Maintenance Trip Reports and Quarterly Effectiveness Evaluation Reports Time Critical Response Action for the Rocket Ridge Area of Open Demolition Area #2 (RVAAP-004-R-01 Open Demolition Area #2 MRS) Military Munitions Response Program, August 2008 - September 2009	e2M	SEP-2009
	Final Explosive Siting Plan 2008 Performance-Based Acquisition for Environmental Investigation and Remediation MEC Avoidance/Removal Services	USA Environ	SEP-2009
	Final Work Plan Performance-Based Acquisition for Environmental Investigation and Remediation MEC Avoidance/Removal Services	USA Environ	SEP-2009
	Final Project Management Plan for Environmental Services at 14 Military Munitions Response Program Sites, Version 1.0	Shaw	SEP-2009
	Operations and Maintenance Trip Reports and Quarterly Effectiveness Evaluation Reports Time Critical Response	Vista	OCT-2009

MMRP Previous Studies

2009	Title	Author	Date
	Action for the Rocket Ridge Area of Open Demolition Area #2 (RVAAP-004-R-01 Open Demolition Area #2 MRS) Military Mentions Response Program, October 2009 - September 2010		
	Final Removal Action Report for the Time Critical Removal Action (TCRA) at the Rocket Ridge Area (RRA) within RVAAP-004-R-01 Open Demolition Area #2 MRS	PIKA	DEC-2009
2010	Disposal of MD & MC, and Misc. Demo Final Report	PIKA	MAR-2010
	Final Project Work Plan for the Time Critical Removal Action (TCRA) at Rocket Ridge Area of RVAAP- 004-R-01 Open Demolition Area #2 at Ravenna Army Ammunition Plant	PIKA	MAY-2010
	Final Public Involvement Plan Addendum for the Time Critical Removal Action at the Rocket Ridge Area	PIKA	MAY-2010
	Final Project Management Plan for the Time Critical Removal Action (TCRA) at the Rocket Ridge Area (RRA) within RVAAP-004-R-01 Open Demolition Area #2 MRS	PIKA	MAY-2010
	Final Explosives Safety Submission (ESS) Munitions and Explosives of Concern (MEC) Non-Time Critical Construction Support at the RVAAP-01 Ramsdell Quarry Landfill	SAIC/PIKA	MAY-2010
	Final Explosives Safety Submission Munitions and Explosives of Concern Non-Time Critical Interim Removal Action at the Rocket Ridge Area of RVAAP-004-R-01 Open Demolition Area #2 MRS, Version 3.1	PIKA	MAY-2010
	Final Explosives Safety Submission Munitions and Explosives of Concern Non-Time Critical Interim Removal Action at the Rocket Ridge Area of RVAAP-004-R-01 Open Demolition Area #2 MRS, Version 3.1, Amendment 1	PIKA	AUG-2010
	Final Public Involvement Plan Addendum for Military Munitions Response Program Remedial Investigation Environmental Services	Shaw	SEP-2010
2011	FY09 PBA - (001,004,008,019,033,050,060) Final RI Work Plan	Shaw	MAR-2011
	FY09 PBA - (002,016,032,034,061,062,063) Draft RI Work Plan	Shaw	JUL-2011

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Military Munitions Response Program

Site Descriptions

Site ID: PBA@MR Ravenna
Site Name: MR PBA 2009

STATUS

Parcel: NONE
Regulatory Driver: CERCLA
MRSP Score: No known or suspected hazard

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200905.....	201409
RD.....	200905.....	201409
RA(C).....	200905.....	201509
RIP Date:	N/A	
RC Date:	201509	

SITE DESCRIPTION

PBA@MR Ravenna tracks funding requirements of a PBA that was awarded in FY09 (PBA09) and addresses 14 MR sites. Seven of the sites (RVAAP-001-R-01, 004-R-01, 008-R-01, 019-R-01, 033-R-01, 050-R-01, and 060-R-01) received base award funding in FY09 for all requirements through the ROD, except for RVAAP-008-R-01 and 033-R-01, which were funded through RIP.

The other seven sites (RVAAP-002-R-01, 016-R-01, 032-R-01, 034-R-01, 061-R-01, 062-R-01, and 063-R-01) received option awards in FY10. All sites are funded through the ROD except for RVAAP-034-R-01 and 062-R-01, which are funded through RIP. Additional options are scheduled to address LTM for RVAAP-033-R-01 and 034-R-01 once RIP is achieved, currently scheduled for award in FY14.

Funding for the anticipated FY14 options and USACE oversight are carried in this site. Additional requirements not covered by the PBA are addressed in each individual site.

CLEANUP/EXIT STRATEGY

All 14 MR sites will undergo RI/FS activities under the PBA09 and will be funded through the ROD. Four of the MR sites will be funded through RIP. Seven of the 14 sites were funded in FY09: RVAAP-001-R-01, 004-R-01, 008-R-01, 019-R-01, 033-R-01, 050-R-01, and 060-R-01. And, seven of the 14 sites were funded in FY10: RVAAP-002-R-01, 016-R-01, 032-R-01, 034-R-01, 061-R-01, 062-R-01, and 063-R-01. LTM options for RVAAP-033-R-01 and RVAAP-034-R-01 are carried here for award in FY14.

Remaining unfunded requirements addressing the RI/FS, Design, and remedial action (construction) [RA(C)] phases for all of the munitions response (MR) sites are addressed in the respective sites.

Site ID: RVAAP-001-R-01
Site Name: RAMSDELL QUARRY

STATUS

Parcel: Ramsdell Quarry Landfill (15 acres)

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200810.....	201309
RD.....	201210.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

During the period 1946 to 1950, the 13.4 acre RVAAP-001-R-01 (Ramsdell Quarry) was used to thermally treat waste explosives and napalm bombs. No historic information has been located for the period of 1950-1976. From 1976, a portion of the site was used as a nonhazardous solid waste landfill, which was permitted as a sanitary landfill in 1978 by the state of Ohio until its closure in 1990. The landfill is not part of the MRS.

The MRS is comprised of two separate areas: a northern area where OB/OD operations were conducted in a former quarry, and a southern area that contains a small inactive quarry and wooded area where installation personnel had found munitions debris. The northern quarry area is collocated with an IRP AOC. Munition debris was identified as part of the field investigation of the IRP site, RVAAP-01.

The Final SI was completed in May of FY08. For the SI fieldwork, a magnetometer and metal detector assisted UXO survey was conducted in the northern quarry area and at the southern quarry area, where little historical data exists. Subsurface anomalies were detected at the northern quarry, specifically around the pond; however, no evidence of MEC was observed at the MRS. Large caliber munitions debris (MD) was found at two locations in the southern quarry during the SI field work. The potential presence of MEC in the pond in the northern quarry area (Area 1) and MC in the southern quarry area (Area 2) will require additional investigation under future CERCLA actions.

A PBA was awarded in July FY09 (as PBA09) for RVAAP-001-R-01 to address remedial investigation work for this site, with the objective of an RI report in three years. RVAAP-01 addressed IR concerns at this location. The RI work plan for this MRS was completed and approved and fieldwork has been completed. The project is currently delayed due to the asbestos issue at RVAAP-01.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS, followed by three acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews.

The reasonably anticipated future land use for the northern portion of this MRS is Restricted Access OHARNG Military Use and Training Land Use. Anticipated LUCs for the northern portion of the MRS will include perimeter fencing, personnel training/briefing, signage, and access and digging restrictions. The reasonably anticipated future land use for the southern portion of the MRS (Area

Site ID: RVAAP-001-R-01
Site Name: RAMSDELL QUARRY

2) is Dismounted Training-Digging OHARNG Military Use and Training Land Use. No LUCs are anticipated for the southern portion of the MRS.

Site ID: RVAAP-002-R-01
Site Name: ERIE BURNING GROUNDS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Sediment

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309
RD.....	201310.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

RVAAP-002-R-01 (Erie Burning Grounds) was used from 1941 to 1951 to thermally treat bulk, obsolete, off-spec propellants, conventional explosives, rags, and large explosive contaminated items (e.g., railcars) through open burning on the ground surface. The MRS is collocated with an IRP AOC and is 33.9 acres.

The final SI was completed in May of FY08. During the SI, several subsurface anomalies were detected in the northwestern and central portions of the MRS; however, no MEC was observed. Further, several subsurface anomalies were detected in the southwestern portion of the MRS and one possible MEC item was found partially buried northwest of the wooded area. MEC is also expected in the flooded sections of the MRS and will require further investigation under future CERCLA actions.

A PBA was awarded July FY09 (part of the second phase) for an RI at RVAAP-002-R-01 that is scheduled to be completed within three years. RVAAP-02 addressed soil and dry sediment IR concerns at this location. The second work plan which includes this MRS has been prepared, reviewed, and approved, with a majority of fieldwork completed as of February 2012. This fieldwork also included surface water and sediment sampling to determine the nature and extent of any MC.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS, followed by three acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews.

The reasonably anticipated future land use will consist of Restricted Access OHARNG Military Use and Training Land Use. LUCs will likely include personnel training/briefing and restricted access including implementation of signage and Siebert stakes.

Site ID: RVAAP-004-R-01
Site Name: OPEN DEMOLITION AREA #2

STATUS

Parcel: Open Demolition Area No. 2 (25 acres)

Regulatory Driver: CERCLA

MRSP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200810.....	201309
RD.....	201310.....	201409
IRA.....	201001.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The 35.4 acre Open Demolition Area #2 (RVAAP-004-R-01) was used from 1948 until 1991 to detonate large caliber munitions and off- specification bulk explosives and for burial of white phosphorus and bombs of unknown type. The MRS is collocated with an IRP AOC (RVAAP-04). The MRS consists of the former demolition area, Burial Sites 1 and 2, Rocket Ridge, the Bomb Disposal Area located adjacent to the northwestern section of the MRS, and all areas in between.

The final SI was completed in May of FY08. MEC was found at Rocket Ridge, the Bomb Disposal Area, Burial Site 2, and on the hill across Sand Creek from Rocket Ridge. At Rocket Ridge, observed MEC included T-bar fuzes, white phosphorus rifle grenades, and possibly 500-lb bombs. One partially buried fuze, considered MEC, was found at the Bomb Disposal Area. A partially buried fuze, considered MEC, was also found at Burial Site 2. On the hill directly across (north) from Rocket Ridge, two 40mm cartridges (considered MEC) with intact primers were found. Munitions debris was found throughout the MRS and consisted of items such as demilitarized 155mm projectiles, remnants of 40mm rounds, casing fragments from large caliber projectiles, and remnants of donor charge bags.

Rocket Ridge, where MEC items have been discarded on the ground surface and into Sand Creek, is located along a 70-foot embankment northeast of Building 1503 overlooking Sand Creek. In June 2007, a white phosphorous rifle grenade detonated at Rocket Ridge. A first TCRA was conducted in May 2008 for abating potential munitions migration during high stream storm events via the installation of steel mesh barrier screens within the main stream channel of Sand Creek. A second TCRA removal action for four suspected conventional MEC items from Rocket Ridge was executed during the third quarter of FY09 and was completed in the fourth quarter of FY09. During this phase, the three suspected 500-pound bombs were determined to be MD and a 105 MM shell was determined to be live and was blown in place.

Rocket Ridge was subsequently divided into two sections. One was contaminated with M19 white phosphorous rifle grenade rounds, located at the foot of the slope and within a segment of Sand Creek. The other was contaminated with miscellaneous MEC and MD, located along the slope leading into the creek. Additionally, this investigation provided volume estimates and types of materials that needed to be removed during the third phase of the TCRA which commenced in the fourth quarter of FY10.

In December 2010, a portion of Sand Creek was diverted from the M19 dump area. Excavation and processing of MEC- and MD-contaminated soil was completed in April 2011. Removal and containerization of white phosphorous waste from the M19 dump area was completed in August 2011. A MEC and MD survey along the sections of Sand Creek immediately upstream and downstream of the Rocket Ridge area was completed in October 2011. Demolition of 115 full M19 grenades at Open Demolition Area 2 was conducted and completed in October 2011. Restoration of the Sand Creek Diversion Area is currently scheduled to take place in the spring of 2012.

Site ID: RVAAP-004-R-01
Site Name: OPEN DEMOLITION AREA #2

A PBA was awarded in July FY09 for RVAAP-004-R-01 to address remedial investigation work for this site, with the objective of a final RI report in three years. RVAAP-04 addressed IR concerns for soil and dry sediment at this location.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS to determine what additional work is needed to support its future use. The RI/FS will include MEC characterization and will be followed by eight acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. LUCs will likely include personnel training/briefings, restricted access, and digging restrictions. The reasonably anticipated future land use will consist of Restricted Access OHARNG Military Use and Training Land Use.

Site ID: RVAAP-008-R-01
Site Name: LOAD LINE #1

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200810.....	201309
RD.....	200909.....	201409
RA(C).....	200909.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

Load Line 1 (RVAAP-008-R-01) operated from approximately 1941 to 1971 for loading various types of projectiles. Additionally, ordnance was demilitarized at this site from 1973 to 1974. Load Line1 was used to melt and load trinitrotoluene (TNT) and Composition B explosives into large-caliber shells during WWII and the Korean War. Workers, on a weekly basis during operations, 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 from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. Wash-down water and wastewater from the load line operations that collected in concrete sumps was pumped through sawdust filtration units and then discharged to an off-AOC settling pond known as Criggy's pond.

The final SI was completed in May FY08. The MRS consists of approximately one half acre of the Load Line1 site and is composed of several areas associated with Buildings CB-13/CB-13B, and CB-14, and areas where triple base propellants still exist.

A PBA was awarded in FY09 to address work for this site through RC. The performance objective is to achieve RIP/RC in five years. The work plan has been reviewed and approved, with fieldwork conducted. However additional fieldwork needs to be conducted, as another immediately adjacent area approximately 0.4 acres in size has been identified that is potentially impacted by triple-based propellant. The original 0.4 acres will be referred to as LL-1 Area 1, and the new area will be referred to as LL-1 Area 2. The site acreage has been doubled (total of 0.8 acres) to accommodate the new area. RVAAP-08 addresses IR concerns at this location.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy includes an Interim Removal Action (funded) to remove the triple based propellants as discussed at the 2011 partnering meeting. Additional actions will consist of MEC characterization in the RI. Limited MEC Clearance and soil excavation with off-site disposal are anticipated for the remedial actions under the FY09 PBA. Based on the ongoing LUC Assessment, the reasonably anticipated future land use is Unrestricted OHARNG Military Use and Training. No LUCs will be required if Unrestricted OHARNG Use is achieved. Current LUCs include access and digging restrictions. LTM will consist of LUCs and five-year reviews in the CTC until a final outcome is certain.

Site ID: RVAAP-016-R-01
Site Name: FUZE AND BOOSTER QUARRY

STATUS

Parcel: 40MM Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309
RD.....	201310.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The 4.9 acre 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 collocated with an IRP AOC (RVAAP-16).

The final SI was completed in May of FY08. No MEC was observed during the SI; however, munitions debris was found on the southeastern side of the southern pond. It is suspected that subsurface anomalies identified during the MMRP SI represent buried munitions debris and possibly MEC. Additionally, RVAAP personnel have observed the presence of potential MEC in the northern and southern ponds when water levels are low. The bottoms of the ponds were not investigated

Debris piles north of the ponds are not included in this site, but are included under RVAAP-032-R-01 and RVAAP-062-R-01.

The PBA awarded in FY09 (part of the second phase) for an RI at RVAAP-016-R-01 that is scheduled to be completed within three years. The work plans have been generated, reviewed and approved. Most of the fieldwork is complete. RVAAP-16 addressed IR concerns at this location. Surface water and sediment are being addressed under the MMRP.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the MMRP RI/FS followed by two acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Dismounted Training- Digging OHARNG Military Use and Training Land Use. No LUCs are anticipated but costs will be carried in the CTC until a final outcome is known.

Site ID: RVAAP-019-R-01
Site Name: LANDFILL NORTH OF WINKLEPECK

STATUS

Parcel: Landfill North of Winklepeck Burning Grounds (5 acres)
Regulatory Driver: CERCLA
MRSP Score: 05
 Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)
 Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200810.....	201309
RD.....	201210.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A
RC Date: 201609

SITE DESCRIPTION

The Landfill North of Winklepeck MRS (RVAAP-019-R-01) encompasses a 2.3 acre area that lies adjacent and downstream from the former landfill (which is in actuality, a dump). The MRS footprint was reconfigured during the historical records review to exclude the former landfill, which is covered with soil and the dump area is considered to be a Response Complete site under the MMRP Based on the SI, it includes the area adjacent and along the length of the former landfill extending down and including the unnamed stream. This area includes the location where the flare canisters and suspected booster cups were found.

The Final SI was completed in May of FY08. No MEC was discovered during the SI, although munitions debris was found.

A PBA was awarded in FY09 for RVAAP-019-R-01 to address remedial investigation work for this site, with the objective of an RI report in three years. The work plans have been approved and fieldwork has been conducted. RVAAP-19 addresses IR concerns at this location.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by two acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Restricted Access OHARNG Military Use and Training Land Use. LUCs will likely include digging restrictions.

Site ID: RVAAP-032-R-01
Site Name: 40MM FIRING RANGE

STATUS

Parcel: 40MM Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309
RD.....	201310.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The 1.3 acre 40mm Firing Range (RVAAP-032-R-01) is a former test range for the 40mm cartridge and is surrounded by forest. The MRS was used from 1969 to 1971. The site is collocated with an IRP site (RVAAP-32). The impact area was located in the western portion of the site while the firing point was sited at the opposite end. MEC was reported to be present beyond the impact area, on the slope that leads down to the Fuze and Booster Quarry.

The final SI was completed in May of FY08. MEC was not discovered during the SI; however, munitions debris was found scattered from the target point to a point approximately 100 ft beyond the former impact area.

The PBA awarded in FY09 (part of the second phase) for an RI at RVAAP-032-R-01 that is scheduled to be completed within three years. The work plans have been approved and the fieldwork has been conducted.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by one acre of MEC clearance to four feet. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use is Dismounted Training-Digging OHARNG Military Use and Training Land Use. No LUCs are anticipated but costs will be carried in the CTC until a final outcome is known.

Site ID: RVAAP-033-R-01
Site Name: FIRESTONE TEST FACILITY

STATUS

Parcel: Load Line 6 (43 acres)

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200810.....	201309
RD.....	200909.....	201409
RA(C).....	200909.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The 0.4 acre Firestone Test Facility (RVAAP-033-R-01) consisted of two buildings used as test chambers for tube-launched, optically-tracked, wire-guided (TOW) missiles and Dragon missiles. In addition, shaped charges were tested in a small nearby pond. The site was used from the late-1960s to 1993. The former test chambers have been demolished and all of the debris removed. The test chamber foundations remain. Another suspect area was included in the SI fieldwork that consists of a small clearing and piles of dirt and large timbers. The site is collocated with an IRP AOC Load Line 6 (RVAAP-33).

The Final SI was completed in May of FY08. Neither MEC nor munitions debris were discovered during the SI of the two former missile test chambers locations, the ground surface around the pond, and the small clearing. Multiple closely spaced subsurface geophysical anomalies were detected around the pond and the location of the test chamber. The submerged portion of the pond was not investigated under the SI.

A PBA was awarded in FY09 to address work for this site through RC. The performance objective is to achieve RIP/RC in five years. The work plans have been approved and the fieldwork has been conducted. RVAAP-33 addresses IR concerns at this location.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS. Limited MEC Clearance and soil excavation with off-site disposal are anticipated for the remedial actions under the FY09 PBA. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Dismounted Training- Digging OHARNG Military Use and Training Land Use. However, this site may achieve NFA based on the fact that the associated IRP site will likely achieve Unrestricted Residential Land Use. No LUCs are anticipated but costs will be carried in the CTC until a final outcome is known.

Site ID: RVAAP-034-R-01
Site Name: SAND CREEK DUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 04

Contaminants of Concern: Munitions and explosives of concern (MEC)

Media of Concern: Sediment, Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309
RD.....	201004.....	201409
RA(C).....	201004.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The Sand Creek Dump (RVAAP-034-R-01), which is collocated with an IRP site (RVAAP-34), is undeveloped land that stretches along the banks of Sand Creek for approximately 1,000 ft. The MRS portion of the site is 0.9 acres in size. The Sand Creek Dump was used as a disposal site (1950 to 1960) for materials including, but not limited to concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris remains at the site. RVAAP-34 addresses IR concerns at this location. This site was identified in the SI as a smaller area located within the IR site.

During a surface IRA performed in October 2003, two 75mm inert projectiles were discovered at this site. MEC was not discovered during the SI; however, one empty 105mm projectile was discovered in Sand Creek downstream of the former dump. The MMRP SI was completed in FY08 which recommended further investigation to address a potential MEC concern along a reach of Sand Creek. A last quarter FY08 contract for a full geophysical investigation of the affected stream bank area was completed in FY10.

The PBA awarded in FY09 (part of the second phase) for RIP/RC at RVAAP-034-R-01 that commenced in FY10. The performance objective is to achieve RIP/RC in five years. The work plans have been approved and the fieldwork has been completed.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS. Limited MEC Clearance and soil excavation with off-site disposal are anticipated for the remedial actions under the FY09 PBA. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Small Arms Range-OHARNG Military Use and Training Land Use. LUCs will likely include personnel training/briefings and access and digging restrictions.

Site ID: RVAAP-050-R-01
Site Name: ATLAS SCRAP YARD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200907.....	201309
RD.....	201210.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The Atlas Scrap Yard (RVAAP-050-R-01), which is collocated with IRP AOC RVAAP-50, consists of mostly open land that contains a network of roads. Originally used as a construction camp, the site, which is 66 acres, was formerly used for scrap storage and currently consists of scattered piles of debris.

During the 2004 -2005 IRP RI, MEC was discovered in the southwest corner of the site. Most of the MEC and MEC scrap was removed under a separate contract. Accessible areas were later surveyed during the MMRP SI. The final MMRP SI was completed in May of FY08. No MEC or munitions debris were found lying on the ground surface, and only a few scattered subsurface anomalies were detected. In the north-central section, no MEC or MD was observed lying on the ground surface around or on top of the debris piles. No MEC or MD was observed lying on the ground surface in the east-central section of the site. Areas known to have been previously used for storage of MEC and MD were calculated to be roughly two acres.

A PBA was awarded in FY09 for RVAAP-050-R-01 to address remedial investigation work for this site, with the objective of an RI report in three years. The work plans have been approved and the fieldwork has been completed.

RVAAP-50 addresses IR concerns at this location.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by two acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Small Arms Range-OHARNG Military Use and Training Land Use. No LUCs are anticipated but costs will be carried in the CTC until a final outcome is known.

Site ID: RVAAP-060-R-01
Site Name: BLOCK D IGLOO

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	200907.....	201309
RD.....	201310.....	201409
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The Block D Igloo MRS (RVAAP-060-R-01) resulted when fuzed bombs in Igloo 7-D-15 (D Block) exploded on March 24, 1943. The initial 3,000-foot radial MRS boundary was established by the USACE, Huntsville District to capture the probable debris field resulting from the explosion and was based on the type of munitions stored in the bunker at the time of the explosion. In 1943 a response action was performed by USACE immediately after the explosion. As described below, the area of this site was adjusted based on the 2008 SI findings.

The final SI was completed in May FY08. During the 2008 SI, a magnetometer/metal detector assisted UXO survey was conducted within and around the former igloo and at four documented locations where explosion-related debris was found. Neither MEC nor munitions debris were found within the interior of the former igloo and within a circumference of approximately 100 ft surrounding this area. At the four documented debris locations, no visual evidence of MEC and/or munitions debris was found, and very few subsurface anomalies were detected.

Based on the observations and findings of the UXO survey, MEC and/or munitions debris are not present at these locations; however, no such declaration can be made for the remaining areas that were not included in the SI fieldwork.

A PBA was awarded in June FY09 for RVAAP-060-R-01 to address remedial investigation work for this site, with the objective of an RI report in three years. The Army determined that the rationale for the Block D Igloo and Block D Igloo TD MRS boundaries in the original SI was flawed. The Army reevaluated information available from the original explosion and follow-on cleanup and SI activities. A Technical Memorandum was prepared and coordinated with the Ohio EPA presenting rationale for the reduction of the investigation area. The rationale was reviewed and accepted by the Ohio EPA, reducing the investigation footprints for the Block D Igloo and Block D Igloo - TD MRSs from 340.2 and 14.13 acres to 92 and 0 acres, respectively. RI field observations support the reduction of the MRS footprint and reaffirm that no release of MEC/MC occurred within the area removed from the investigation.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS FS followed by five acres of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use. LUCs will likely include digging restrictions.

Site ID: RVAAP-061-R-01
Site Name: BLOCK D IGLOO -TD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309

RIP Date: N/A

RC Date: 201309

SITE DESCRIPTION

The Block D Igloo (RVAAP-061-R-01) site resulted when fuzed bombs in Igloo 7-D-15 ("D" Block) exploded on March 24, 1943. The transferred (TD) in the site name indicates that this is land that is located outside of the installation property boundary. The initial 3,000-foot radial MRS boundary was established by the USACE, Huntsville District to capture the probable debris field resulting from the explosion and was based on the type of munitions stored in the bunker at the time of the explosion. The 2008 historical records review identified 19.25 acres for the off-site portion. This area was investigated during the 2008 MMRP SI and it was determined that no further action was required to address MEC or MC.

The 2008 historical records report identified 19.25 acres for the off-site portion. This area was investigated during the 2008 SI and it was determined that no further action was required to address MEC or MC, however, the 2008 SI did identify a new area of land that potentially contained debris. The new area consisted of 14.13 acres.

The PBA (PBA09) was awarded in June FY09 and (second phase) for an RI at RVAAP-061-R-01 that is scheduled to be completed within three years. The Army determined that the rationale for the Block D Igloo and Block D Igloo TD MRS boundaries in the original SI was flawed. The Army reevaluated information available from the original explosion and follow-on cleanup and SI activities. A Technical Memorandum was prepared and coordinated with the Ohio EPA presenting rationale for the reduction of the investigation area. The rationale was reviewed and accepted by the Ohio EPA, reducing the investigation footprints for the Block D Igloo and Block D Igloo - TD MRSs from 340.2 and 14.13 acres to 92 and 0 acres, respectively. RI field observations support the reduction of the MRS footprint and reaffirm that no release of MEC/MC occurred within the area removed from the investigation.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by NFA. The reasonably anticipated future land use will consist of residential/agricultural use as this site is not located on government property. No LUCs are anticipated.

Site ID: RVAAP-062-R-01
Site Name: WATER WORKS #4 DUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 06

Contaminants of Concern: Munitions and explosives of concern (MEC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201309
RD.....	201004.....	201409
RA(C).....	201004.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The Water Works #4 Dump (RVAAP-062-R-01) is an approximate 0.77 acre open area located immediately west of Water Works No.4 and Load Line 7, in the southwestern portion of RVAAP. The site boundary identified in the US Army Closed, Transferred, and Transferring (CTT) range/site inventory was not accurate. The actual site is located approximately 400 ft to the east.

The final SI was completed in May of FY08. During the MMRP SI, no MEC or MC was identified, although further characterization is needed to confirm presence/absence. Munitions debris was found during the MMRP SI and several subsurface anomalies were also detected in the open field.

The PBA (PBA09) was awarded in June FY09 and contains an option for RIP/RC at RVAAP-062-R-01. The performance objective is to achieve RIP/RC in five years. The work plans have been approved and the fieldwork has been conducted. The acreage under investigation has increased from that indicated in the SI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use. No LUCs are anticipated but costs will be carried in the CTC until a final outcome is known.

Site ID: RVAAP-063-R-01
Site Name: GROUP 8 MRS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSP Score: 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
PA.....	200209.....	200312
SI.....	200509.....	200805
RI/FS.....	201004.....	201409
RD.....	201310.....	201509
RA(C).....	201410.....	201609
LTM.....	201610.....	204609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

The 2.6 acre Group 8 MRS (RVAAP-063-R-01) consists of most of the area between Buildings 846 and 849. This area is disturbed land that may have historically been used for debris and rubbish burning. In 1996, one loaded anti-personnel fragmentation bomb (referred to as a hammerhead anti-personnel bomb) was found at the site. MEC, MD and MC were identified during the MMRP SI.

The PBA (PBA09) was awarded in June FY09 and contains an option for an RI at RVAAP-063-R-01 that is scheduled to be completed within three years. The work plans have been approved and the fieldwork has been completed.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by one acre of MEC clearance to four feet and moderate soil excavation with off-site disposal. LTM will consist of LUCs and five-year reviews. The reasonably anticipated future land use will consist of Dismounted Training-Digging OHARNG Military Use and Training Land Use. LUCs will likely include digging restrictions.

MMRP Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
RVAAP-005-R-01	WINKLEPECK BURNING GROUNDS	200603	Operational Range. Ineligible for ER,A funding.
RVAAP-012-R-01	LOAD LINE #12	200805	The May 2008 Final SI recommended NFA for the site.
RVAAP-046-R-01	BUILDING #F-15 AND F-16	200805	The May 2008 Final SI recommended NFA for the site.
RVAAP-048-R-01	ANCHOR TEST AREA	200805	The May 2008 Final SI recommended NFA for the site.
RVAAP-064-R-01	Old Hay Field MRS	200805	Operational Range. Ineligible for ER,A funding.

MMRP Schedule

Date of MMRP Inception 200209

Past Phase Completion Milestones

2004

PA (PBA@MR Ravenna - MR PBA 2009, RVAAP-001-R-01 - RAMSDELL QUARRY , RVAAP-002-R-01 - ERIE BURNING GROUNDS, RVAAP-004-R-01 - OPEN DEMOLITION AREA #2, RVAAP-005-R-01 - WINKLEPECK BURNING GROUNDS, RVAAP-008-R-01 - LOAD LINE #1, RVAAP-012-R-01 - LOAD LINE #12, RVAAP-016-R-01 - FUZE AND BOOSTER QUARRY, RVAAP-019-R-01 - LANDFILL NORTH OF WINKLEPECK, RVAAP-032-R-01 - 40MM FIRING RANGE, RVAAP-033-R-01 - FIRESTONE TEST FACILITY, RVAAP-034-R-01 - SAND CREEK DUMP, RVAAP-046-R-01 - BUILDING #F-15 AND F-16, RVAAP-048-R-01 - ANCHOR TEST AREA, RVAAP-050-R-01 - ATLAS SCRAP YARD, RVAAP-060-R-01 - BLOCK D IGLOO, RVAAP-061-R-01 - BLOCK D IGLOO -TD, RVAAP-062-R-01 - WATER WORKS #4 DUMP, RVAAP-063-R-01 - GROUP 8 MRS, RVAAP-064-R-01 - Old Hay Field MRS)

2008

SI (PBA@MR Ravenna - MR PBA 2009, RVAAP-001-R-01 - RAMSDELL QUARRY , RVAAP-002-R-01 - ERIE BURNING GROUNDS, RVAAP-004-R-01 - OPEN DEMOLITION AREA #2, RVAAP-008-R-01 - LOAD LINE #1, RVAAP-012-R-01 - LOAD LINE #12, RVAAP-016-R-01 - FUZE AND BOOSTER QUARRY, RVAAP-019-R-01 - LANDFILL NORTH OF WINKLEPECK, RVAAP-032-R-01 - 40MM FIRING RANGE, RVAAP-033-R-01 - FIRESTONE TEST FACILITY, RVAAP-034-R-01 - SAND CREEK DUMP, RVAAP-046-R-01 - BUILDING #F-15 AND F-16, RVAAP-048-R-01 - ANCHOR TEST AREA, RVAAP-050-R-01 - ATLAS SCRAP YARD, RVAAP-060-R-01 - BLOCK D IGLOO, RVAAP-061-R-01 - BLOCK D IGLOO -TD, RVAAP-062-R-01 - WATER WORKS #4 DUMP, RVAAP-063-R-01 - GROUP 8 MRS, RVAAP-064-R-01 - Old Hay Field MRS)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date: 201609

Schedule for Next Five-Year Review: 2012

Estimated Completion Date of MMRP at Installation (including LTM phase): 204609

RAVENNA ARMY AMMUNITION PLANT MMRP Schedule

[Green Box] = phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
PBA@MR Ravenr	MR PBA 2009	RI/FS	[Green]	[Green]				
		RD	[Green]	[Green]				
		RA(C)	[Green]	[Green]	[Green]			
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-001-R-0	RAMSDELL QUARRY	RI/FS	[Green]					
		RD	[Green]	[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-002-R-0	ERIE BURNING GROUNDS	RI/FS	[Green]					
		RD		[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-004-R-0	OPEN DEMOLITION AREA #2	RI/FS	[Green]					
		RD		[Green]				
		IRA	[Green]	[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-008-R-0	LOAD LINE #1	RI/FS	[Green]					
		RD	[Green]	[Green]				
		RA(C)	[Green]	[Green]	[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-016-R-0	FUZE AND BOOSTER QUARRY	RI/FS	[Green]					
		RD		[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-019-R-0	LANDFILL NORTH OF WINKLEPECK	RI/FS	[Green]					
		RD	[Green]	[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-032-R-0	40MM FIRING RANGE	RI/FS	[Green]					
		RD		[Green]				
		RA(C)			[Green]	[Green]		
		LTM					[Green]	[Green]

RAVENNA ARMY AMMUNITION PLANT MMRP Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-033-R-0	FIRESTONE TEST FACILITY	RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-034-R-0	SAND CREEK DUMP	RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-050-R-0	ATLAS SCRAP YARD	RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-060-R-0	BLOCK D IGLOO	RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-061-R-0	BLOCK D IGLOO -TD	RI/FS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-062-R-0	WATER WORKS #4 DUMP	RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
RVAAP-063-R-0	GROUP 8 MRS	RI/FS						
		RD						
		RA(C)						
		LTM						

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess Compliance Restoration

CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 14/0

Installation Site Types with Future and/or Underway Phases

- 1 Sewage Treatment Plant
(CC RVAAP-75)
- 8 Spill Site Area
(CC RVAAP-68, CC RVAAP-70, CC RVAAP-71, CC RVAAP-72, CC RVAAP-74, CC RVAAP-76, CC RVAAP-77, CC RVAAP-78)
- 3 Storage Area
(CC RVAAP-73, CC RVAAP-79, CC RVAAP-80)
- 2 Surface Disposal Area
(CC RVAAP-69, CC RVAAP-83)

Most Widespread Contaminants of Concern

Asbestos, Explosives, Herbicides, Metals, Other (Propellants), Other (Solid Waste), Other (potassium dichromate), Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
N/A					

Duration of CR

Year of CR Inception: 200809

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201909/201909

Date of CR completion including Long Term Management (LTM): 201909

CR Contamination Assessment

Contamination Assessment Overview

Thirteen CR sites have been identified at the former RVAAP facility. The sites were identified during the time period FY09-FY10, and consist of new AOC's that qualify for environmental investigation and remediation under the Army's IRP expanded guidelines. The guidelines were expanded in December 2008 to extend the time period for eligible sites from Oct. 17, 1986 to present day activities. Initial investigation of CR sites was initiated under CERCLA in FY10. IRAs will be conducted as needed. LTM may be required at several of the CR sites and may extend well into the future after completion of remediation. Site-specific details can be found under the individual site descriptions.

Environmental restoration activities include the Installation Restoration Program (IRP) and Military Munitions Response Program (MMRP). On Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment, ODUSDI&E, issued an interim policy for Defense Environmental Restoration Program (DERP) eligibility that rescinded the 1986 eligibility date for the IRP and the 2002 eligibility date for the MMRP. This made many sites previously addressed in the Army's compliance-related cleanup (CC) program eligible for the DERP. Sites that are now eligible for the Munitions Response (MR) program have been migrated from Army Environmental Database-Compliance-related Cleanup (AEDB-CC) and given the naming convention of other MR sites. The newly eligible non-MR type sites are considered to be Installation Restoration (IR) sites; however, the newly eligible sites are being coded as CR in AEDB-R to distinguish them from the original IR sites and IR metrics.

Cleanup Exit Strategy

Achievement of RC is expected by the beginning of FY19 for all CR sites. LTM requirements may be needed for some sites starting towards the end of FY19.

CR Previous Studies

	Title	Author	Date
2010	Final Quality Control Plan for the 2010 Phase I Remedial Investigation Services at Compliance Restorations Sites (9 Areas of Concern)	SAIC	JUL-2010
	Final Project Management Plan for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern)	SAIC	SEP-2010
	Final Site Safety and Health Plan for the 2010 Phase I Remedial Investigation Service at Compliance Restoration Sites (9 Areas of Concern), Addendum No. 1	SAIC	SEP-2010
	Final Site Safety and Health Plan Addendum for 2010 Phase I Remedial Investigation Services Compliance Restoration Sites CC-RVAAP-78 and CC-RVAAP-80	Prudent	SEP-2010
	Final Project Management Plan for 2010 Phase I Remedial Investigation Services Compliance Restoration Sites CC RVAAP-78 Quarry Pond Surface Dump & CC RVAAP-80 Group 2 Propellant Can Tops	Prudent	SEP-2010
2011	CC RVAAP-78 DRAFT PROJECT WORK PLAN	Prudent	AUG-2011
	CC RVAAP-80 DRAFT SI REPORT	PIKA	SEP-2011

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Compliance Restoration

Site Descriptions

Site ID: CC RVAAP-68

Site Name: ELECTRIC SUBSTATIONS (E,W,No. 3)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201709
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

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 ft, 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 HRR included TAL metals, 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 ft, 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 ft. 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. A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including the three areas in this site. The base award included site inspections (SIs), RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for the three former substations comprising this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. No LUCs are anticipated. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training Land Use.

Site ID: CC RVAAP-69
Site Name: BUILDING 1048 - FIRE STATION

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201709
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

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 ft. Soil from the SR 5 parking lot was excavated and placed in the vicinity of this AOC.

An HRR was completed in December 2011. A performance-based acquisition (PBA) contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-70
Site Name: EAST CLASSIFICATION YARD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Herbicides, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201709
RA(C).....	201710.....	201909
RIP Date:	N/A	
RC Date:	201909	

SITE DESCRIPTION

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.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training Land Use.

Site ID: CC RVAAP-71

Site Name: BARN NO. 5 PETROLEUM RELEASE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
PA.....	200909.....	200910
SI.....	201110.....	201409
RI/FS.....	201210.....	201509
RIP Date:	N/A	
RC Date:	201509	

SITE DESCRIPTION

Barn No. 5 was formerly located on the south central portion of the Ravenna Army Ammunition Plant (RVAAP) close to the Post No. 6 gate. A letter dated May 13, 1964, documents the release of approximately 20 barrels of gasoline (840 gallons) to the ground surface inside of the south fence south of Barn No. 5. Reportedly, the release occurred from a buried SOHIO pipeline that runs parallel to, and outside of, the RVAAP fence line at this location. This release is addressed by CC RVAAP-71.

It is possible the historical petroleum release at this location may continue to impact the soil and/or groundwater quality on the installation property. The area of potential impact consists of approximately 0.6 acres, which includes the footprint of the former barn area and the land between the former barn and the fence line. Potential COCs consist of VOCs, SVOCs, and lead.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The site inspection will be awarded under the PBA in FY12. The exit strategy will include An RI option under the PBA. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training Land Use.

Site ID: CC RVAAP-72
Site Name: FACILITY-WIDE USTs

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Other (potassium dichromate),
 Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

CC RVAAP-72 consists of 58 underground storage tanks (USTs) located throughout the facility. USTs were located throughout RVAAP operational production areas including load lines, maintenance areas, gate houses, water works, power houses and fueling stations. Approximately 45 of the UST were installed in 1941 and the remaining were installed between 1941 and 1981. The USTs ranged in size from 100 gallons to 20,000 gallons and were used for storage of gasoline, diesel fuel, No. 5 heating oil, and No. 6 fuel oil. All USTs included as part of CC-RVAAP-72 are inactive and suspected to be removed. Petroleum impacted soils and/or groundwater may exist at the former UST sites.

An HRR was completed in December 2011. Each UST was assessed as an individual unit as part of the historical records review. Information on the chronological summary of each UST including installation, last use, purpose, and removal was researched and compiled. No further action (NFA) was recommended for 43 of 58 USTs.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY11 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training Land Use.

Site ID: CC RVAAP-73
Site Name: FACILITY-WIDE COAL STORAGE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201809

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

Installation records document the former presence of 17 coal storage locations at Ravenna Army Ammunition Plant (RVAAP), 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 historical records review, 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 historical records review 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.

Site ID: CC RVAAP-73
Site Name: FACILITY-WIDE COAL STORAGE

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes significant soil excavation with off-site disposal under the FY11 PBA followed by completion of the RI/FS. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training

Site ID: CC RVAAP-74

Site Name: BLDG 1034 MOTOR POOL HYDRAULIC LIFT

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB),
Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201709
RA(C).....	201610.....	201809

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

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 width, and four feet in height. The pit is reportedly buried at depths ranging from four feet below ground surface (bgs) to approximately eight feet bgs. The twin-post lift reportedly has a clearance of six ft 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 (TPH), PAHs, and PCBs.

A historical records review 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.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. A limited demolition and tank removal will also be performed. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-75

Site Name: GEORGE ROAD STP MERCURY SPILL

STATUS

Parcel: NONE
Regulatory Driver: CERCLA
Contaminants of Concern: Metals
Media of Concern: Groundwater, Sediment, Soil, Surface Water

Table with 3 columns: Phases, Start, End. Rows include PA, SI, RI/FS, RA(C) with corresponding dates. Includes RIP Date: N/A and RC Date: 201909.

SITE DESCRIPTION

CC RVAAP-75 is related to a former mercury spill at the George Road sewage treatment plant (STP). The STP was used to treat industrial and residential effluent, including pink water from the production lines. Reportedly a pint-sized jar of mercury was spilled into a floor drain in the comminutor building. The mercury was never recovered.

The STP maintained Ohio NPDES permit (#31000000BD), which allowed discharge to Outfall No. 002 (to the adjacent receiving stream). The STP was gravity fed and consisted of two Imhoff tanks, two trickling filters, and a clarifier. Sludge was dried in a greenhouse structure and spread over the ground surface at the old hay fields located at the corner of Slagle and Newton Falls Roads. The design capacity was 350,000 gallons per day. Reportedly, approximately 1,200 cubic ft of sludge was spread every three years. The George Road Sewage Treatment Plant was taken out of service in 1993 and was properly closed under NPDES permit (#31000000BD).

An HRR was completed in December 2011. The report indicated that interviewees verified that a pint-size jar of mercury was spilled into a floor drain at the facility. Building schematics show the floor drain leads outside the building and ties into a 15 inch vitrified clay pipe which appears to be channeled back into the treatment system. Interviewees also indicated that the floor drains likely have a P-trap which may have caught the spilled mercury. The HRR recommended further investigation including inspection of the piping and pipe trap.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal under the FY11 PBA. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-76
Site Name: DEPOT AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Explosives, Metals, Other (Propellants), Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201809
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

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 a 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) Pain Can Burial Area, and ditch lines within the operational areas.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by moderate soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-77

Site Name: BLDG 1037 LAUNDRY WASTEWATER SUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Explosives

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200809.....	200904
SI.....	200905.....	201002
RI/FS.....	201003.....	201609
RD.....	201610.....	201809
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

CC RVAAP-77 consists of a former below ground concrete sump located on the north side of Building 1037. The sump had a capacity of approximately 5,765 gallons. The unit was previously used as a settling tank for the discharge of laundry rinse water. Wash water was emptied approximately 12 times during eight hours of operation and rinsing three times each eight hours. The wash water entering the tank prior to the rinse water discharge had sufficient settling time so that the increase in rate from the rinse water did not disturb the settled matter on the tank bottom. Rinse water was then sent to CC RVAAP-75 (George Road Sewage Treatment Plant). Wastes of concern are TNT and RDX. The concrete wastewater sump was removed in 2009.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-78
Site Name: QUARRY POND SURFACE DUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Asbestos, Explosives, Metals, Other (Propellants), Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200904.....	200906
SI.....	200907.....	200909
RI/FS.....	201004.....	201809
IRA.....	201110.....	201309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

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 asbestos-containing materials (ACM), construction debris, scrap metal, and other unknown materials. One 55-gallon metal drum (contents unknown) is located on the ground surface within this area. 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, VOCs, SVOCs, metals, asbestos, and PCBs in soil and groundwater.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI and an interim remedial action (IRA).

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes moderate soil excavation with off-site disposal under the FY11 PBA followed by completion of the RI/FS. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-79
Site Name: DLA ORE STORAGE SITES

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200904.....	200906
SI.....	200907.....	200909
RI/FS.....	201010.....	201609
RD.....	201610.....	201809
RA(C).....	201710.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

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 (DNSC) 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.

Constituents of concern include metals asbestos, and radiation constituents in soil, sediment, surface water and groundwater.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. This site is currently undergoing an RI.

Site ID: CC RVAAP-79

Site Name: DLA ORE STORAGE SITES

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by significant soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-80
Site Name: GROUP 2 PROPELLANT CAN TOPS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Other (Solid Waste)

Media of Concern: Soil, Surface Water

Phases	Start	End
PA.....	200904.....	200906
SI.....	200907.....	200909
RI/FS.....	201004.....	201909

RIP Date: N/A

RC Date: 201909

SITE DESCRIPTION

This area consists of approximately 539,572 square feet (12.4 acres). Propellant can tops were identified at the ground surface at the southern end of the former Group 2 Ammunition Storage Area. The area is addressed by CC RVAAP-80. The tops were observed by OHARNG trainees in fall 2008 in the vegetative area located immediately south of the ammunition storage magazines in the vicinity of the railroad spur lines. As a result, the Louisville District USACE performed an initial geophysical survey of the southern area ground surface. Results of the initial investigation revealed multiple magnetic anomalies in the surface and near surface soils. On-site UXO personnel visually identified the surface anomalies as propellant can lids or tops.

The ground surface has been disturbed and contains hummocks (mounds) ranging in height from one to two feet throughout. Historical knowledge and photographs indicate the site was formerly a level-graded area used for the storage of inert materials.

A geophysical survey and sampling activities were conducted in 2011. The geophysical survey revealed five anomaly cluster areas exist at the surface or within near surface soils (within 9 inches) at the site. Additional single (i.e. not clustered) anomalies appear throughout the AOC. No signs of disturbance within the subsurface lithology (signs of excavation or dumping) were noted based upon the geophysical investigation. Surface soil samples were collected within the boundaries of three of five selected anomaly clusters in order to assess potential releases of propellants. None of the samples reflected detectable concentrations of COCs above facility-wide cleanup goals.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by site closeout. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

Site ID: CC RVAAP-83

Site Name: FORMER BUILDINGS 1031 AND 1039

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

Contaminants of Concern: Asbestos, Explosives, Metals, Other (Propellants), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA.....	200904.....	200906
SI.....	201110.....	201409
RI/FS.....	201210.....	201709
RD.....	201710.....	201809
RA(C).....	201710.....	201909
RIP Date:	N/A	
RC Date:	201909	

SITE DESCRIPTION

Former Buildings 1031 and 1039 (CC RVAAP-83) consist of the former Hospital Building and former Laboratory Building, respectively. Both buildings were located within the Administration Area of the former RVAAP facility.

Building 1031 - Former Hospital Building

This building was constructed in 1942 and functioned as the facility hospital until it closed in 1988. The building was demolished in 2008. The former building was approximately 13,500 square feet. The west end of the Hospital Building included a gauge lab. The gauge lab was used for the development of large scale photos for a period of about 1.5 years in the early-1970s after the laboratory at Building 1039 was closed.

Potential site-related constituents (SRCs) of concern are related to the former generation of x-ray acid/silver mix solutions, and common hospital wastes. The composition of x-ray acids is unknown; however they likely contain lead and radioactive materials. The hospital wastes typically consist of infectious materials containing pathogens, sharps, pathological tissues, and pharmaceuticals.

The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Potential SRCs for the sanitary system at the former Hospital Building are VOCs, SVOCs, radioactive materials, and Target Analyte List (TAL) metals. Investigation of the sewers is covered under RVAAP-66 Facility-wide Sewers.

Building 1039 - Former Laboratory Building

This former Laboratory Building measured approximately 16,500 square ft. The structure contained three powder test rooms for the routine analyses of lead azide, mercury fulminate, and percussion element mixes. The laboratory was used for the testing of Load Line materials. During operations, the building contained and operated a photography laboratory, a chemistry laboratory, and a medical x-ray facility. The photo laboratory was historically used for all large scale photo development activities until its closure in the early-1970s.

Waste x-ray acid/silver mix solutions were reportedly disposed in the sanitary George Road sewage treatment system. The Defense Property Disposal Organization (DPDO)/Defense Reutilization and Marketing Office (DRMO) termed the waste as a reclaimed precious metal resource.

The laboratory building was demolished by Lakeshore Engineering Services, Inc. (LES) during the time period of May 2006 through July 2007. Following demolition, all unpainted and uncontaminated brick and concrete was crushed and recycled off-site. The

Site ID: CC RVAAP-83

Site Name: FORMER BUILDINGS 1031 AND 1039

basement of Building 1039 was filled with clean soil and was then seeded with grass seed. There was no regulatory review of the work conducted.

SRCs of concern are related to the former generation of x-ray acid/silver mix solutions, and the laboratory analysis of powder test room materials (lead azide, mercury fulminate), percussion element mixes, paints, shellac, metals, fuels, and tapes or adhesives.

The potential historical disposal of these materials through the sanitary waste system is of environmental concern. The historical sanitary lines were constructed of clay pipe, and failure of clay pipe is common. Potential SRCs for the sanitary system at the former Laboratory Building are VOCs, SVOCs, TAL metals, radioactive materials, explosives, and propellants.

A PBA contract was awarded in FY11 to address investigation and remediation of the 14 CR sites (CC RVAAP-68 through 80 and 83) at RVAAP, including this one. The base award included SIs, RIs, and RAs. The remaining options will be awarded in FY12 and FY13. An SI option for this site will be awarded in FY12. The USACE CR PBA oversight costs are carried in this site.

CLEANUP/EXIT STRATEGY

The anticipated exit strategy for this site includes completion of the RI/FS followed by limited soil excavation with off-site disposal. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. The reasonably anticipated future land use will consist of Unrestricted OHARNG Military Use and Training.

CR Site Closeout (No Further Action) Summary

Site ID **Site Name**

NFA Date **Documentation**

There are no NFA sites

CR Schedule

Date of CR Inception: 200809

Past Phase Completion Milestones

2009

SI (CC RVAAP-78 - QUARRY POND SURFACE DUMP, CC RVAAP-79 - DLA ORE STORAGE SITES, CC RVAAP-80 - GROUP 2 PROPELLANT CAN TOPS)
PA (CC RVAAP-68 - ELECTRIC SUBSTATIONS (E,W,No. 3), CC RVAAP-69 - BUILDING 1048 - FIRE STATION, CC RVAAP-70 - EAST CLASSIFICATION YARD , CC RVAAP-72 - FACILITY-WIDE USTs, CC RVAAP-73 - FACILITY-WIDE COAL STORAGE, CC RVAAP-74 - BLDG 1034 MOTOR POOL HYDRAULIC LIFT, CC RVAAP-75 - GEORGE ROAD STP MERCURY SPILL, CC RVAAP-76 - DEPOT AREA, CC RVAAP-77 - BLDG 1037 LAUNDRY WASTEWATER SUMP, CC RVAAP-78 - QUARRY POND SURFACE DUMP, CC RVAAP-79 - DLA ORE STORAGE SITES, CC RVAAP-80 - GROUP 2 PROPELLANT CAN TOPS, CC RVAAP-83 - FORMER BUILDINGS 1031 AND 1039)

2010

SI (CC RVAAP-68 - ELECTRIC SUBSTATIONS (E,W,No. 3), CC RVAAP-69 - BUILDING 1048 - FIRE STATION, CC RVAAP-70 - EAST CLASSIFICATION YARD , CC RVAAP-72 - FACILITY-WIDE USTs, CC RVAAP-73 - FACILITY-WIDE COAL STORAGE, CC RVAAP-74 - BLDG 1034 MOTOR POOL HYDRAULIC LIFT, CC RVAAP-75 - GEORGE ROAD STP MERCURY SPILL, CC RVAAP-76 - DEPOT AREA, CC RVAAP-77 - BLDG 1037 LAUNDRY WASTEWATER SUMP)
PA (CC RVAAP-71 - BARN NO. 5 PETROLEUM RELEASE)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date: 201909

Schedule for Next Five-Year Review: 2012

Estimated Completion Date of CR at Installation (including LTM phase): 201909

RAVENNA ARMY AMMUNITION PLANT CR Schedule

█ = phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-68	ELECTRIC SUBSTATIONS (E,W,No. 3)	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-69	BUILDING 1048 - FIRE STATION	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-70	EAST CLASSIFICATION YARD	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-71	BARN NO. 5 PETROLEUM RELEASE	SI	█	█				
		RI/FS	█	█	█			
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-72	FACILITY-WIDE USTs	RI/FS	█	█	█	█		
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-73	FACILITY-WIDE COAL STORAGE	RI/FS	█	█	█	█	█	█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-74	BLDG 1034 MOTOR POOL HYDRAULIC LIFT	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-75	GEORGE ROAD STP MERCURY SPILL	RI/FS	█	█	█	█		
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-76	DEPOT AREA	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-77	BLDG 1037 LAUNDRY WASTEWATER SUMP	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-78	QUARRY POND SURFACE DUMP	RI/FS	█	█	█	█		
		IRA	█					
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-79	DLA ORE STORAGE SITES	RI/FS	█	█	█	█		
		RD					█	
		RA(C)						█
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-80	GROUP 2 PROPELLANT CAN TOPS	RI/FS	█	█	█	█	█	█

RAVENNA ARMY AMMUNITION PLANT CR Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CC RVAAP-83	FORMER BUILDINGS 1031 AND 1039	SI						
		RI/FS						
		RD						
		RA(C)						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201009

Restoration Advisory Board (RAB): RAB established 1996

RAB Adjournment Date:

RAB Adjournment Reason:

Additional Community Involvement Information

The RVAAP RAB was established in 1996 and has 25 members consisting of 23 community members and two non-community 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).

The RVAAP RAB generally meets every two to three 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. All meetings are announced in the local media.

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.

In 2003, a community involvement plan was developed to facilitate communication, identify issues of concern and serve as a guide for public involvement goals and objectives. The plan outlines the many ways that RVAAP involves the community in the restoration activities, including through the RAB, site tours, and the website. The community involvement plan was updated on June 30, 2009 under contract to PIKA as part of the Phase I Rocket Ridge TCRA. It was more recently updated on Sept. 1, 2010 by Shaw Environmental.

Administrative Record is located at

RVAAP
Building 1037
8451 State Route 5
Ravenna, OH 44266

Information Repository is located at

Reed Memorial Library
167 East Main Street
Ravenna, OH 44266

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

Current Technical Assistance for Public Participation (TAPP): 199906

TAPP Title: Winklepeck OB Grounds Phase II

Current Technical Assistance for Public Participation (TAPP): 200102

TAPP Title: Winklepeck Burning Grounds site

Community Involvement

Potential TAPP: The RVAAP RAB applied for funds in January 2010. A response is pending.

