

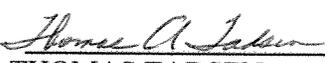
FY2006

**Ravenna Army Ammunition Plant
Ohio
INSTALLATION ACTION PLAN**

Printed July 15, 2005

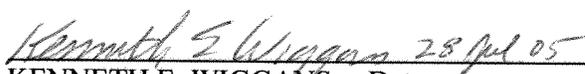
Ravenna Army Ammunition Plant
FY06 Installation Action Plan

APPROVAL

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 1 Aug 05
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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year restoration program for an installation. The plan defines Installation Restoration Program (IRP) requirements and proposes a comprehensive approach and associated costs to conduct future investigations and remedial actions at each Area of Concern (AOC) at the installation.

In an effort to coordinate planning information between the IRP manager, major army commands (MACOMs), installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for the Ravenna Army Ammunition Plant (RVAAP). The IAP is used to track requirements, schedules and tentative budgets for all major Army installation restoration programs. All AOC-specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change during the document's annual review. Under current project funding, all remedies will be in place at the RVAAP by the end of FY 2010.

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Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration
AOC	Area of Concern
ASR	Archive Search Report
bgs	below ground surface
BRAC	Base Realignment and Closure Action
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CTC	Cost to Complete
CTT	Closed, Transferring, Transferred
cy	Cubic Yard
DD	Decision Document
DERP	Defense Environmental Restoration Program
DSERTS	Defense Site Environmental Restoration Tracking System (Now AEDB-R)
EE/CA	Engineering Evaluation and Cost Analysis
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army (formally called DERA)
FPRI	Fixed Price Remediation with Insurance
FS	Feasibility Study
FY	Fiscal Year
GOCO	Government-Owned, Contractor-Operated
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazacine
IAP	Installation Action Plan
IRA	Interim Removal Action
IRP	Installation Restoration Program
LAP	Load, Assemble and Pack
LL	Load Line
LTM	Long Term Monitoring
LUC	Land Use Control
MACOM	Major Command
MC	Munitions Constituents
MEC	Munitions and explosives of concern
MCL	Maximum Contaminant Level
mm	Millimeter
MMRP	Military Munitions Response Program
NACA	National Advisory Committee on Aeronautics
NE	Northeast or Not Evaluated
NFA	No Further Action
NGB	National Guard Bureau
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
ODA	Open Demolition Area
OE	Ordnance and Explosives
OHARNG	Ohio Army National Guard
OMA	Operation and Maintenance Account
OSC	Operations Support Command
OSD	Office of the Secretary of Defense

Acronyms & Abbreviations

PA	Preliminary Assessment
PBC	Performance Based Contracting
PCB	Polychlorinated Biphenyls
PMP	Property Management Plan
ppm	Parts per million
PY	Prior Year
RA	Remedial Action
RA(C)	Remedial Action - Construction
RA(O)	Remedial Action - Operation
RAB	Restoration Advisory Board
RAC	Risk Assessment Code
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
REIMS	Ravenna Environmental Information Management System
REM	Removal
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Application International Corporation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compounds
TAPP	Technical Assistance for Public Participation
TD	Thermal Decomposition
TNT	2,4,6-trinitrotoluene
TRC	Technical Review Committee
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (changed to USACHPPM)
USATHAMA	United States Army Toxic and Hazardous Materials Agency (replaced by USAEC)
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
WBG	Winklepeck Burning Ground

INSTALLATION LOCATION: The former Ravenna Army Ammunition Plant (RVAAP) is located on 21,419 acres in Portage and Trumbull Counties, Ohio. Warren, Ohio is located 7 miles to the east of RVAAP and Kent, Ohio is located 15 miles to the west. The Operations Support Command (OSC) transferred control and operation of 16,164 acres to the National Guard Bureau (NGB) in May 1999. In March 2002, an agreement was signed to immediately transfer an additional 3,774 uncontaminated acres to the Ohio Army National Guard (OHARNG) with the remaining acreage to be transferred as restoration of the AOCs is completed.

INSTALLATION MISSION: In FY 1993, the mission of RVAAP was changed from inactive-maintained to modified caretaker status (limited mission). Toltest, Inc. is the current modified caretaker contractor.

COMMAND ORGANIZATION:

SUBCOMMAND: Installation Management Agency, Northwest Region

INSTALLATION: Ravenna Army Ammunition Plant, Commander's Representative and NGB

LEAD EXECUTOR: US Army Corps of Engineers, Louisville District.

REGULATOR PARTICIPATION:

Federal: U.S. Environmental Protection Agency, Region 5

State: Ohio Environmental Protection Agency

NPL STATUS: RVAAP is not an NPL site.

RAB/TRC/TAPP STATUS: RVAAP has an active RAB, which was established in 1996. It contains twenty-five members with eight elected officials.

PROGRAM SUMMARIES:

IRP

Contaminants of Concern: Explosives, Metals, Propellants, PCBs, SVOCs, VOCs,

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

Estimated date for RIP/RC: 2010

Funding to Date: (FY89-FY05): \$37,505,060

CTC: \$43,310,000

MMRP

Contaminants of Concern: MEC

Media of Concern: Soil, Surface Water, Sediment

Estimated date for RIP/RC: 2017

Funding to Date: (up to FY05): \$75K (\$25 PY for the PA; \$50 K for the SI beginning in FY05)

CTC: \$9,216,000

Cleanup Program Summary

HISTORIC ACTIVITY: RVAAP is a government-owned, contractor-operated (GOCO) U.S. Army BRAC facility. RVAAP was excessed in 1992. Storage of explosives continued until 2004. The installation is roughly 11 miles long and 3.5 miles wide area. In August 1940, a tract of land covering 25,000 acres was purchased by the United States Government in the northeastern part of Ohio in Portage and Trumbull counties. Construction of the load, assemble, and pack (LAP) facility started in September 1940. Munitions production activities started in August 1941. The primary missions of the facility were depot storage and ammunition loading. It went through several name changes during its history before being designated the RVAAP in 1961.

Facilities were operated by the Atlas Powder Company from September 1940 until the end of World War II when the operation of the plant was turned over to the Ordnance Department. From 1946 to 1949, the ammonium nitrate line was operated by the Silas Mason Company for the production of ammonium nitrate fertilizer. The plant was placed in standby status in 1950. The plant was reactivated during the Korean War for the loading and packing of major caliber projectiles and components. All production ended in August 1957; and in October 1957, the installation was again placed in a standby condition.

From January to July 1961, Load Line 12 was used to melt out and recover explosives from bombs, the first operation of this type in the ammunition industry. The RVAAP was once again reactivated in May 1968 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.

RVAAP received a RCRA Part A permit in 1980 for the storage and treatment of off-spec munitions and munitions-related waste. RVAAP submitted a RCRA Part B permit application in 1992 for the installation's Open Burning and Open Detonation Grounds and a hazardous waste storage building. Open Demolition Area (ODA) # 2 (RVAAP-04) is the only active RCRA unit at the RVAAP. All others have been closed.

The Operations Support Command (OSC) transferred control and operation of 16,164 acres to the NGB in May 1999. In March 2002, an agreement was signed to immediately transfer an additional 3,774 uncontaminated acres to the OHARNG with the remaining acreage to be transferred as restoration of the AOCs is completed.

CURRENT ACTIVITY:

MISSION: To complete IRP, MMRP, and decontamination and demolition of excess buildings for transfer of all property to NGB, with subsequent transfer of accountability to OHARNG by 2018.

REGULATORY STATUS: RVAAP is not on the USEPA NPL, although it is in the USEPA's CERCLIS database. Management of the IRP AOCs follows CERCLA requirements. There are a number of other regulatory programs addressing other non-IRP AOCs.

In June 2004, the Army and Ohio EPA signed the Director's Findings and Orders to authorize continued use of Demolition Area #2 for purposes of supporting environmental restoration. Ravenna Army Ammunition Plant will close the Demolition Area #2 RCRA unit when it is no longer needed to support restoration.

Cleanup Program Summary

MAJOR ISSUES: Continued support of all the stakeholders, including the public, at RVAAP will be need to meet the schedules, objectives, and cost estimates identified in this IAP. Completion of the IRP and MMRP projects at some AOCs may be delayed due to difficulties in getting regulatory approval to thermally treat explosively contaminated buildings containing PCB paints. There may also be scheduling setbacks due to delays in getting funding for removal of large concrete structures in the load lines needed for training by the OHARNG and for the MMRP.

PROGRAM PROGRESS:

IRP: Progress to Date:

- Award of PBC 05 for High Relative Risk AOCs
- Completion of the facility wide surface water assessment
- Finalize RI for load lines 1, 2, 3, 4, 12
- Finalize Load Line 11 IRA
- Signing of findings and orders
- Award and completion of field work for the 14 AOCs characterization study
- Initiation of facility wide groundwater monitoring plan
- Completion of RVAAP facility wide Human Health Risk Manual
- Completion of RVAAP facility wide Ecological Risk Work Plan
- Establishment of the RVAAP communication and environmental information management system, including websites (REIMS)
- Initiated comprehensive inter-agency project schedule
- Finalize Ordnance and Explosives ASR
- Finalize Winklepeck Burning Ground Focused Feasibility Study

Future Plan of Action:

- Complete projects associated with PBC 03, receive AOC RIP/RC December 2006
- Complete projects associated with PBC 05, receive AOC RIP/RC September 2007
- Continue comprehensive inter-agency project schedule
- Finalize and implement facility wide Project Management Plan
- Finalize Property Management Plan [Land Use Controls (LUCs)]

MMRP:

Progress to Date: PA for the Installation is complete as of March 2004

Future Plan of Action:

- Site Inspection scheduled for award in 2005, with completion in 2007.

TRANSFER STRATEGY:

Load Line 11; Winklepeck Burning Grounds	2006
Ramsdell Quarry Landfill; Pistol Range; Load Lines 1,2,3,4	2007
Load Line 12	2008
Load Lines 5,6,7,8, 9,10; 40mm Test Range, Anchor Test Area, Wet Storage, Landfill North of Winklepeck, Open Demolition Area #2	2009+

Ravenna Army Ammunition Plant

INSTALLATION RESTORATION PROGRAM

AEDB-R ER,A AOCS/AOCS RC: 52/20

AEDB-R ER,A AOC TYPES:

3 Above Ground Storage Tanks	3 Burn Areas
1 Contaminated Building	1 Contaminated Soil Pile
3 Disposal Pit/Dry Wells	1 Explosive Ordnance Disposal Area
1 Firing Range	2 Industrial Discharges
3 Landfills	1 Mixed Waste Area
2 Other	1 Pesticide Shop
1 Pistol Range	7 Spill Site Areas
4 Storage Areas	9 Surface Impoundment Lagoons
2 Underground Storage Tanks	1 Unexploded Munition/Ordnance
6 Waste Treatment Plants	

CONTAMINANTS OF CONCERN: Explosives, Metals, Propellants, PCBs, SVOCs, VOCs

MEDIA OF CONCERN: Soil, Groundwater, Sediment, Surface Water

COMPLETED REM/IRA/RA: RVAAP-34, 44, 47, 51

TOTAL ER,A FUNDING:

PRIOR YEAR (up to FY04):	\$ 34,676,060
CURRENT (FY05):	\$ 2,829,000
FUTURE (FY06-FY11):	\$ 43,310,000

DURATION OF IRP:

Year of IRP Inception:	1989
Year of RA Completion:	2010
Year of IRP Completion:	2038

IRP Contamination Assessment

The contamination at RVAAP originated from past industrial activities associated with the production and demilitarization of large caliber projectiles, general-purpose bombs, and parts for these munitions. RVAAP produced munitions during World War II 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 TNT, HMX and 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 and 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 saw dust to remove suspended explosives. Waste explosives from the melt pour lines were routinely disposed of by open burning and detonation at other AOCs on the installation.

Load Lines 5 through 11 (fuze and booster) were used to manufacture 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 being 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 highly shock and heat sensitive primary explosives. Load Line 12 produced 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 AOCs associated with past industrial activities at RVAAP include landfills, testing facilities, dumps, burial sites, a pistol range, storage facilities, a scrap yard, and decontamination buildings. Although not present at every one of these AOCs, the contaminants of potential concerns include primary and secondary explosives, propellants, heavy metals, volatile and semi volatile organics, and PCBs, pesticides. Industrial activities ceased in 1992 when RVAAP was declared excess.

RVAAP started the IRP in 1989. Currently there are 31 active AOCs of which 10 are under performance based contracts (PBCs). The AOCs were given a Relative Risk Site Evaluation (RRSE) rating of high, medium, or low based on the results of limited sampling in 1996 and 1998. Sampling of the soil, sediment, surface, and groundwater at many of the high AOCs and some of the medium AOCs has been done as part of the remedial investigation process during the past 7 years.

Well sampling conducted by Ohio EPA in 1997 and 1998 showed no off-post explosives contamination of residential wells.

A Phase I RI examined 11 high priority AOCs identified as RVAAP-04, 05, 08, 09, 10, 11, 12, 13, 18, 19, and 29. A final RI report was issued in 1997. The study concluded that Load Lines 1-4, and

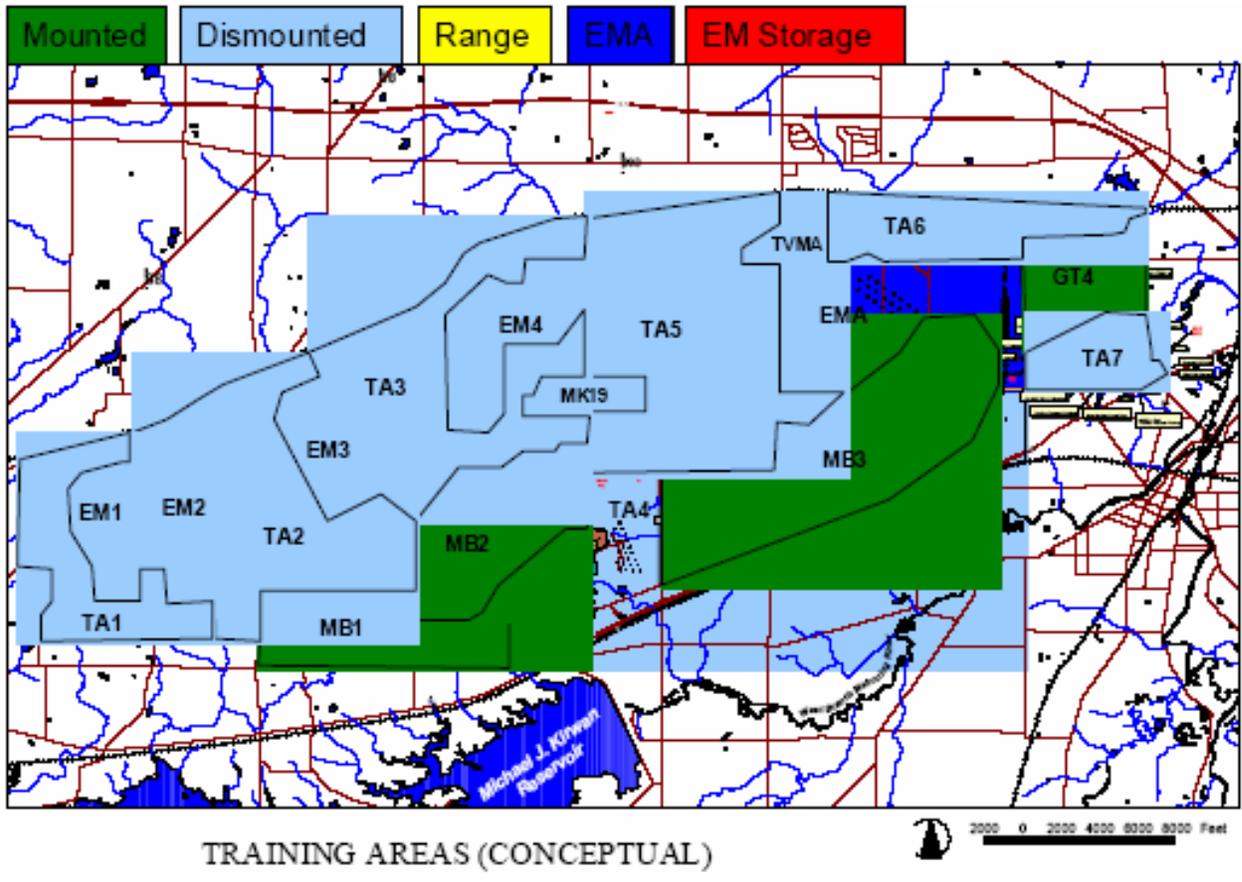
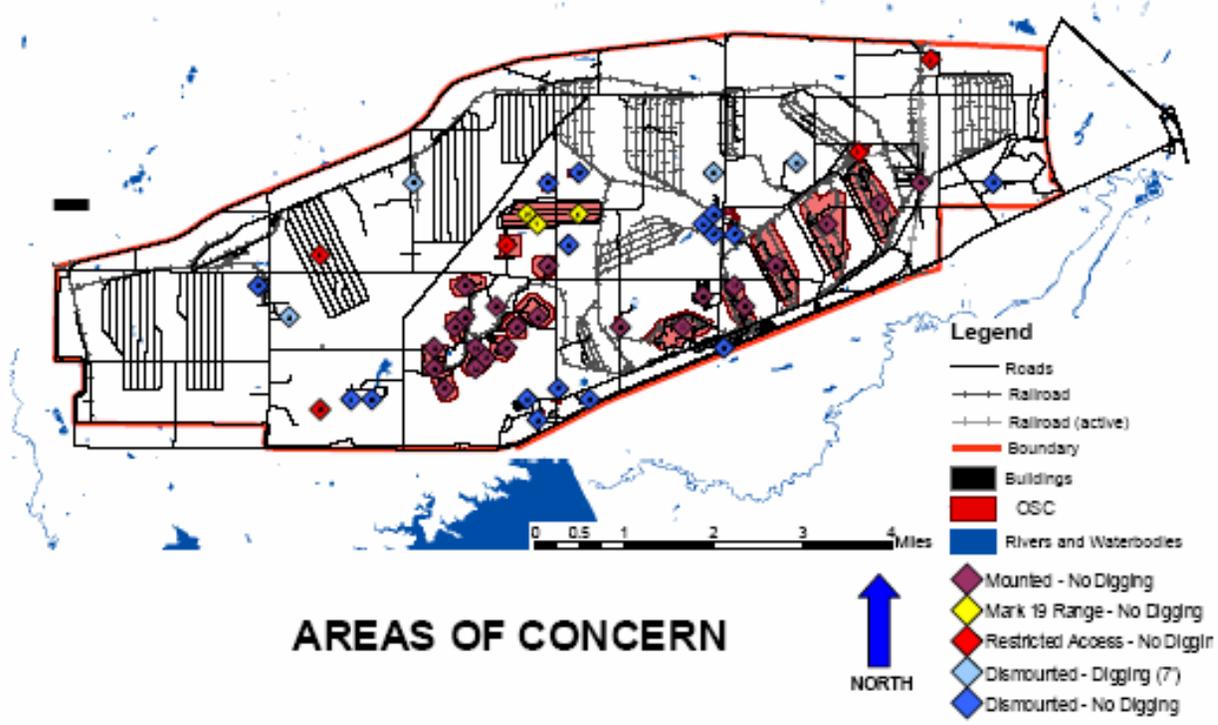
12 appeared to be the most contaminated and contaminants were probably not migrating far from the sources in significant concentrations. The report recommended further study.

Results from more recent studies have for the most part confirmed initial beliefs 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 AOCs. Less common contaminants include PCBs and propellants. These same contaminants have been detected in the water and sediment within the storm and sanitary sewers. On-post wells located to the southeast of Load Line 2 near the perimeter have shown trace amounts of explosives. Surface water and sediment samples indicate no significant levels of contaminants are migrating from the site.

RI data are also available for some of the other AOCs used to support the main production activities. Limited data available from earlier efforts again show explosives and heavy metals to be the principle contaminants of potential concern at AOCs used to burn, dump, or bury explosive waste from the Load Lines. These contaminants are most frequently found in the soils at Winklepeck Burning Grounds, Demolition Area #2 and Erie Burning Grounds, areas used to detonate and burn waste explosives. Erie Burning Grounds has in recent years existed as a shallow impoundment bordered with high quality wooded wetlands. Explosives, metals and some organics have been detected in the surface water and sediment at and downstream of the site.

CLEANUP EXIT STRATEGY:

The Army will complete restoration of the AOCs at RVAAP using PBCs. All high AOCs have been placed under contract as of March 2005. A PBC is scheduled to be awarded in the future to achieve RIP/RC at the remaining medium and low RRSE AOCs. Long term monitoring will be done on both a facility-wide and a AOC by AOC basis. No further action at all the AOCs will be achieved by ensuring there will be no unacceptable risk for the proposed future use by the OHARNG. (See Individual AOC Cleanup Strategies for details.)



Title	Author	Date
Installation Assessment of Ravenna Army Ammunition Plant. Report No. 132	USATHMA	Nov-78
Ravenna Army Ammunition Plant RCRA Facility Assessment Draft RR/VSI Report	Jacobs Engineering Group, Inc.	Oct-89
Hazardous Waste Management Study No. 37-26-0442-84: Phase 2 of AMC Open Burning/Open Detonation Groundwater Evaluation	USAEHA OSC/Specpro	Oct-89
Facility-Wide Safety and Health Plan for the Ravenna Army Ammunition Plant	OSC/mkm	Feb-96
Preliminary Assessment for the Characterization of Areas of Contamination	OSC/mkm	Feb-96
Action Plan for the Ravenna Army Ammunition Plant	OSC/mkm	Mar-96
Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant	OSC/Specpro	Apr-96
Phase I Remedial Investigation Sampling and Analysis Plan Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant	OSC/Specpro	Jul-96
Phase I Remedial Investigation Site Safety and Health Plan Addendum for High Priority Areas of Concern for the Ravenna Army Ammunition Plant	OSC/mkm	Jul-96
Investigation-Derived Waste Characterization and Disposal Plan for the Phase I RI of High Priority Areas of Concern at RVAAP	USACE OSC/mkm	Dec-96
Public Meeting Briefing - Phase I RI of High Priority AOCs at the RVAAP	USACE	Sep-97
Quality Control Plan for the phase II RI for Winklepeck Burning Grounds at RVAAP	USACE	Jan-98
Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation for Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant	SAIC	Jan-98
Remedial Investigation Report for the Phase I Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant. Volume I Main Text	SAIC	Feb-98
Remedial Investigation Report for the Phase I Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant. Volume II Appendixes A-K	SAIC	Feb-98
Geophysical Survey Results of Mustard Agent Burial Site at RVAAP, Edition 2	USACE	Mar-98
Safety and Health Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds and Determination of Facility-Wide Background	SAIC	Apr-98
Geophysical Survey Results of mustard Agent Burial Site 1 at RVAAP, Edition 1	USACE	Apr-98
SAP Addendum for the Phase II RI of the Winklepeck Burning Grounds and Determination of facility-Wide Background at the RVAAP	USACE	Apr-98
RCRA Closure Field Investigation Report for the Deactivation Furnace Area, Open Detonation Area, Building 1601, and Pesticides Building at RVAAP	USACE	Jun-98
SAP and SSHP Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill	USACE	Jun-98
Hazardous Medical Waste Study RRSE for Newly Added Sites at RVAAP	USACE	Oct-98
October 1998 Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation	USACE	Oct-98
Initial Phase Report Groundwater Investigation Ramsdell Quarry at RVAAP	USACE	Jan-99
Initial Phase Report, Groundwater Investigation, Ramsdell Quarry Landfill	USACE	Jan-99
February 1999 Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation	USACE	Feb-99
Quarterly Monitoring Report, Ramsdell Quarry Groundwater Investigation	USACE	Apr-99
Phase II RI Report for the Winklepeck Burning Grounds at RVAAP	USACE	Aug-99
Sampling and Analysis Plan Addendum No. 1 for the Phase II RI of Load Line	USACE	Aug-99
SAP Addendum No. 1 for the Phase II RI Load Line 1	USACE	Aug-99
Environmental Information Management Needs Assessment	USACE	Sep-99
SAP Addendum No. 1 for Phase I RI of Demo Area 1 at RVAAP	USACE	Oct-99
SSHP Addendum No. 1 for Phase I RI of Demo Area 1 at RVAAP	USACE	Oct-99
Draft- Vegetation Methods for Ground-Truthing of Ecological Risk at Winklepeck Burning Grounds at the RVAAP, Draft	USACE	Dec-99
Small Mammal Methods for Ground-Truthing of Ecological Risk at Winklepeck Burning Grounds at the RVAAP	USACE	Dec-99
Sampling and Analysis Plan for the Interim Removal Action, Decontamination and Demolition of Building T-5301(AOC 47)	OSC	Feb-00
Site Specific Safety and Health Plan for the Interim Removal Action, Decontamination and Demolition of Building T-5301 (AOC 47)	OSC	Feb-00

Title	Author	Date
Work Plan & Sampling and Analysis for the Bioremediation Pilot Study for Soils from Former Bldg. FJ 904 at Load Line 12 (AOC 12)	OSC	Mar-00
Draft-Final Completion Report for the Bioremediation Pilot Study for Soils from Former Bldg. FJ 904 at Load Line 12 (AOC 12)	OSC	Mar-00
SAP and SSHP Addendum No. 2 for the Biological Measurements at Winklepeck Burning Grounds at RVAAP	USACE	May-00
Facility-Wide SAP and Facility-Wide SSHP for Environmental Investigations for RVAAP	USACE	Jul-00
Report Groundwater Investigation at Ramsdell Quarry at RVAAP	USACE	Aug-00
Sampling and Analysis Plan Addendum No. 2 for the Phase II RI of Load Line 1	USACE	Sep-00
SAP for Phase II RI Load Line 12 at RVAAP	USACE	Sep-00
SSHP for Phase II RI Load Line 12 at RVAAP	USACE	Sep-00
OE/UXO Locating, Removal and Disposal at the Open Detonation Area #2	OSC	Sep-00
Work Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Site Safety and Health Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Sampling and Analysis Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Work Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Site Safety and Health Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Sampling and Analysis Plan for the Remedial Investigation at Load Line 11 (AOC 44)	OSC	Oct-00
Work Plan for the Remedial/Design Removal Action of the Paris-Windham Road Dump (AOC 51)	OSC	Apr-01
Work Plan for the Phase II Remedial Investigation at Central Burn Pits	OSC	Aug-01
Sampling and Analysis for the Phase II Remedial Investigation at Central Burn Pits	OSC	Aug-01
Site Safety and Health Plan for the Phase II Remedial Investigation at Central Burn Pits	OSC	Aug-01
Work Plan for the Interim Removal Action, Decontamination and Demolition of Building T-5301(AOC 47)	OSC	Feb-00
Work Plan for the Interim Removal Action at Load Line 11 (AOC 44)	OSC	Jan-01
Sampling and Analysis for the Interim Removal Action at Load Line 11 (AOC 44)	OSC	Jan-01
Site Specific Safety and Health Plan for the Interim Removal Action at Load Line 11 (AOC 44)	OSC	Jan-01
Work Plan for the Phase II Remedial Investigation at Upper & Lower Cobbs Pond	OSC	Jul-01
Sampling and Analysis for the Phase II Remedial Investigation at Upper & Lower Cobbs Pond	OSC	Jul-01
Site Safety and Health Plan for the Phase II Remedial Investigation at Upper & Lower Cobbs Pond	OSC	Jul-01
Closure Report for the Interim Removal Action, Decontamination and Demolition of Building T-5301 (AOC 47)	OSC	Jul-01
Draft Compliance Monitoring Program for the Open Detonation Area #2	OSC	Jun-01
Draft Groundwater Quality Assessment Program Report for the Ramsdell Quarry Landfill	OSC	Nov-01
Sampling and Analysis Addendum for the Remedial/Design Removal Action of the Paris-Windham Road Dump (AOC 51)	OSC	Apr-02
Site Specific Safety and Health Plan for the Remedial/Design Removal Action of the Paris-Windham Road Dump (AOC 51)	OSC	Apr-02
Sampling and Analysis Addendum for the Remedial/Design Removal Action at the Sand Creek Disposal Road Landfill (AOC 34)	OSC	Apr-02
Work Plan for the Remedial/Design Removal Action at the Sand Creek Disposal Road Landfill (AOC 34)	OSC	Apr-02
Site Specific Safety and Health Plan for the Remedial/Design Removal Action at the Sand Creek Disposal Road Landfill (AOC 34)	OSC	Apr-02
Interim Removal Action for Load Line #11		Apr-02
OE/UXO Removal and Interim Removal Action Report for the Open Demolition Area #1		Apr-02
Sampling and Analysis Plan Addendum #3, Biological Measurements at the Winklepeck Burning Grounds	SAIC	May-02
Work Plan and Sampling and Analysis Plan Agenda for the Phase II Remedial Investigation of Demolition Area 2	SAIC	Jun-02
Technical Memorandum, Human Health and Ecological Risk Assessment Approach for the Load Line 1 and Load Line 2 Phase II Remedial Investigations- Revised Final	SAIC	Aug-02
RVAAPs Facility Wide Human Health Risk Work Plan- Draft	CELRL	Sep-02

Title	Author	Date
RVAAPs Facility Wide Ecological Risk Work Plan- Draft	CELRL	Oct-02
Report on the Biological Field Truthing Effort and Winklepeck Burning Grounds- Draft Final	SAIC	Nov-02
RVAAPs Facility Wide Surface Water Assessment Work Plan- Draft	CELRL	Dec-02
Conceptual Plan For a Facility-Wide Groundwater Monitoring Program Plan For the RVAAP	Spec Pro	Aug-03
Final Sampling and Analysis Plan Addendum for the Remedial Investigation at Load Line #6	MKM	Sep-03
Final Sampling and Analysis Plan Addendum for the Remedial Investigation at Load Line #9	MKM	Sep-03
Final Safety and Health Plan for the Remedial Investigation of Load Lines #6, and #9	MKM	Sep-03
Sampling & Analysis Plan Addenda for the Phase I/Phase II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds at the RVAAP	Spec Pro	Oct-03
Safety and Health Plan for the Phase I/Phase II Remedial Investigation of the Fuse & Booster Quarry Landfill/Ponds at the RVAAP	Spec Pro	Oct-03
Final Work Plan for the Remedial Design/Removal Action at the Paris-Windham Road Dump	MKM	Nov-03
Final Work Plan for the Remedial Design/Removal Action at the Sand Creek Dump	MKM	Nov-03
Final Phase II Remedial Investigatin Report for the Winklepeck Burning Grounds at the RVAAP (with revised executive summary)	SAIC	Jun-03
Draft Final Phase II Remedial Investigation Report for Load Line 12 at the RVAAP	SAIC	Oct-03
Final Phase II Remedial Investigation Report for Load Line 1at the RVAAP	SAIC	Jun-03
Preliminary Draft Phase II Remedial Investigation Report for Load Line 2 at the RVAAP	SAIC	May-03
Preliminary Draft Phase II Remedial Investigation Report for Load Line 3 at the RVAAP	SAIC	May-03
Preliminary Draft Phase II Remedial Investigation Report for Load Line 4 at the RVAAP	SAIC	May-03
Preliminary Draft Supplemental Baseline Human Health Risk Assessment for Load Line 1 Alternative Receptors at the RVAAP	SAIC	May-03
Final Facility Wide Ecological Risk Work Plan	CELRL	Apr-03
Draft Facility Wide Human Health Risk Work Plan (Final Due Dec 03)	CELRL	Apr-03
Final Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of the Erie Burning Grounds at the RVAAP	SAIC	Oct-03
Final Site Safety and Health Plan Addendum No. I for the Phase II Remedial Investigation of the Erie Burning Grounds at the RVAAP	SAIC	Oct-03
Final Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of the Ramsdell Quarry Landfill at the RVAAP	SAIC	Oct-03
Final Site Safety and Health Plan Addendum No. I for the Phase I Remedial Investigation of the Ramsdell Quarry Landfill at the RVAAP	SAIC	Oct-03
Final RVAAP Facility Wide Surface Water Assessment Work Plan	CELRL	Jan-03
Ravenna Army Ammunition Plant Community Relations Plan	CELRL	Sep-03

Ravenna Army Ammunition Plant

INSTALLATION RESTORATION PROGRAM

ER,A Active AEDB-R Sites

RVAAP-01

RAMSDELL QUARRY LANDFILL

SITE DESCRIPTION

The Ramsdell Quarry Landfill is an unlined, 10-acre landfill in the bottom of an abandoned quarry. Water is ponded in the northern end of the quarry. During the period 1946 to 1950, the AOC was used to thermally treat waste explosives and napalm bombs. No historical information has been located for the period of 1950-1976. From 1976 to 1990, the AOC was used strictly as a non-hazardous solid waste landfill. A portion of the AOC was permitted as a sanitary landfill by the state of Ohio from 1978 until its closure in 1990. The landfill is regulated under RCRA while the remaining portion of the quarry is regulated under CERCLA.

Because this unit is unlined, there is potential for releases from the landfill to surrounding soils and groundwater. Five groundwater monitoring wells were installed around the landfill perimeter in 1988. The wells are monitored on a regular basis as part of the landfill closure requirements. 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. Low levels of explosives and metals have been detected in groundwater.

Additional wells were installed and soil, sediment and surface water samples were taken in fall 2003 to further determine the nature and extent of the contamination of the CERCLA portion of the quarry. A preliminary draft report on the findings was submitted in August 2004. This is one of the six AOCs in the PBC for FY05. The groundwater unit was transferred from RCRA solid waste program to CERCLA in February 2005. This is one of the six AOCs in the FY05 PBC.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07. It will be Response Complete by September 2007. Five years of groundwater monitoring will follow; Cap Maintenance will continue until 2020 (OMA Funded). Future use by the OHARNG will be restricted access - no digging. Land Use Controls will be needed.

STATUS

Regulatory: CERCLA
RRSE: High
CONTAMINANTS: SVOCs, Explosives, Metals
MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200306	200611
RA(C).....	200506	200709
LTM.....	200710	202109
RC Expected: 200709		



RVAAP-02

ERIE BURNING GROUNDS

SITE DESCRIPTION

This 35 acre AOC was used to treat munitions by open burning on the ground surface during the late 1940s and early 50s. Bulk, obsolete, off-spec propellants, conventional explosives, rags, and large explosive-contaminated items were treated at this location. The ash residue from the burns was left at the AOC. UXO is present at the AOC. Waste constituents of concern at this location include RDX, TNT, and heavy metals. There is a potential for release of contaminants from this unit to the surrounding soils, surface water/sediment and groundwater. This AOC is now a wetland area.

The PA/SI was completed in 1989. Phase I RI fieldwork was conducted at this AOC in July 1999. The final report was completed in 2001. It was determined that additional groundwater sampling was needed.

The Phase II RI fieldwork including groundwater, soil and sediment samples was completed in fall 2003. A preliminary draft report on the findings was submitted in August 2004. The property transferred in May 1999 to the NGB. This AOC is composed primarily of wetlands. This is one of the six AOCs in the FY05 PBC.

CLEANUP STRATEGY

The AOC will be Response Complete by September 2007. Complete Phase II RI report. No remedial action is anticipated. Long Term Monitoring will follow. Future use by the OHARNG will be restricted access – no digging. Land Use Controls will be needed. Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Explosives, Metals, SVOCs
MEDIA OF CONCERN: Soil, Groundwater Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI.....	198906	198906
RI	199810	200611
RD	200506	200611
RA.....	200506	200709
LTM	200710	201309

RC Expected: 200709



RVAAP-04

OPEN DEMOLITION AREA #2

SITE DESCRIPTION

This AOC was used since 1948 to detonate large caliber munitions and off-spec bulk explosives that could not be deactivated or demilitarized by any other means due to their condition. Detonation was performed in a backhoe-dug pit with a minimum depth of 4 ft. After detonation, metal parts were picked up and removed from the AOC. The CERCLA (IRP) portion of the AOC is ~25 acres in size. Contaminants of concern at this AOC are white phosphorus, explosives, and heavy metals. Sand Creek bisects the AOC.

A Phase I RI was completed for the AOC in February 1998. The RI found explosives, particularly TNT, and several inorganics including cadmium, lead and mercury in both the surface and subsurface soils.

Concentrations of inorganic compounds in sediment appear to be within the range of AOC-wide background values.

There is a smaller 1.5 acre area regulated under RCRA on the north side of Sand Creek, which was regularly used until 1992 for demolition activities. This area is not eligible for ER,A funding. A USAEHA geotechnical study was conducted at this AOC in 1992, with minor amounts of contamination being detected in the soils. Four groundwater monitoring wells were installed at the AOC as part of the USAEHA study. The wells are currently sampled on a quarterly basis. Low levels of explosives have been periodically detected in RCRA wells within this AOC. Non-IRP funding was used in 1999 and 2000 to remove UXO/OE to a depth of 4 ft in the area of the 1.5 acre RCRA unit. IRP funds are being used to characterize and properly address and dispose of any contaminated soils within eligible areas.

In summer 2002, the Phase II RI field work was completed to better delineate the north side and south side of the AOC. The preliminary draft RI report was submitted in December 2004. The MEC portion (the proposed fence and the Rocket Ridge area) of this AOC is eligible for the Military Munitions Response Program (MMRP- RVAAP-004-R-01). The final facility-wide surface water and sediment report was submitted in February 2005. A future addendum will be funded under RVAAP-34. This is one of the six AOCs in the FY05 PBC.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+. The AOC will be Response Complete by September 2007. Long Term Monitoring consisting of five years of groundwater monitoring will follow. Future OHARNG use will be restricted access - no digging. Any bank stabilization, fencing, and UXO removal work is expected to be funded from the MMRP.

STATUS

REGULATORY: CERCLA

RRSE: High

CONTAMINANTS: Explosives, Metals

MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200109	200611
RD	200506	200611
RA	200506	200709
LTM	200710	201309

RC Expected: 200709

RVAAP-05

WINKLEPECK BURNING GROUNDS

SITE DESCRIPTION

The total burning ground area consists of 200 acres and has been in operation since 1948. Prior to 1980, open burning was carried out in pits, pads, and sometimes on the roads within the 200 acre area. Burning was conducted on the bare ground and the ash was abandoned at the AOC. Prior to 1980, wastes treated in the area included RDX, antimony sulfide, Composition B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes and small amounts of laboratory chemicals. Munitions and explosive constituents (MEC) (primarily scrap metal) are present at the AOC. From 1980-98, burns of scrap explosives, propellants and explosive-contaminated materials were conducted in raised refractory-lined trays within a 1.5 acre area.

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Explosives, Metals, SVOCs
MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA.....	198802.....	198804
SI.....	198906.....	198906
RI.....	199410.....	200608
RD.....	200603.....	200608
RA(C).....	200608.....	200701
LTM.....	200810.....	201409
RC Expected: 200701		

The Part B permit application covering the active portion of the AOC was withdrawn in 1994. The burn trays along with the 90-day storage unit, Building 1601, were closed in accordance with Ohio EPA guidance in 1998.

The Phase II RI Report includes facility-wide background levels, as well as human health and ecological risk assessments. Additional field studies were conducted in FY00 at Winklepeck and RVAAP reference locations to more accurately define the risk to ecological receptors at the AOC. The Draft Ecological Field Truthing report was submitted in April 2001. This Eco report has undergone revisions and is currently undergoing finalization. Phase III RI fieldwork was completed in fall 2000; the Final report will be submitted in March 2005. The Final Focused Feasibility Study was submitted in February 2005. Explosive contamination has been found in some monitoring wells.

CLEANUP STRATEGY

This AOC has an increased priority for action in order to expedite property transfer to the NGB. This AOC will be transferred in FY06.



The proposed future land use is a Mark 19 (grenade machine gun) Range. The Focused Feasibility Study found five areas within the AOC that require soil remediation for explosives and heavy metals due to unacceptable human health risks. There was MEC and soil removal in 2005 with OMA funds, to allow construction of the Mark 19 Range. Additional soil contamination was found that requires removal in FY06. Groundwater monitoring will follow for five years after remediation is complete.

RVAAP-06 C BLOCK QUARRY

SITE DESCRIPTION

This AOC is an abandoned quarry approximately 0.3 acres in size. The AOC was used as a disposal area for annealing process wastes (chromic acid) for a short time during the 1950s. Liquid wastes were apparently dumped on the ground in the pit bottom. The AOC is now heavily forested with trees of one foot diameter or larger. Waste constituents of concern include chromium, lead, and mercury.

A detailed sampling investigation of the soils from this unit in 1986 detected no metals above RCRA-regulated levels.

In the fall of 2001, additional samples were taken. Metals, including hexavalent chromium, and organics were detected in soil above screening levels. The amount of contaminated soil is larger than previously expected. This AOC was transferred to OHARNG in May 1999. Four monitoring wells were installed and sampled in December 2004. Soil, surface water and sediment samples were taken in December 2004.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC. Soil removal, followed by groundwater sampling (LTM), is anticipated. Land use controls will be needed. Future use of this land is restricted access - no digging.

STATUS

REGULATORY: CERCLA
RRSE: Low
CONTAMINANTS: Metals, Organics
MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200408	200907
RD	200905	200911
RA(C).....	200911	201108
LTM	201110	201610

RC Expected: 201108



SITE DESCRIPTION

From approximately 1941 to 1971, wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined earthen impoundment ~1 acre in size. Water from the impoundment was discharged to a surface stream that exited the installation. This area was also used as a demilitarization area. Contaminants of concern at this unit are explosive compounds and heavy metals (including lead, chromium, and mercury). There is a potential for releases from this unit to the soils, surface water/sediment and groundwater. Most above ground structures were demolished during 2000. Environmental controls were used during the demolition activities to prevent migration of contaminants to the environment.

The RI sampling (1999-2000) found high levels of explosives in the soil around the melt-pour and preparation buildings. Groundwater has low levels of explosives and metals. Preliminary screening of the contaminant levels indicates that the sediments may pose an ecological risk. Surface water did not show any significant contamination. The RI report was finalized in June 2003.

A PBC was awarded to Shaw Environmental in Sept 2003 to complete an interim soil and sediment removal action at the Load Lines 1, 2, 3 and 4. The supplemental human health risk assessment for Load Line 1 was submitted April 2004. Final Load Lines 1, 2, 3, 4 Remedial Goal Objectives were submitted in September 2004. The Preliminary Draft Focused Feasibility Study was submitted November 2004.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07.

Final: All concrete wall and foundations and walkways may be removed depending on funding. Flushing and grouting or removal of the underground utilities may be done as needed. The source of funds for these actions needs to be determined.

The PBC project will result in an interim remedy. Higher headquarters needs to resolve the status of the concrete slabs and sewers at this AOC. Additional investigations of the soils under the inaccessible portions of the buildings may be needed. Results of the investigations will be used to

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Explosives, Metals, SVOCs
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI.....	198906	198906
RI	199410	200603
RD	200406	200603
RA(C).....	200406	200606

RC Expected: 200610

RVAAP-08

LOAD LINE 1 (PAGE 2 OF 2)

determine if additional remedial action is needed to make the AOCs safe for training by the OHARNG.

Future plans include completion of the RI/FS. Soil removal is proposed. Future land use by the OHARNG will involve armored vehicle maneuvering. Soils may be disturbed to a depth of four feet.

Currently, part of this area, known as Criggy's Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

SITE DESCRIPTION

From approximately 1941 to 1971, building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond ~2 acres in size and 6 to 8 ft deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this unit are explosive compounds and heavy metals (ex., lead, chromium, cadmium, and mercury). There is a high potential for releases from this unit to the soils, surface water/sediments and groundwater.

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Explosives, Metals, SVOCs, VOCs
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200010	200603
RD	200406	200603
RA(C).....	200406	200610

RC Expected: 200610

A Phase I RI was completed in 1998. Explosives and metals were the most common soil contaminants. Organics, PCBs, propellants and pesticides were also detected. Low levels of some contaminants were found in the groundwater at this AOC. Fieldwork for a Phase II RI to further determine the nature and extent of the contamination was completed in 2001. The RI was completed summer 2004. The Preliminary Draft Focused Feasibility Study was submitted November 2004. Final Load Lines 1, 2, 3, 4 Remedial Goal Objectives were submitted in September 2004. The structures in the load line must be removed for future use by the OHARNG. Explosively contaminated buildings must desensitized using a thermal decomposition process. To prepare for thermal decomposition (TD) of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials have been removed from the buildings where explosive hazards did not pose an unreasonable risk. U.S. EPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07.

Final: All concrete wall and foundations and walkways may be removed depending on funding. Flushing and grouting or removal of the underground utilities may be done as needed. The source of funds for these actions needs to be determined. The PBC project will result in an interim remedy. Higher headquarters needs to resolve the status of the concrete slabs and sewers at this AOC. Additional investigations of the soils under the inaccessible portions of the buildings may be needed. Results of the investigations will be used to

RVAAP-09

LOAD LINE 2 (PAGE 2 OF 2)

determine if additional remedial action is needed to make the AOCs safe for training by the OHARNG. Costs are covered under Load Line 1 (RVAAP-08).

Future plans include completion of the RI/FS. Soil removal is proposed. Future land use by the OHARNG will involve armored vehicle maneuvering. Soils may be disturbed to a depth of four feet.

Currently, part of this area, known as Kelly's Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

Some explosively contaminated buildings are expected to require removal of explosive residue using a thermal decomposition (TD) process. To prepare for TD of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials will be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process.

SITE DESCRIPTION

From approximately 1941 to 1971, building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a drainage ditch leading to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. Contaminants of concern at this unit are explosive compounds and heavy metals (e.g. lead, chromium, and mercury). There is a high potential for releases from this unit to the soils, surface water/sediment and groundwater.

A Phase I RI was completed in 1998. Explosives and metals were the most common soil contaminants. Organics, PCBs, propellants and pesticides were also detected. Low levels of some contaminants were found in the groundwater at this AOC. Fieldwork for a Phase II RI to further determine the nature and extent of the contamination was completed in 2001. A preliminary draft RI report was submitted in May 2003 with regulatory review completed in June 2003.

The structures in the load line must be removed for future use by the OHARNG. Explosively contaminated buildings must desensitized using a thermal decomposition process. To prepare for thermal decomposition (TD) of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials have been removed from the buildings where explosive hazards did not pose an unreasonable risk. U.S. EPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. If and when the agency will approve the burns is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD.

The Preliminary Draft Focused Feasibility Study was submitted November 2004. Final Load Lines 1, 2, 3, 4 Remedial Goal Objectives were submitted in September 2004.

A PBC contract was awarded to Shaw Environmental in Sept 2003 to complete all phases through LTM at LL1, 2, 3 and 4 for all soils and some sediment.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07.

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Explosives, Metals, SVOCs, VOCs
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200010	200603
RD	200406	200603
RA(C).....	200406	200610

RC Expected: 200610

RVAAP-10

LOAD LINE 3 (PAGE 2 OF 2)

All concrete wall and foundations and walkways may be removed depending on funding. Flushing and grouting or removal of the underground utilities may be done as needed. The source of funds for these actions needs to be determined.

The PBC project will result in an interim remedy. Higher headquarters needs to resolve the status of the concrete slabs and sewers at this AOC. Additional investigations of the soils under the inaccessible portions of the buildings may be needed. Results of the investigations will be used to determine if additional remedial action is needed to make the AOCs safe for training by the OHARNG. Costs are covered under Load Line 1 (RVAAP-08).

Future plans include completion of the RI/FS. Soil removal is proposed. Future land use by the OHARNG will involve armored vehicle maneuvering. Soils may be disturbed to a depth of four feet.

Some explosively contaminated buildings are expected to require removal of explosive residue using a thermal decomposition (TD) process. To prepare for TD of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials will be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process.

SITE DESCRIPTION

From approximately 1943 to 1971, building wash-down water and wastewater from the load line operations were collected in concrete sumps, pumped through sawdust filtration units and then discharged to a settling pond. Building wash-down water from the melt-pour buildings was also swept out through doorways onto the ground surrounding the buildings. The settling pond was an unlined triangular-shaped pond ~2 acres in size and 6 to 8 feet deep. Water from the impoundment was discharged to a surface stream that exited the installation. Contaminants of concern at this unit are explosive compounds and heavy metals (ex., lead, chromium, cadmium). There is a high potential for releases from this unit to the soils, surface water/ sediment and groundwater.

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: SVOCs, VOCs, Metals, Explosives
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200010	200603
RD	200406	200603
RA(C).....	200406	200610

RC Expected: 200610

A Phase I RI was completed in 1998. Explosives and metals were the most common soil contaminants. Organics, PCBs, propellants and pesticides were also detected. Low levels of some contaminants were found in the groundwater at this AOC. Fieldwork for a Phase II RI to further determine the nature and extent of the contamination was completed in 2001. A preliminary draft RI report was submitted in May 2003 with regulatory review completed in June 2003.

The structures in the load line must be removed for future use by the OHARNG. Explosively contaminated buildings must desensitized using a thermal decomposition process. To prepare for thermal decomposition (TD) of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials have been removed from the buildings where explosive hazards did not pose an unreasonable risk. U.S. EPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. If and when the agency will approve the burns is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD.

A PBC contract was awarded to Shaw Environmental in Sept 2003 to complete all phases through LTM at LL1, 2, 3 and 4 for all soils and some sediment. The Preliminary Draft Focused Feasibility Study was submitted November 2004. Final Load Lines 1, 2, 3, 4 Remedial Goal Objectives were submitted in September 2004.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07.

RVAAP-11

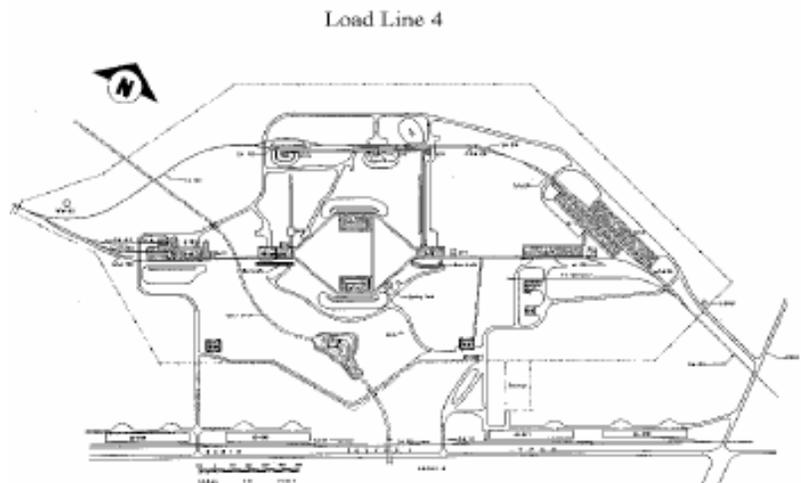
LOAD LINE 4 (PAGE 2 OF 2)

Final: All concrete wall and foundations and walkways may be removed depending on funding. Flushing and grouting or removal of the underground utilities may be done as needed. The source of funds for these actions needs to be determined. LTM, cover maintenance, will continue indefinitely.

The PBC project will result in an interim remedy. Higher headquarters needs to resolve the status of the concrete slabs and sewers at this AOC. Additional investigations of the soils under the inaccessible portions of the buildings may be needed. Results of the investigations will be used to determine if additional remedial action is needed to make the AOCs safe for training by the OHARNG. Costs are covered under Load Line 1 (RVAAP-08).

Future plans include completion of the RI/FS. Soil removal is proposed. Future land use will involve armored vehicle maneuver, with accompanying disturbance to a depth of four feet.

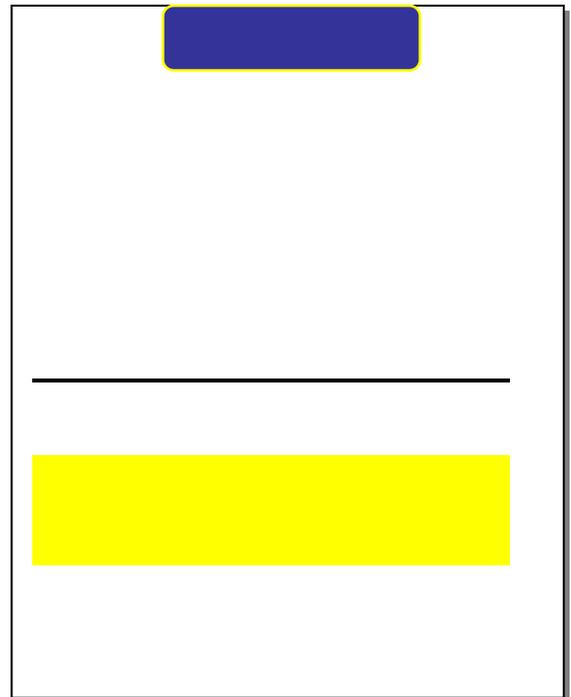
Currently, part of this area, known as Load Line 4 Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.



RVAAP-12 LOAD LINE 12

SITE DESCRIPTION

From 1941-43 and 1946, ammonium nitrate was produced at this AOC. From 1949 to 1993, munitions were periodically demilitarized with building wash-down water and waste water from the bomb melt out facility operations being collected in a house gutter system, and flowing 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 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 (RVAAP-18). Contaminants of concern at this unit are explosive compounds and heavy metals. There is a high potential for releases from this unit to the soils, surface water/sediment and groundwater. The original pink water treatment plant servicing Building 904 was officially closed as of May 2000.



A composting pilot study (IRA) using soils contaminated with explosives from the area of Building F-904 was started in 2000. The report from this pilot bioremediation project is final. Samples of environmental media were collected in the fall of 2000. The Phase II RI was finalized in March 2004.

High levels of nitrates exceeding the MCL were detected in the groundwater in this AOC. Metals and explosives were detected in the soil, sediment and groundwater. Metals were detected in surface water. This is one of the six AOCs in the FY05 PBC.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY08.

Soil removal is anticipated. Land Use Controls reflecting the anticipated future use of mounted training and no digging may be imposed. Monitored natural attenuation is anticipated for groundwater remediation for thirty years. Flushing and grouting or removal of the underground utilities may be done as needed. This will be accomplished with non-ER,A funds.

The Final ROD for this AOC is dependent on the signed ROD for the MMRP portion (RVAAP-012-R-01).

BUILDING 1200 DILUTIONS/SETTLING POND

SITE DESCRIPTION

From approximately 1941 to 1971, ammunition was demilitarized at this building by steaming munitions rounds. 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. Contaminants of concern at this unit are explosive compounds and heavy metals (including lead, chromium, and mercury). There is a potential for releases from this unit to the soils, surface water/sediment and groundwater.

Limited explosives and metals contamination was detected in the ditch and settling ponds during the Phase I RI. This AOC was transferred in May 1999.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC. Soil removal, followed by groundwater sampling (LTM), is anticipated. Land Use Controls of dismantled training and digging up to seven feet are anticipated.

Thermal treatment of buildings will be conducted (non-ER,A funds). All foundations and footings (to 1 ft bgs) will be removed. This will be accomplished with non-ER,A funds.

STATUS

REGULATORY: CERCLA

RRSE: Low

CONTAMINANTS: Explosives, Metals

MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200408	200904
RD	200902	200909
RA(C).....	200910	201002
LTM.....	201010	201509

RC Expected: 201002



FUZE AND BOOSTER QUARRY LANDFILL/PONDS

SITE DESCRIPTION

This AOC operated during the period 1945 through 1993. The AOC consists of three ponds in an abandoned rock quarry. The ponds are 20 to 30 ft deep and are separated by earthen berms. Prior to 1976, the quarry was reportedly used for open burning and as a landfill. The debris from the burning/landfill was reported to have been removed during pond construction. From 1976-93, spent brine regenerate and sand filtration backwash water from one of the RVAAP drinking water treatment plants was discharged into the ponds. This discharge was regulated under a NPDES permit. In 1998, this AOC was expanded to include three other shallow settling ponds and two debris piles, bringing the AOC to ~45 acres. The lands adjacent to the quarry were utilized as an impact area to test 40mm projectiles and to incinerate/deactivate fuze and booster components.

STATUS

REGULATORY: CERCLA
RRSE: High
CONTAMINANTS: Metals, Explosives
MEDIA OF CONCERN: Soil, Sediment, Surface Water, Groundwater

PHASES	Start	End
PA	198802	198804
SI.....	198906	198906
RI	200212	200611
RD	200506	200611
RA(C).....	200506	200709
LTM	200710	201309

RC Expected: 200709

Constituents of concern include explosive compounds and heavy metals. There is a potential for release of contaminants to the groundwater, soils and surface water/sediment from this AOC.

The Phase II RI field work was completed in November 2003. Perchlorate was detected in two surface water samples (preliminary results); a second round of confirmatory samples showed no detectable levels of perchlorate. An additional sampling event may be required. The preliminary draft of the Phase II RI was submitted in January 2005. This is one of the six AOCs in the FY05 PBC.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+

A RD/RA of sediment and/or debris removal may be needed. Land Use Controls of mounted training and no digging are anticipated. The Integrated Natural Resources Management Plan will be implemented on AOC.



Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

RVAAP-19 - LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

SITE DESCRIPTION

This is a 5 to 10 acre unlined landfill used for general plant refuse (sanitary wastes, possibly also explosive wastes and ash residue). It was used from 1969 until 1976 and has minimum soil cover. This landfill is up-gradient of a wetland area.

The Phase I RI sampling and trenching were completed in 1996. Low levels of metals (above background), pesticides, PCBs and SVOCs, were detected in soil. Low levels of metals were detected in sediment. This AOC was transferred in May 1999.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Approximately 2.5 acres of the AOC will receive a cover. LTM and future land use controls consist of restricted access - no digging around the landfill. Areas surrounding the landfill perimeter are available for dismantled training but no digging is allowed.

STATUS

REGULATORY: CERCLA

RRSE: Low

CONTAMINANTS: Metals, SVOCs, Pesticides, PCBs

MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200408	200904
RD	200901	200906
RA(C).....	200906	200912
RA(O)	201010	201509

RC Expected: 200912



RVAAP-28

MUSTARD AGENT BURIAL SITE

SITE DESCRIPTION

This unit is a possible mustard agent burial AOC ~15 x 18 ft and is triangularly shaped. In 1969, records indicate that an EOD Unit excavated a suspected mustard agent burial AOC near the west end of the NACA runway. One 190-liter (50 gallon) drum and seven rusty canisters were recovered. All recovered items were empty and no contamination was discovered. Following this excavation, an unidentified and undocumented source reported that the AOC had not been correctly identified and was actually in an adjacent area.

This additional area (~15 x 18 ft) is located southwest of the original area. The area is now marked by reflective Seibert stakes. Two non-intrusive, geophysical surveys (EM-31, and EM-61) of the AOC were completed in 1998. Several areas were identified with metallic responses. Some, if not all, may be related to cultural features at or near the surface. Soil samples taken in 1998 found no thiodiglycol (mustard breakdown product). There was no sign of disturbed soils or numerous buried metallic objects that would clearly delineate a formal burial AOC.

Groundwater samples were collected to test for mustard and mustard breakdown products in 2004. No mustard or mustard breakdown products were found. The Preliminary Draft Groundwater Investigation Report was submitted in February 2005. This AOC was transferred in May 1999.

CLEANUP STRATEGY

A Final Groundwater Investigation and No Further Action Record of Decision are expected December 2007. Future land use will be restricted access - no digging, marked by Seibert stakes.



RVAAP-29

UPPER AND LOWER COBB PONDS

SITE DESCRIPTION

The Upper and Lower Cobb Pond complex consists of two unlined ponds that received discharges from Load Lines 3 and 12 explosive waste water treatment systems from 1941 through 1971. Upper Cobb Pond is ~5 acres in size and Lower Cobb Pond is ~4 acres in size.

The Phase I RI found low levels of explosives in sediment; no contaminants were found in the surface water. The Phase II RI field work was completed in the summer 2001. Soil, sediment, surface water and groundwater were sampled.

This AOC is partially addressed under the Facility-Wide Surface Water sampling program. The Preliminary Draft RI Report was submitted in February 2005.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07.

The Final RI Report and Record of Decision are scheduled for October 2005 and December 2007 respectively.

No remedial action is expected. LTM consisting of five years of groundwater monitoring may follow. OHARNG future use will be dismantled training, with no digging.

STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS:

Explosives, Metals, Aluminum Chloride

MEDIA OF CONCERN:

Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	198802	198804
SI	198906	198906
RI	200101	200802
LTM	200801	201406

RC Expected: 200802



RVAAP-32

40 (AND 60) MM FIRING RANGE

SITE DESCRIPTION

This AOC was used as a test firing range for 40 mm projectiles during the late 1960s and early 1970s. This AOC was reported by former workers at RVAAP to have been a test firing range for munitions. The dates of this operation were from 1969-71. No original file documentation exists for the operation. UXO is suspected at this ~2-acre AOC.

The AOC is partially covered with pole timber. Soil samples collected by USACHPPM in 1996 detected arsenic and cadmium above the RRSE screening concentrations.

Additional samples were taken in fall 2003. An AOC characterization report was submitted in January 2005.

STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS: Metals

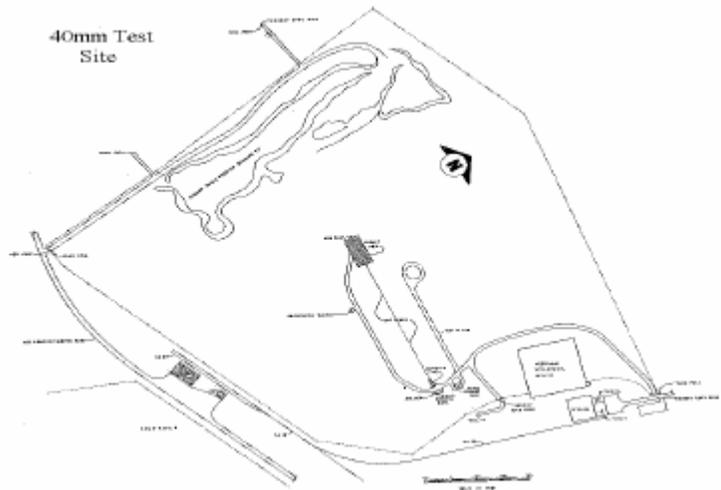
MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	199407	199602
SI	199607	199612
RI	200306	200610

RC Expected: 200610

CLEANUP STRATEGY

Land Use Controls may be needed due to environmental contaminants and/or MEC. The OHARNG future use will be mounted training with no digging.



RVAAP-33 LOAD LINE 6

SITE DESCRIPTION

This unit, also known as the Firestone Test Facility, was reported by former workers at RVAAP to have been a security classified experimental test facility for munitions. Shaped charges were constructed and tested for the Department of Defense. The AOC consists of a pond (underwater test chamber) and several buildings (~45 acres). The dates of operation are not known. No original file documentation exists for this AOC. The contaminants of potential concern are lead azide, TNT, RDX, other explosives and metals.

Soil samples collected by USACHPPM in 1996, detected antimony, copper and lead above the RRSE screening concentrations. All but four of the buildings were thermally treated and structures were removed in 2003. The Phase I RI field work was completed in November 2003.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+. A preliminary draft RI report is due in March 2006; a Record of Decision is scheduled for July 2008 and will address the MEC AOC, which is covered under MMRP AOC, RVAAP 033-R-01. MEC removal is scheduled in 2012. Soil removal is anticipated. Five years of LTM groundwater monitoring of seven wells. Land Use Controls may be needed; future OHARNG use is expected to be mounted training, with no digging.

All foundations and footings (to 1 ft bgs) will be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Lead Azide, Explosives, Metals
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	199407	199602
SI	199407	199901
RI	200207	200809
RD	200805	200810
RA(C).....	200810	200910
LTM.....	200910	201411

RC Expected: 200910



SAND CREEK DISPOSAL ROAD LANDFILL

SITE DESCRIPTION

This AOC was reported by former workers at RVAAP to have been an open dump for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris is at the surface, but covered by vegetation. The AOC is ~2.7 acres and located adjacent to Sand Creek. The dates of operation of this unit are not known, but are believed to be around the 1950s. No original file documentation exists. The debris is eroding into Sand Creek.

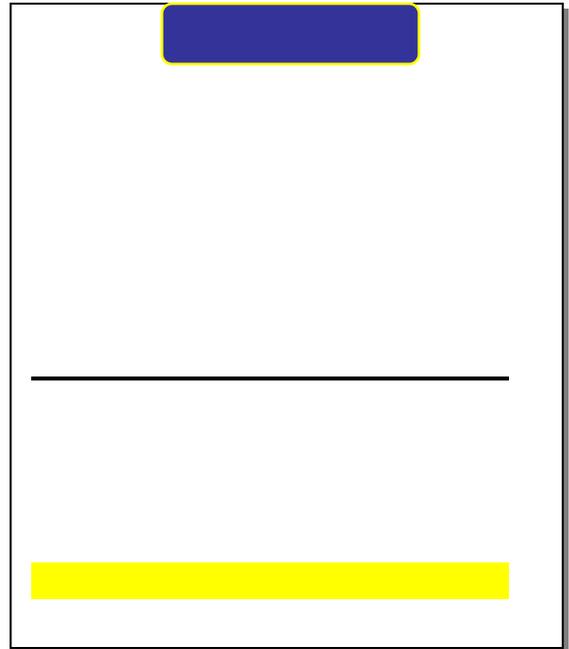
Arsenic was detected in sediment at levels above the RRSE screening concentrations. Soil samples were taken by the USACE in September 2001 to further refine the RRSE. Arsenic (87ppm), benzo(a)pyrene (0.322ppm), benzo(a)athracene (0.347ppm), benzo(b)fluoranthene (0.446ppm) and indeno(1,2,3-cd)pyrene were detected at significant concentrations. The high RRSE rating was confirmed by this sampling event.

Soil and debris removal (IRA) was completed in summer 2003. The Final IRA report was submitted in April 2004. This AOC was transferred in May 1999.

CLEANUP STRATEGY

An Analytical Evaluation Risk Summary and Record of Decision are scheduled for January 2007, in conjunction with the Paris-Windham AOC RVAAP-51.

OHARNG future use will be dismantled training, with no digging. All facility-wide project funding will be tracked under this AOC. These projects include Risk Assessment Updates, Facility-wide Groundwater Monitoring Program, Ravenna Environmental Information Management System, Property Management Plan (LUC), Facility Scheduling, and Facility-wide documents and their addendums (such as the Sampling and Analysis plan, Health and Safety Plan, Project Management Plan).



RVAAP-36 PISTOL RANGE

SITE DESCRIPTION

This AOC was used by the installation security force for pistol qualification. Bullets were fired into the embankment. The unit size is 350 x 150 ft. No original file documentation exists for this AOC.

USACHPPM samples detected lead in the soil at a maximum concentration of 4,309 ppm.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY07. A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

The top foot of the backstop berm will be removed (500cy). Future OHARNG land uses include dismantled training without digging. LTM may be required.

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Lead
MEDIA OF CONCERN: Soil, Surface Water, Sediment

PHASES	Start	End
PA	199508	199602
SI	199511	199812
RI	200101	200810
RD	200806	200812
RA(C).....	200812	200906
LTM.....	201010	201102

RC Expected: 200906



RVAAP-38 NACA TEST AREA

SITE DESCRIPTION

This is an approximately 12.4 acre AOC that was used as an aircraft test area. Surplus military aircraft were crashed into a barrier, using a fixed rail attached to the aircraft landing gear, in an attempt to develop crash-worthy fuel tanks and/or high flashpoint fuel. Some of the aircraft were buried at the AOC after the tests. Demolition Area #1, RVAAP- 03, is located within the RVAAP-38 boundary.

Phase I RI samples were taken in October 1999. The Phase I RI was completed in 2000 and finalized in fall 2001. Low levels of metals and organics were detected in soil. Nitrocellulose was detected in the sediment, but is believed to be attributed to RVAAP-03, which is located within the NACA Test Area. This AOC was transferred to OHARNG in May 1999.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Soil bio-remediation is anticipated. Land Use Controls may be needed; future OHARNG use of the AOC is expected to be dismantled training with no digging. LTM consisting of groundwater monitoring of twelve wells for five years is expected.

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Metals, Organics
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	199508	199602
SI	199508	199812
RI	199909	200810
RD	200806	200811
RA(C).....	200811	200904
LTM.....	200910	201412

RC Expected: 200904



RVAAP-39 LOAD LINE 5

SITE DESCRIPTION

This AOC was a load line that operated from 1941 to 1945 to produce fuzes for artillery projectiles. Load line 5 was deactivated and its equipment removed in 1945.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. Surface soils were found to have a maximum lead concentration of 2,800 ppm. Explosives were not detected in any samples taken by USACHPPM.

Screening groundwater data collected for RVAAP-26, Fuze and Booster Area Settling Tanks during the first RRSE, was used to score the groundwater pathway at the AOC.

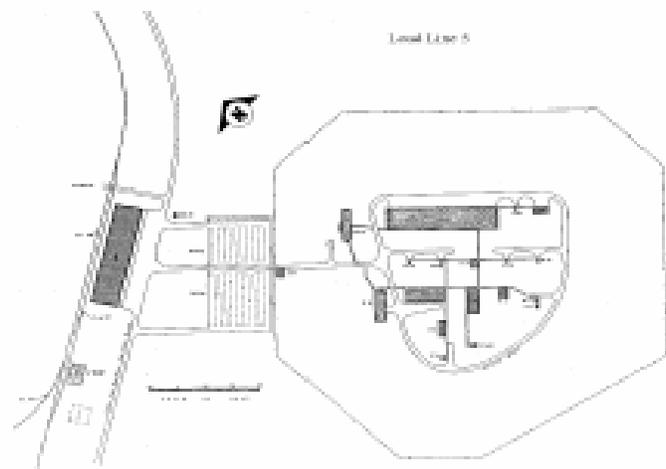
CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Thermal treatment of buildings will be conducted (non-ER,A funds). A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training without digging allowed. Land Use Controls may be needed. LTM consists of groundwater monitoring for five years.

All foundations and footings (to 1 ft bgs) will be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).



STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS: Explosives and metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	200810
RD	200806	200811
RA(C).....	200811	200904
LTM.....	200910	201412

RC Expected: 200904

SITE DESCRIPTION

This AOC 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. The LL-7 was used again in 1969 and 1970 to produce 40mm projectiles, and between 1989 and 1993 the LL-7 Pink Water Treatment Plant was in operation.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. The surface soil and groundwater pathways are considered complete. Six surface soil samples were collected from outside of the production buildings and analyzed for explosives and metals. The sampling locations were selected based on the production use. Emphasis was placed on areas around production and explosive storage buildings. One sediment sample was scheduled to be collected from one of the settling ponds at the AOC, but no settling ponds or other sediment pathways were evident.

One screening groundwater sample was collected north-northwest of Building 1B-2 (down gradient by surface topography) and analyzed for explosives and metals. The groundwater was collected from between 8 and 9 feet bgs. Significant concentrations of lead (maximum 2,000 ppm) and low concentrations of explosives, HMX, RDX and 2, 4, 6 TNT, were found in the surface soils.

The structures in the load line must be removed for future use by the OHARNG. Explosively contaminated buildings must be desensitized using a thermal decomposition process. To prepare for thermal decomposition (TD) of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials will have to be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Thermal treatment of buildings will be conducted (non-ER,A funds). A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging

STATUS

REGULATORY: CERCLA
RRSE: Low
CONTAMINANTS: Explosives, Metals
MEDIA OF CONCERN: Soil, Groundwater, Sediment, Surface Water

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	201002
RD	200910	201003
RA(C).....	201003	201009
LTM.....	201010	201509

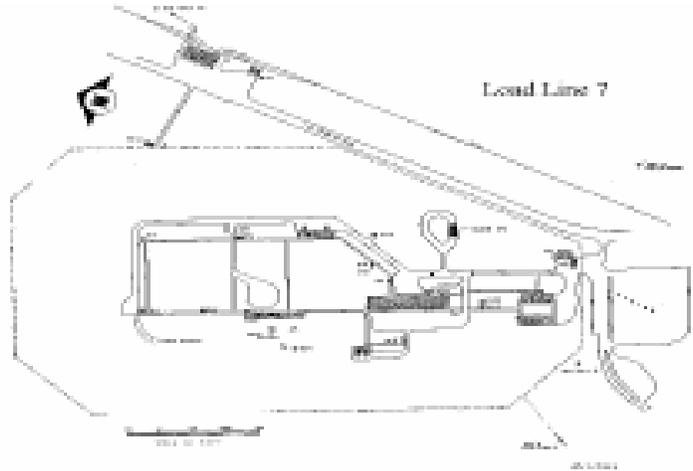
RC Expected: 201009

RVAAP-40

LOAD LINE 7 (PAGE 2 OF 2)

allowed. Land Use Controls may be needed. LTM consist of groundwater monitoring of six wells for five years.

All foundations and footings (to 1 ft bgs) will be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined). Removal of five lead lined sumps and three hundred feet of associated piping and soils is anticipated in the IRP.



SITE DESCRIPTION

This AOC 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.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. The surface soil, groundwater and sediment pathways are considered complete. Five surface soil samples and one groundwater sample were collected from outside of the assembly buildings and analyzed for explosives and metals. The sampling locations were selected based on assembly use. Sample point selection emphasized production and explosives storage buildings. One sediment sample was collected from the small (approximately 10 feet in diameter) settling pond at the AOC and analyzed for the same

compounds. No surface water was collected from the settling pond since this pond was found to be an intermittent water source, and it is not significant for the purpose of the RRSE. The subsurface soil used to estimate the groundwater pathway was collected approximately 60 feet north-northwest of Building 2B-1 (down gradient by surface topography). Lead was found in the surface soil at a maximum concentration of 1,000 ppm. No explosives were detected.

The structures in the load line must be removed for future use by the OHARNG. Explosively contaminated buildings must be desensitized using a thermal decomposition process. To prepare for thermal decomposition (TD) of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials will have to be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Thermal treatment of buildings will be conducted (non-ER,A funds). A RD/RA such as soil removal may be needed. Future use by the OHARNG consists of mounted training with no digging.

STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS: Explosives, Metals

MEDIA OF CONCERN: Soil, Groundwater, Sediment, Surface Water

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	200903
RD	200812	200905
RA(C).....	200905	200912
LTM.....	200912	201412

RC Expected: 200912

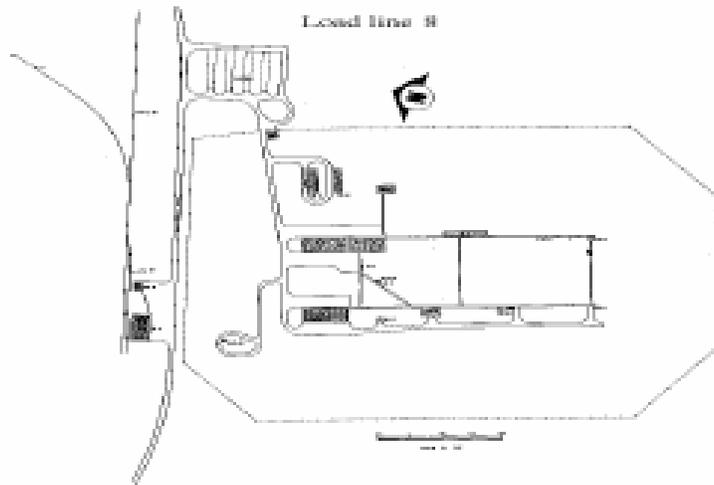
RVAAP-41

LOAD LINE 8 (PAGE 2 OF 2)

LTM consists of groundwater monitoring of six wells for five years. Land Use Controls may be needed. Future use of this land is restricted access - no digging.

Removal of five lead lined sumps and three hundred feet of associated piping and soils is anticipated in the IRP.

All foundations and footings (to 1 ft bgs) will be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).



RVAAP-42 LOAD LINE 9

SITE DESCRIPTION

This AOC operated from 1941 to 1945 to produce detonators. Load Line 9 was deactivated and its equipment removed in 1945.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. The surface soil and groundwater pathways are considered complete. Six surface soil samples were collected from outside of the production buildings and analyzed for explosives and metals. The sampling locations were selected based on the production use. Emphasis was placed on the buildings that were used to process and store the lead azide and tetryl. One sediment sample was originally going to be collected from one of the settling ponds at the AOC, but no settling ponds or other sediment pathways were evident. Subsurface soil data collected for RVAAP-26, Fuze and Booster Area Settling Tanks during the first RRSE, was used to score the groundwater pathway at the AOC. The subsurface soil used to estimate the groundwater pathway was collected adjacent to the settling tank on the east side of Building DT-5. Lead was the only contaminant that exceeded the RRSE standard concentration in the surface soil. No explosives were detected during the RRSE sampling. Limited samples taken in 2000 detected low levels (below 2%) of lead azide in sediment and surface water in the sumps. The buildings were thermally treated and the remaining structures removed in 2003. The Phase I RI field work was completed in November 2003.

CLEANUP STRATEGY

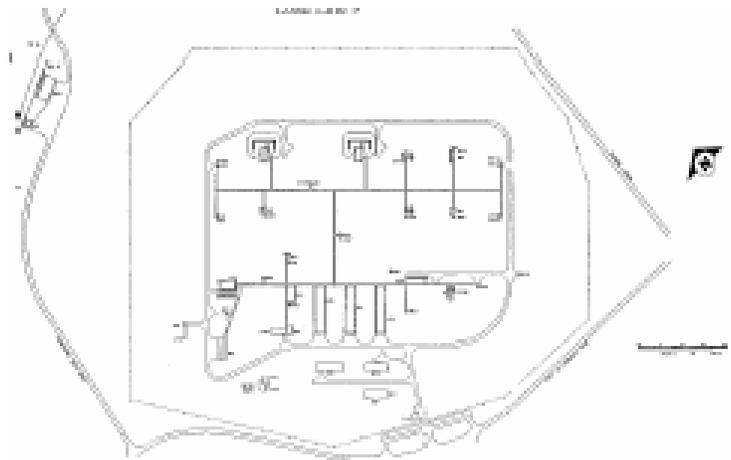
This AOC will be transferred to OHARNG in FY09+. The Preliminary Draft RI report is scheduled for November 2006. The Record of Decision is scheduled for August 2008. All foundations and footings (to 1 ft bgs) may be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source is to be determined). Removal of lead lined sumps and soil is anticipated in the IRP. LTM consists of land use controls and groundwater monitoring of seven wells for five years. Future use by the OHARNG consists of mounted training with no digging.

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Explosives, Metals
MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200208	200809
RD	200805	200901
RA(C).....	200901	201003
LTM.....	201003	201503

RC Expected: 201003



SITE DESCRIPTION

This AOC operated from 1941 to 1945 to produce percussion elements. Load Line 10 was placed on standby in 1945. From 1951 to 1957, LL-10 produced primers and percussion elements. From 1969 to 1971, LL-10 was used again to produce primers. It has been inactive since.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. The surface soil and groundwater pathways are considered complete. Six surface soil samples were collected from outside of the production buildings and analyzed for explosives, metals and cyanide. The sampling locations were selected based on the production use. Emphasis was placed on those buildings that were used to produce or store the explosives. LL10 is the only load line known to have lead thiocyanate, so cyanide was added to the

list of analytes. One sediment sample was originally going to be collected from one of the settling ponds at the AOC, but no settling ponds or other sediment pathway were evident. Antimony (maximum 600 ppm) and lead (maximum 3,100 ppm) were detected in the surface soil at levels above the RRSE standard concentrations. Small amounts of explosives (2,4,6 TNT, 4am 2,6 DNT and 2am 4,6 DNT) were detected in the surface soil. Subsurface soil data collected for RVAAP-26, Fuze and Booster Area Settling Tanks during the first RRSE, was used to score the groundwater pathway at the AOC. The subsurface soil used to estimate the groundwater pathway was collected adjacent to the settling tank on the west AOC of Bldg PE-6.

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Explosives, Metals
MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	200903
RD	200812	200905
RA(C).....	200905	200910
LTM.....	200910	201501

RC Expected: 200910

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

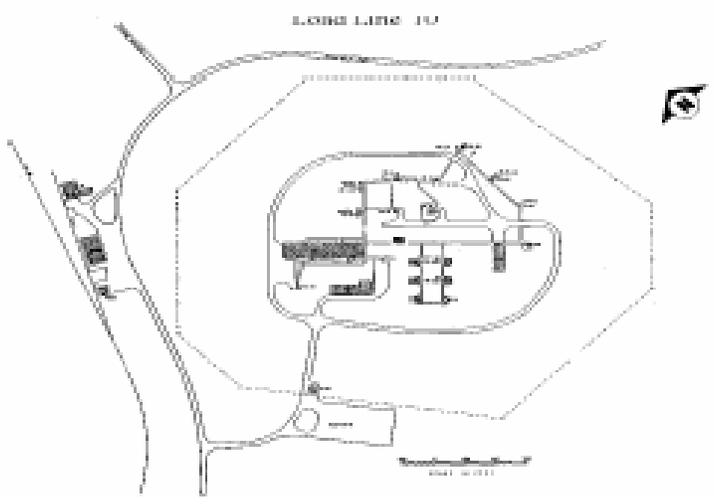
A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Future use of the load lines by the OHARNG consists of mounted training with no digging allowed. The structures in the load lines must be removed to allow for this use. Some explosively contaminated buildings are expected to require removal of explosive residue using a thermal decomposition (TD) process. To prepare for TD of the buildings, transite siding, paint chips, floor sweepings, mercury switches, PCB light ballasts, and other hazardous materials will be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review

RVAAP-43

LOAD LINE 10 (PAGE 2 OF 2)

process. The restoration program is not funding the TD. A RD/RA such as soil removal may be needed. LTM consist of groundwater monitoring of six wells for five years and land use controls. All foundations and footings (to 1 ft bgs) may be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).



SITE DESCRIPTION

This AOC operated from 1941 to 1945 to produce primers for artillery projectiles. Load Line 11 was placed on standby in 1945. From 1951 to 1957, LL-11 was used to produce primers and fuzes.

The relative risk AOC evaluation was completed in 1998 by USACHPPM. The surface soil, groundwater and sediment pathways are considered complete. Five surface soil samples were collected from outside of the production buildings and analyzed for explosives and metals. The sampling locations were selected based on the production use. Emphasis was placed on those buildings that were used to produce and store explosives. One sediment sample was collected and analyzed for the same constituents. The sediment sample was collected from a drainage ditch running north from the load line. Data collected for RVAAP-26, Fuze and Booster Area Settling Tanks during the first RRSE, was used to score the groundwater pathway at the AOC. The subsurface soil used to estimate the groundwater pathway was collected adjacent to the settling tank immediately to the east of Building AP-3. Arsenic was detected in the sediment slightly above the RRSE ecological screening concentration. Lead was the only contaminant found in the surface soil with a maximum concentration of 11,000ppm.

In 2001, the lead-lined sumps, lead contaminated sediments, and solvent contaminated soils were removed during an IRA in 2001. The Final IRA report was submitted in April 2004. Some of the sewer lines were also permanently plugged with grout to prevent migration of contaminants. The RI field work was conducted in FY01. The preliminary report was completed January 2005.

Note: No perchlorate was detected in the groundwater at or above the 4 ppb detection limit.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

The Final RI is scheduled for September 2005. Thermal treatment of buildings will be conducted. No remediation is expected. LTM consists of groundwater monitoring of ten wells for five years will follow and possible land use controls. OHARNG land use will be mounted training, with no digging.

Future use of the load lines by the OHARNG consists of mounted training with no digging allowed. The structures in the load lines must be removed to allow for this use. Some explosively

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Explosives, Metals, VOCs
MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	199910	200802
LTM	200810	201312

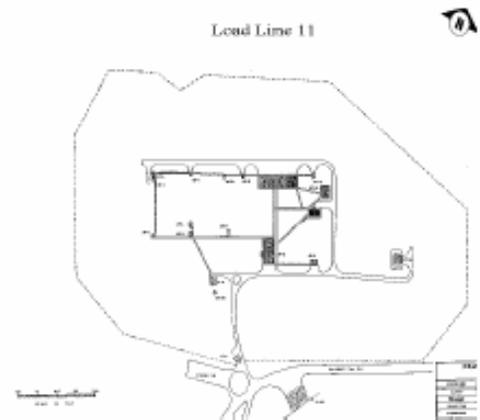
RC Expected: 200802

contaminated buildings are expected to require removal of explosive residue using a thermal decomposition (TD) process. To prepare for TD of the buildings, transite siding, paint chips, floor

RVAAP-44

LOAD LINE 11 (PAGE 2 OF 2)

sweepings, mercury switches, PCB light ballasts, and other hazardous materials will be removed from the buildings where explosive hazards do not pose an unreasonable risk. USEPA must approve thermal decomposition of buildings containing paints with greater than 50 ppm PCBs. The length of time the agency will need is uncertain as the project must undergo a lengthy review process. The restoration program is not funding the TD. A RD/RA such as soil removal may be needed. LTM consist of groundwater monitoring of six wells for five years and land use controls. All foundations and footings (to 1 ft bgs) may be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).



RVAAP-45 WET STORAGE AREA

SITE DESCRIPTION

This AOC was used from 1941 to 1945 to store (in igloos) lead azide, mercury fulminate and tetryl. The product was stored in water-filled drums. There is no documentation concerning any spills in the area. The surface soil pathway is considered complete.

Five surface soil samples were collected from the AOC and analyzed for explosives and metals. One sample was collected outside the door, just off of the edge of the concrete pad from each of the five buildings used for storage, or from the soil immediately below a discharge from a floor drain. The most significant contaminant concentrations were from lead (3,100ppm), mercury (49ppm) and cadmium (41ppm).

The buildings were thermally treated in spring 2003.

CLEANUP STRATEGY

This AOC will be transferred to OHARNG in FY09+.

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Soil removal is anticipated. Future use by the OHARNG consists of dismantled training without digging.

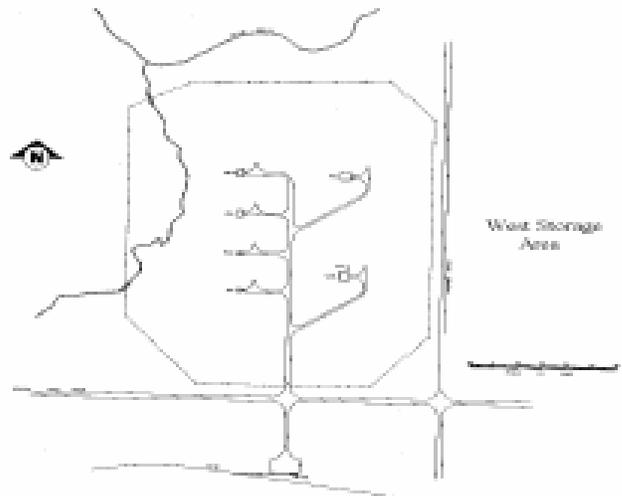
All foundations and footings (to 1 ft bgs) may be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).

STATUS

REGULATORY: CERCLA
RRSE: Low
CONTAMINANTS:
 Metals, Lead Azide, Mercury Fulminate, Tetryl
MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	200904
RD	200901	200906
RA(C).....	200906	201006
LTM.....	201010	201103

RC Expected: 201006



RVAAP-46 BLDGS F-15 AND F-16

SITE DESCRIPTION

These buildings were used during World War II, the Korean Conflict and Vietnam War to test miscellaneous explosives. Quantities and exact dates of testing are unknown.

The surface soil and sediment pathways are considered completed at this AOC. Four surface soil samples were collected from the AOC and analyzed for explosives and metals. Two samples were collected just outside of the foundations of each of the buildings. One sediment sample was collected in a drainage ditch leading to Sand Creek near Building F-16. Soil samples showed slightly elevated levels of lead (maximum 430 ppm) and arsenic (maximum 28 ppm).

Arsenic was also detected in the sediment at a maximum concentration of 9 ppm, approximately 1.5 times the ecological RRSE screening concentration. This AOC was transferred to OHARNG in May 1999.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Soil removal is anticipated. Future use by the OHARNG consists of dismantled training with digging up to seven feet.

Thermal treatment of buildings will be conducted (non-ER,A funds). All foundations and footings (to 1 ft bgs) may be removed. Flushing and grouting or removal of the underground utilities will be done as needed (funding source to be determined).

STATUS

REGULATORY: CERCLA
RRSE: Medium
CONTAMINANTS: Explosives, Metals
MEDIA OF CONCERN: Soil Sediment

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200312	200904
RD	200901	200906
RA(C).....	200906	201006
LTM.....	201010	201103

RC Expected: 201006



RVAAP-49 CENTRAL BURN PITS

SITE DESCRIPTION

This approximately 20 acre AOC was used for the burning of non-explosive scrap materials. The dates of operation for the AOC are unknown.

The surface soil and groundwater pathways are considered complete. Five surface soil samples were collected and analyzed for SVOCs, PCBs, herbicides, explosives and metals. One subsurface soil sample was collected and analyzed for the same compounds plus VOCs. The subsurface soil used to estimate the groundwater pathway was collected from the eastern limit (downhill side) of the main disturbed area. The USACHPPM sampling detected significant levels of antimony (maximum 9,000 ppm), arsenic (maximum 30 ppm) and lead (maximum 2,200 ppm) in the soil. Field work for the Phase I RI was done in summer 2001. The Phase I RI preliminary draft was submitted January 2005. This AOC was transferred to OHARNG in May 1999. This is one of the six AOCs in the FY05 PBC.

STATUS

REGULATORY: CERCLA

RRSE: High

CONTAMINANTS: VOCs, SVOCs, PCBs, Herbicides, Metals

MEDIA OF CONCERN: Soil, Groundwater, Surface water, Sediment

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200010	200610
RD	200506	200610
RA(C).....	200506	200709
LTM.....	200810	201310

RC Expected: 200709

CLEANUP STRATEGY

A RD/RA of soil removal may be required, followed by LTM. OHARNG future use will be dismantled training, with no digging. Land Use Controls are needed.



RVAAP-50 ATLAS SCRAP YARD

SITE DESCRIPTION

This AOC is the AOC of an old construction camp (approximately 150 acres) built to house workers during the construction of the plant. Facilities were demolished following World War II. Since that time, the area has been used as a scrap yard for miscellaneous materials. UXO is present at the southwest corner of the AOC.

Preliminary samples detected low levels of PAHs in soil and metals in one screening groundwater sample. Non-IRP sorting and removal of OE and OE scrap at the AOC has been partially completed. Soil samples showed levels of benzo(a)pyrene (maximum 22 ppm), and dibenzo(a,h)anthracene (maximum 7.3 ppm) above the human RRSE standard concentrations.

This AOC was transferred to OHARNG in May 1999.

CLEANUP STRATEGY

A characterization report for fourteen AOCs, including this AOC, is due in December 2005. This report will be used to procure a future PBC for the remaining AOCs at RVAAP. This PBC will take these AOCs to RIP/RC.

Future use by the OHARNG consists of mounted training without digging.

LTM consisting of ground water monitoring with eight wells and land use controls are anticipated. Soil removal is anticipated.

STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS: Explosives, VOCs, SVOCs, Metals and PCBs

MEDIA OF CONCERN: Soil, Groundwater, Surface Water, Sediment

PHASES	Start	End
PA	199802	199806
SI	199807	199807
RI	200408	200903
RD	200810	200905
RA(C).....	200905	200910
LTM.....	201004	201506

RC Expected: 200910



PBC AT RAVENNA (2003 & 2005)

SITE DESCRIPTION

This site was created to track the funding for the PBC at Ravenna AAP.

CLEANUP STRATEGY

Additional work is planned.

STATUS

REGULATORY: CERCLA

RRSE: Medium

CONTAMINANTS:

Metals

MEDIA OF CONCERN:

Groundwater

PHASES	Start	End
PA	200308	200308
RA(C).....	200310	200701
LTM.....	200701	2001201

RC Expected: 200701

Ravenna Army Depot

INSTALLATION RESTORATION PROGRAM RESPONSE COMPLETE SITES

Response Complete Site Detail

AEDB-R Number	AEDB-R Title	RC Date
RVAAP-03	OPEN DEMOLITION AREA #1	200309
RVAAP-07	BLDG. 1601 HAZARDOUS WASTE STORAGE	198906
RVAAP-14	LOAD LINE 6 EVAPORATION UNIT	198906
RVAAP-15	LOAD LINE 6 TREATMENT PLANT	200001
RVAAP-17	DEACTIVATION FURNACE	198906
RVAAP-18	LOAD LINE 12 WASTEWATER TREATMENT PLANT	199703
RVAAP-20	SAND CREEK SEWAGE TREATMENT PLANT	198906
RVAAP-21	DEPOT SEWAGE TREATMENT PLANT	198906
RVAAP-22	GEORGE ROAD SEWAGE TREATMENT PLANT	198906
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	198906
RVAAP-24	WASTE OIL TANK	198911
RVAAP-25	BLDG. 1034 MOTOR POOL AST	198906
RVAAP-26	FUZE BOOSTER AREA SETTLING TANKS	200001
RVAAP-27	BUILDING 854, PCB STORAGE	198906
RVAAP-30	LOAD LINE 7 WASTEWATER TREATMENT	200001
RVAAP-31	ORE PILE RETENTION POND	200001
RVAAP-35	1037 BUILDING- LAUNDRY WASTEWATER SUMP	200001
RVAAP-37	PESTICIDE BUILDING S-4452	199602
RVAAP-47	BUILDING T-5301	200109
RVAAP-51	PARIS-WINDHAM ROAD	200409

PAST MILESTONES

1989

IRP Phase Start Date

1990

PA, Installation 38 AOCs

1996

PA/RI Action Plan

Phase I RI High Priority AOCs

1998

Phase II RI Winklepeck Burning Grounds Field Work Complete/Draft Report under Review

Facility-wide Background Field Work Complete/Draft Report currently under Review

RRSE for 13 new AOCs Field Work Complete/Draft Report Currently Under Review

1999

RI - Phase II Erie Burning Grounds

RI - Phase II NACA Test Area

RI - Phase II Open Demolition Area #1

2000

IRA - LL 12/ Bioremediation Pilot Study Demonstration Complete

RI - Phase II Erie Burning Grounds Draft Report Completed/ Under Review

RI - Phase I NACA Test Area Field Work/Draft Report Completed/Under Review

RI - Phase I Open Demolition Area #1 Field Work/Draft Report Completed/ Under Review

RI - Winklepeck Open Burning Grounds Ecological Risk Assessment Field Work Complete

IRA - Building 5301 Completed/No Further Action Status

Facility-Draft Revision to Wide SAP and HSP completed

2001

RI - Phase I Load Line 11 Field Work Complete

RI - Phase II Load Line 1, 12 Field Work Complete

FS - Winklepeck Field Work Completed

RI - Phase I Load Line 11 Field Work Completed

IRA - Open Demolition Area #1 Fieldwork Completed

RI - Load Lines 2, 3, 4 Fieldwork (Phase II) Completed

RI - Central Burn Pits Phase I Fieldwork Completed

RI - Upper & Lower Cobb Ponds Phase I Fieldwork Completed

2002

RI- Phase II Open Demolition Area #2 Fieldwork Completed

- Work Plans completed for the IRAs at Paris Windham Road Dump (RVAAP-51) and Sand Creek Disposal Road

Landfill (RVAAP-34)

- IRA reports for Open Demolition Area #1 (RVAAP-03) and Load Line 11 (RVAAP-44) issued
- Work Plans for Open Demolition Area #2 completed
- Draft Final Report for Winklepeck Burning Grounds Biological Field Truthing project issued.
- Work Plans issued for Facility-wide Human Health and Ecological Risk Assessments issued.
- Draft Work Plans for Facility-wide surface water assessment issued

2003

PBC for soil/sediment at Load Lines 1, 2, 3 and 4

RI- Field work for LL 6 & 9 and the Fuze & Booster Quarry Landfill Pond Completed

2004

- Facility wide surface water assessment
- Finalize RI for load lines 1, 2, 3, 4, 12
- Finalize Load Line 11 IRA
- Signing of findings and orders
- Award and completion of field work for the 14 AOCs characterization study
- Initiation of facility wide groundwater monitoring plan
- RVAAP facility wide Human Health Risk Manual
- RVAAP facility wide Ecological Risk Work Plan
- Establishment of the RVAAP communication and environmental information management system, including websites (REIMS)
- Initiated comprehensive inter-agency project schedule
- Finalize UXO ASR
- Finalize Winklepeck Burning Ground Focused Feasibility Study

PROJECTED MILESTONES

Projected ROD/DD Approval Dates:

2007: RVAAP-01,02,04,05,08,09,10,11,12,16,,32,49

2008: RVAAP-28, 29, 44

2009+: RVAAP-06,13,19,33,36,38,39,40,41,42,43,45,46,48,50

Projected Construction Completion: 2037

Projected Completion Date of all RA(C) Activities: 2010

Projected Completion Date of IRP (including LTM phase): 2044

Schedule

Ravenna AAP Installation Action Plan Schedule (Based on Cost-to-Complete)

AEDB-CC#	SITE NAME	PHASE	FY06	FY07	FY08	FY09	FY10+
PBC at Ravenna	PBC 03: Load Lines 1-4 (RVAAP-08, 09, 10, 11) PBC 05: 6 High Sites (RVAAP-01, 02, 04, 12, 16, 49)	RA(C)					
		LTM					
RVAAP-01	RAMSDELL QUARRY LANDFILL (H)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-02	ERIE BURNING GROUNDS (H)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-04	OPEN DEMOLITION AREA #2 (H)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-05	WINKLEPECK BURNING GROUNDS (H)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-06	C BLOCK QUARRY (L)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-08	LOAD LINE1 (H)						
RVAAP-09	LOAD LINE 2 (H)						
RVAAP-10	LOAD LINE 3 (H)						
RVAAP-11	LOAD LINE 4 (H)						
RVAAP-12	LOAD LINE 12 DILUTION/SETTLING POND (H)	RI					
		RD					
		RA(C)					
		RA(O)					
RVAAP-13	BLDG. 1200 DILUTION/SETTLING POND (L)	LTM					
		RI					
		RD					
		RA(C)					
RVAAP-16	FUZE AND BOOSTER QUARRY LANDFILL POND (H)	LTM					
		RI					
		RD					
		RA(C)					
RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS (L)	LTM					
		RI					
		RD					
		RA(C)					
RVAAP-28	MUSTARD AGENT BURIAL SITE (L)	RA(O)					
		LTM					
RVAAP-29	UPPER AND LOWER	RI					

AEDB-CC#	SITE NAME	PHASE	FY06	FY07	FY08	FY09	FY10+
	COBB PONDS (M)	LTM					
RVAAP-33	LOAD LINE 6 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL (H)	LTM					
RVAAP-36	PISTOL RANGE (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-38	NACA TEST AREA (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-39	LOAD LINE 5 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-40	LOAD LINE 7 (L)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-41	LOAD LINE 8 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-42	LOAD LINE 9 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-43	LOAD LINE 10 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-44	LOAD LINE 11 (M)	RI					
		LTM					
RVAAP-45	WET STORAGE AREA (L)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-46	BLDG F-15 &F-16 (M)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-48	ANCHOR TEST AREA (M)	RI					
		LTM					
RVAAP-49	CENTRAL BURN PITS (H)	RI					
		RD					
		RA(C)					
		LTM					
RVAAP-50	ATLAS SCRAP YARD (M)	RI					
		RD					
		RA(C)					
		LTM					

Ravenna Army Ammo Plant Constrained Cost-To-Complete

AEDB- R#	SITE/TITLE	Transfer Date	Phase	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Activity Description	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
01	RAMSDELL QUARRY LANDFILL (H)	FY07	RI											0	478	USACE Technical Support for RI/FS/PP/ROD included under PBC at Ravenna RAC (08 FY06)	W91ZQR-05-F-0033	percentage of PBC award	P. Zorko 23 Feb 05
02	ERIE BURNING GROUNDS (H)	FY09	RI											0	1039	USACE Technical Support for RI/FS/PP/ROD included under PBC at Ravenna RAC (08 FY06)	W91ZQR-05-F-0033	percentage of PBC award	P. Zorko 23 Feb 05
04	OPEN DEMOLITION AREA #2 (H)	FY09	RI											0	817	USACE Technical Support for RI/FS/PP/ROD included under PBC at Ravenna RAC (08 FY06)	W91ZQR-05-F-0033	percentage of PBC award	P. Zorko 23 Feb 05
05	WINKLEPECK BURNING GROUNDS (H)	FY06	RI	58										58	1058	USACE Technical Support for RI/FS/PP/ROD included under PBC at Ravenna RAC (08 FY06)	W91ZQR-05-F-0033	percentage of PBC award	P. Zorko 23 Feb 05
06	BLOCK QUARRY (L)	FY09	RI											918	2671	USACE Technical Support for RI/FS/PP/ROD included under PBC at Ravenna RAC (08 FY06)	W91ZQR-05-F-0033	percentage of PBC award	P. Zorko 23 Feb 05

Ravenna Army Ammo Plant Constrained Cost-To-Complete

AEDB-R#	SITE TITLE	Transfer Date	Phase	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Activity Description	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
RVAAP-08	LOAD LINE 1 (H)	FY07	RI											0		Classified IRIP 2003. Outyear costs covered under RVAAP-PBC at Ravenna			
RVAAP-09	LOAD LINE 2 (H)	FY07	RI											0		Classified IRIP 2003. Outyear costs covered under RVAAP-PBC at Ravenna			
RVAAP-10	LOAD LINE 3 (H)	FY07	RI											0		Classified IRIP 2003. Outyear costs covered under RVAAP-PBC at Ravenna			
RVAAP-11	LOAD LINE 4 (H)	FY07	RI											0		Classified IRIP 2003. Outyear costs covered under RVAAP-PBC at Ravenna			
RVAAP-12	LOAD LINE 12 DILUTION/SETTLING POND (H)	FY08	RI											0		USACE Technical Support for RIFFS/PP-ROD included under PBC at Ravenna RACI (8k fy 06)	W91ZQR-05-F-0033	percentage of PBC award	
			RD											0		USACE Technical Support for RD included under PBC at Ravenna RACI (3k fy06)	W91ZQR-05-F-0033	percentage of PBC award	
			RA(C)											0		USACE Technical Support for RACI included under PBC at Ravenna RACI (23k fy07)	W91ZQR-05-F-0033	percentage of PBC award	
			RA(O)	315	158	246	125	108	132	108	55	295	2542	0		10 wells for groundwater monitoring for natural attenuation for thirty years; two years quarterly, 5 years semi-annual, 23 years annual. PCO	RACER	MFR	T. Lamb, 23MAR05
			LTM									44	44	44	2586	Project closeout	RACER	MFR	T. Lamb, 23MAR05
RVAAP-13	BLDG 1306 DILUTION/SETTLING POND (L)	FY09	RI	165	150									315		Completion of the RIFFS, PP-ROD	RACER	MFR	T. Lamb, 23MAR05
			RD			5								5		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)				180							180		Soil removal, Construction completion reports	RACER	MFR	T. Lamb, 23MAR05
			LTM					120	121	48	24	51	364	0	864	Groundwater monitoring for five years, 4 wells; two years quarterly, one year semi-annually, and two years annually. Well abandonment, PCO	RACER	MFR	T. Lamb, 23MAR05
RVAAP-16	BLZE AND BOOSTER QUARRY LANDFILL POND (H)	FY09	RI											0		USACE Technical Support for RIFFS/PP-ROD included under PBC at Ravenna RACI (48k fy06)	W91ZQR-05-F-0033	percentage of PBC award	
			RD											0		USACE Technical Support for RD included under PBC at Ravenna RACI (2k fy06)	W91ZQR-05-F-0033	percentage of PBC award	
			RA(C)											0		USACE Technical Support for RACI included under PBC at Ravenna RACI (23k fy07)	W91ZQR-05-F-0033	percentage of PBC award	
			LTM	235	757	22	22	48	22	22	48			1106		Groundwater monitoring for five years, 12 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb, 23MAR05
RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS (L)	FY09	RI	254	150									404		Completion of RIFFS, PP-ROD	RACER	MFR	T. Lamb, 23MAR05
			RD			34								34		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)			756	95							851		2.5 acres wide and two feet deep cap	RACER	MFR	T. Lamb, 23MAR05
			RA(O)				163	109	73	117	548			548		Cap Monitoring and maintenance at 8k per year. Groundwater sampling of 4 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb, 23MAR05
RVAAP-28	MUSTARD AGENT BURIAL SITE (L)	FY09	RI	66	98									164	1837	Project close out and PP-ROD; USACE Tech Support	RACER	MFR	T. Lamb, 23MAR05
			LTM				324	7	7	7	43			395		Groundwater monitoring for five years, 4 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb, 23MAR05
RVAAP-29	UPPER AND LOWER COBB PONDS (M)	FY07	RI	70										70		PP-ROD, USACE Tech Support	RACER	MFR	T. Lamb, 23MAR05
			LTM				470	5	5	5	36			526		Groundwater monitoring for five years, 6 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb, 23MAR05
RVAAP-33	LOAD LINE 6 (M)	FY09	RI	190										190		Completion of RIFFS, PP-ROD	RACER	MFR	T. Lamb, 23MAR05
			RD			16								16		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)				629							629		3000 CY soil removal	RACER	MFR	T. Lamb, 23MAR05
			LTM					186	247	34	42	38	589	1424		Groundwater monitoring for five years, 7 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb, 23MAR05

Ravenna Army Ammo Plant Constrained Cost-To-Complete

AEDB-R#	SITE TITLE	Transfer Date	Phase	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Activity Description	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
34	RVAAP-SAND CREEK DISPOSAL ROAD LANDFILL (H)	FY09	LTM	2721	2047	1711	1605	1238	112	112	112	112		9770		FY06-FY10: 2,320 M for Groundwater monitoring for four years; FY06-FY09: 30K per year Risk Assessment Updates; FY06-FY14: 100K per year Ravenna Environmental Information Management System; FY06-14: 10 K per year Property Management Plan (LLC); FY06-FY10: 120 K per year Facility Scheduling; and FY06-10: 265K per year Facility-wide documents and their addendums; FY06-10: Rapid Response Team (250K/yr)	RACER	MFR	C. Mitchell; 5 Feb 05
36	RVAAP-PISTOL RANGE (M)	FY07	RI		223									223	9770	Completion of RIFS; PP-ROD	RACER	MFR	T. Lamb; 23MAR05
			RD			11								11		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)				424							424		Soil Removal	RACER	MFR	T. Lamb; 23MAR05
			LTM						25					25	683	PCO	RACER	MFR	T. Lamb; 23MAR05
38	RVAAP-INACA TEST AREA (M)	FY09+	RI		306									306		Completion of RIFS; PP-ROD	RACER	MFR	T. Lamb; 23MAR05
			RD			22								22		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)				150							150		Soil Bi-remediation	RACER	MFR	T. Lamb; 23MAR05
			LTM					305	353	86	68	48	928	928	1406	Groundwater monitoring for five years, 12 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb; 23MAR05
39	RVAAP-LOAD LINE 5 (M)	FY09+	RI		210									210		Completion of FS, Risk Assessments	RACER	MFR	T. Lamb; 23MAR05
			RD			6								6		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)				218							218		Soil Removal	RACER	MFR	T. Lamb; 23MAR05
			LTM					163	211	20	35	35	36	500	934	Groundwater monitoring for five years, 6 wells; two years quarterly, one year semi-annually, and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb; 23MAR05
40	RVAAP-LOAD LINE 7 (L)	FY09+	RI		355	319	390							1064		Completion of RIFS; PP-ROD	RACER	MFR	T. Lamb; 23MAR05
			RD					6						6		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)					218						218		Soil removal, lead lined sump and line removal	RACER	MFR	T. Lamb; 23MAR05
			LTM						213	112	70	35	71	501	1789	Groundwater monitoring for five years, 6 wells; two years quarterly, one year semi-annually, and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb; 23MAR05
41	RVAAP-LOAD LINE 8 (M)	FY09+	RI		863	217								1080		Completion of RIFS; PP-ROD	RACER	MFR	T. Lamb; 23MAR05
			RD			6								6		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)				218							218		Soil removal, lead lined sump and line removal	RACER	MFR	T. Lamb; 23MAR05
			LTM					241	289	20	35	35	36	656	1960	Groundwater monitoring for five years, 6 wells; two years quarterly, one year semi-annually, and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb; 23MAR05
42	RVAAP-LOAD LINE 9 (M)	FY09+	RI		61									61		Completion of RIFS; PP-ROD	RACER	MFR	T. Lamb; 23MAR05
			RD			6								6		Design	RACER	MFR	T. Lamb; 23MAR05
			RA(C)				218							218		Soil removal, lead lined sump and line removal	RACER	MFR	T. Lamb; 23MAR05
			LTM					298	288	34	42	42	38	742	1027	Groundwater monitoring for five years, 7 wells; two years quarterly, one year semi-annually, and two years annually. Well abandonment, PCO.	RACER	MFR	T. Lamb; 23MAR05

Ravenna Army Ammo Plant Constrained Cost-To-Complete

AEDB- R #	SITE TITLE	Transfer Date	Phase	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Activity Description	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
43	RVAAP-LOAD LINE 10 (M)	FY09+	RI		651	355								1006		Completion of RIFS; PP-RD	RACER	MFR	T. Lamb, 23MAR05
			RD			6								6		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)			218								218		Soil removal, lead lined sump and line removal	RACER	MFR	T. Lamb, 23MAR05
			LTM				580	10	10	10	10	36	656	656		Groundwater monitoring for five years, 6 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCCO.	RACER	MFR	T. Lamb, 23MAR05
44	RVAAP-LOAD LINE 11 (M)	FY09+	RI		16	23								39	1886	USACE Tech Support (IS/PPROD)	RACER	MFR	T. Lamb, 23MAR05
			LTM			293	381	105	57	57	45		938	938		Groundwater monitoring for five years, 10 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCCO.	RACER	MFR	T. Lamb, 23MAR05
45	RVAAP-WET STORAGE AREA (L)	FY09+	RI		330									330	977	Completion of RIFS; PP-RD	RACER	MFR	T. Lamb, 23MAR05
			RD			3								3		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)			122								122		Soil Removal	RACER	MFR	T. Lamb, 23MAR05
			LTM					25						25	480	PCCO	RACER	MFR	T. Lamb, 23MAR05
46	RVAAP-BLDG F-15 & F-16 (M)	FY99	RI		366									366		Completion of RIFS; PP-RD	RACER	MFR	T. Lamb, 23MAR05
			RD			11								11		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)			376								376		Soil Removal	RACER	MFR	T. Lamb, 23MAR05
			LTM					25						25	778	PCCO	RACER	MFR	T. Lamb, 23MAR05
48	RVAAP-ANCHOR TEST AREA (M)	FY09+	RI		238	69								307		Completion of RIFS; PP-RD	RACER	MFR	T. Lamb, 23MAR05
			LTM			609	13	13	13	13	32		693	693		Groundwater monitoring for five years, 4 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCCO.	RACER	MFR	T. Lamb, 23MAR05
49	RVAAP-CENTRAL BURN PITS (H)	FY99	RI											0	1000	USACE Technical Support for RIFS/PPROD included under PBC at Ravenna RAC (LGR 106)	W91ZQR-05-F-0033	percentages of PBC award	T. Lamb, 23MAR05
			RD											0		USACE Technical Support for RD included under PBC at Ravenna RAC (3K 606)	W91ZQR-05-F-0033	percentages of PBC award	T. Lamb, 23MAR05
			RA(C)											0		USACE Technical Support for RAC included under PBC at Ravenna RAC (626K 1907)	W91ZQR-05-F-0033	percentages of PBC award	T. Lamb, 23MAR05
			LTM			550	12	12	12	40			626	626		Groundwater monitoring for five years, 8 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCCO.	RACER	MFR	T. Lamb, 23MAR05
50	RVAAP-ATLASSCRAP YARD (M)	FY99	RI		358									358		Completion of RIFS; PP-RD	RACER	MFR	T. Lamb, 23MAR05
			RD			20								20		Design	RACER	MFR	T. Lamb, 23MAR05
			RA(C)			901								901		Debris and Soil Removal	RACER	MFR	T. Lamb, 23MAR05
			LTM				643	89	13	13	13	40	811	811		Groundwater monitoring for five years, 8 wells; two years quarterly, one year semi-annually and two years annually. Well abandonment, PCCO.	RACER	MFR	T. Lamb, 23MAR05
			Annual Totals		7,655	3,947	12,035	5,718	3,876	1,346	1,277	917	2,216	43,310	43,310				
			POA Budget		7,655	3,947	12,035	5,718	3,876	1,346	1,277	917	2,216	43,310	43,310				
			Difference		0	0	0	0	0	0	0	0	0	0	0				

*rev. 20 June 2005 by aec

PRIOR YEAR FUNDING

FY 1994	\$9,371	
FY 1995	\$1,232,321	
FY 1996	\$333,828	
FY 1997	\$1,325,481	
FY 1998	\$62,312	
FY 1999	\$1,471,177	
FY 2000	\$6,001,500	
FY 2001	\$4,850,400	
FY 2002	\$ 3,251,500	
FY 2003	\$13,259,430	
FY 2004	\$ 2,878,740	
Prior Year Funding Total		\$34,578,322

CURRENT YEAR FUNDING

FY05: \$2,829,000

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: \$43,310,000

TOTAL IRP PROGRAM COSTS: \$76,982,322

Community Involvement

The RVAAP Restoration Advisory Board (RAB) was established in 1996 and has 25 members consisting of 23 community members and 2 non-community members. The community members include an appointee from each of the surrounding 6 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 February 19, 1997. A copy can be found on the RVAAP web site RVAAP.org, as well as two public repositories.

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. There have been presentations by the Ohio Department of Health addressing health issues related to the cleanup; by the contractors that are performing remediation work; by WES on the explosive uptake by vegetation; Corps of Engineers describing newly identified contaminated AOCs; and the US Army Center for Health Promotion and Preventive Medicine to explain the rating of AOCs for funding and the process of performing ecological and human health risk assessments. The minutes of all RAB meetings are recorded. All meetings are announced in the local media. The RAB members and media normally participate in a summer tour of the facility to visit AOCs undergoing remediation. The last tour was held on July 27, 2002. Regular RAB meetings were held during the past year covering such topics as Guaranteed Fixed Price Remediation (now called PBC) at LLs 1-4, progress of the remedial investigations at Open Demolition Area #2 and Fuze and Booster Quarry Ponds/Landfill and thermal decontamination at excess production buildings. A summer tour was not held in 2003 due to the lack of interest. During 2004, regular RAB meetings were held to discuss current projects and issues and a tour was held in August for RAB members, the media, and elected officials to view ongoing restoration activities.

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 RVAAP.org. RVAAP publishes the semiannual Community Access Newsletters to keep the public up to date on all IRP and other environmental work at RVAAP. The RAB received \$25,000 for technical assistance for public participation (TAPP) (technical review) in April 1999. They recently received a second TAPP grant of \$25,000. This funding was used to review the Ecological Field Truthing report for Winklepeck Burning Grounds. The review of the report by the TAPP provider and the RAB were favorable.

In 2003, a Community Relation Plan was written 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 Ravenna AAP involves the community in the restoration activities, including through the RAB, AOC tours and issuance of fact sheets and newsletters.

Ravenna Army Ammunition Plant

MILITARY MUNITIONS RESPONSE PROGRAM

AEDB-R MMRP AOCs/AOCs RC: 19/0

AEDB-R AOC TYPES:

- 11 Unexploded Munitions/Ordnance
- 1 Exploded Ordnance Disposal Area
- 2 Disposal Pit/Dry Well
- 5 Open Burn

CONTAMINANTS OF CONCERN: MEC

MEDIA OF CONCERN: Soil, Surface water and Sediment

COMPLETED REM/IRA/RA: None

TOTAL MMRP FUNDING:

PRIOR YEAR	\$25,000
CURRENT – FY05	\$450,000
FUTURE	\$ 9,216,000

DURATION OF MMRP:

Year of MMRP Inception:	2002
Year of RA Completion:	2012
Year of MMRP Completion:	2044

MMRP Contamination Assessment

Twelve load lines at RVAAP were used to load assemble, and pack (LAP) high explosive munitions and components during World War II, and the Korean and Vietnam Wars. Munitions were also periodically demilitarized and renovated during non-production periods up until 1988. More than 36 million large caliber projectiles, 600 thousand general-purpose bombs, and 420 million munition components such as fuzes, boosters, and percussion elements were produced during World War II. During the Korean War, more than 11 million projectiles, 4 million propelling charges and cartridges, 220 million munition components, and a million antitank mines were produced. Although production declined during the Vietnam War compared to the previous two production periods, RVAAP produced in excess of two and a half million large caliber projectiles, 16 million 40-millimeter grenades, seven million fuzes and 80 million primers. Most of the demilitarization of munitions took place after World War II and the Korean War. Millions of off spec or excess RVAAP munitions were either disassembled with the explosives being recovered or they were burned or detonated at various locations on the facility. Some high explosive munitions made at other U.S. facilities and even from Europe were sent to RVAAP to be demilitarized.

With the exception of ammonium nitrate, all hardware components and explosives used in the LAP operations at RVAAP were manufactured at other facilities. Load Line 12 was used from 1941 to 1943 to make high-grade ammonium nitrate used for mixing with TNT to make amatol. Fertilizer grade ammonium nitrate was produced in the late 1940s for export to Europe. In addition to amatol and pure TNT, Composition B, a mixture of RDX and TNT, was the only other secondary explosive used in large quantities at RVAAP. The primary explosives, lead azide and lead styphnate, were used extensively in the fuze and booster lines. Tetryl and black powder were also used in the components made at these lines. The principle propellants used at RVAAP were nitrocellulose, nitroglycerine, and nitroguanidine in various mixtures. Projectiles from 37 to 240 millimeter were produced at RVAAP with 90, 120, and 155 millimeter being the most common caliber. The general-purpose bombs produced at the facility ranged from 100 to 2,000 pounds gross weight. More information on the chemicals and types of munitions used or produced at RVAAP can be found in the June 2004 ASR for RVAAP.

An inventory of the closed, transferring, and transferred (CTT) ranges or AOCs at RVAAP was completed in November 2003 under the Army's Military Munitions Response Program (MMRP) in order to meet the requirement of the OSD DERP Management Guidance and the follow-on requirements of the FY02 Defense Authorization Act. The inventory identified 19 MMRP AOCs at RVAAP totaling 1,460.39 acres that are known or suspected to contain munitions and explosives of concern (MEC). These AOCs include former open burning and demolition grounds, disposal AOCs, test ranges, and load lines. Not being maintained for more than 30 years, many of these AOCs are now overgrown with brush, saplings, and even large trees and some such as Ramsdell Quarry and Erie Burning Grounds are permanently flooded. A portion of the D Block safety fan originating from the accidental explosion of Igloo 7-D-15 is the only transferred AOC. The explosive safety risk of each of the AOCs was evaluated using the Risk Assessment Code (RAC) process. AOC specific information and more on the RAC scores can be found in the CTT Inventory.

Most of the known MEC at RVAAP is at Open Demolition Area (ODA) #2 and Winklepeck Burning Ground (WBG). MEC and MEC scrap are on the surface and buried throughout WBG and ODA #2 and to a lesser degree on the surface beyond the AOC as a result of kick-outs. Munitions

MMRP Contamination Assessment

detonated at ODA #2 and burned at WBG were usually un-fuzed with the exception of 40-millimeter grenades, which have an integral fuze. Other AOCs, such as Fuze and Booster Quarry Ponds, Ramsdell Quarry Landfill, and Erie Burning Grounds were used for disposal of MEC while others, such as Load Line 12 and Buildings F-15 and F-16 contain MEC incidental to production or testing. Only small amounts of MC have been found at a couple AOCs.

Bombs as large as 500 pounds and projectiles up to 240 millimeter were detonated at WBG. The AOC is currently being cleared of MEC in critical areas to support the construction of a MARK 19 firing range. White phosphorus is present at ODA #2.

The 1.5 acre RCRA unit in ODA #2 was cleared of MEC to a depth of four feet from 1999 to 2000. The MMRP at RVAAP is based upon the phased approach similar to the restoration (CERCLA) program. Starting in 2005, a Site Inspection (SI) is planned for all AOCs except for WBG. The SI will further identify the boundaries and types of munitions at the AOCs using limited geophysical and intrusive studies. The SI will then be used to determine whether additional study and/or remedial action will be necessary. Long term monitoring of the AOCs will be required to ensure the selected remedy continues to be effective and any land use controls are being followed. The SI is expected to be done by December 2006 but remediation of MEC will not be completed until 2012. Ohio EPA will be the lead regulatory agency and all stakeholders including the RAB members and the public, will be encouraged to provide their input into the MMRP.

Title	Author	Date
Closed, Transferring and Transferred Range/Site Inventory Report. Ravenna Army Ammunition Plant, Ohio.	E2M for U.S. Army Corps of Engineers	November 2003
Archives Search Report for the Ravenna Army Ammunition Plant.	U.S. Army Corps of Engineers	June 2004



CTT Range, UXO, DMM, and MC Site Map Ravenna AAP, OH



Figure E-1

Range Area	Acres
A/I	2,879
Closed	1,441.14
Transferring	0
Transferred	19.25



- Contours
 - County Boundary
 - Installation Boundary
 - Railroads
 - Roads
 - Streams
 - Water
- Range or UXO-DMM-MC Site Status**
- A/I
 - Non-range, Non-UXO-DMM-MC site
 - Closed
 - Transferring
 - Transferred

Projection UTM, Zone 17
 Horizontal Datum NAD83
 Units Meters
 Grid 3,000 Meter
 Contour Interval 5 Meters

1:40,000

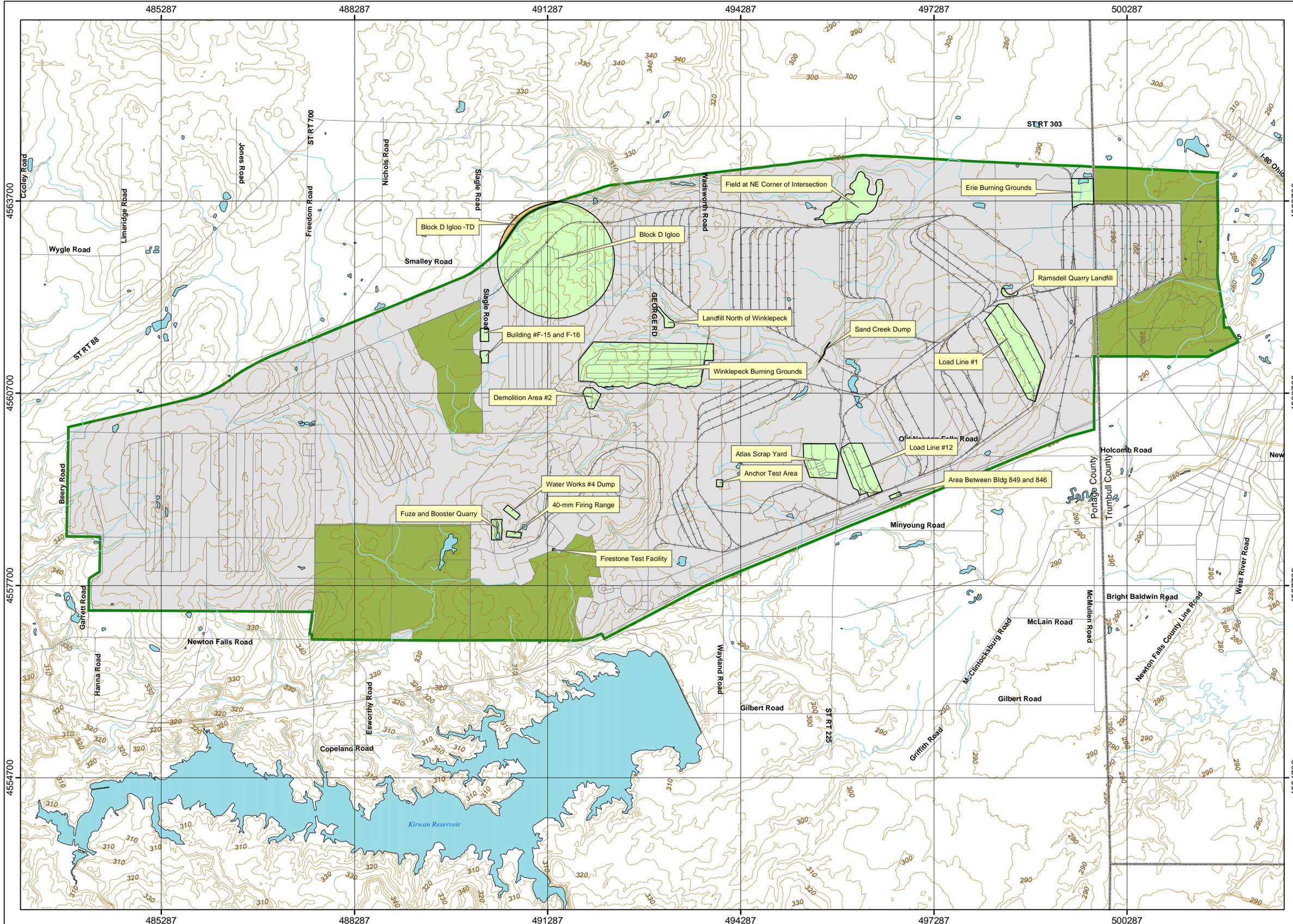
0 0.5 1 2 Kilometers

0 0.25 0.5 1 Miles

Installation Location
Ohio



Closed, Transferring, and Transferred Ranges, UXO, DMM, or MC Sites, Ravenna AAP, OH
 Source: Produced for the U.S. Army Corp of Engineers by engineering-environmental Management Inc. (e2M)
 Date: November 2003
 Edition: Final CTT Range Inventory - Ravenna AAP, OH



CTT Range,
UXO, DMM and MC
Site Map
Ravenna AAP
Eastern Section

Figure E-2

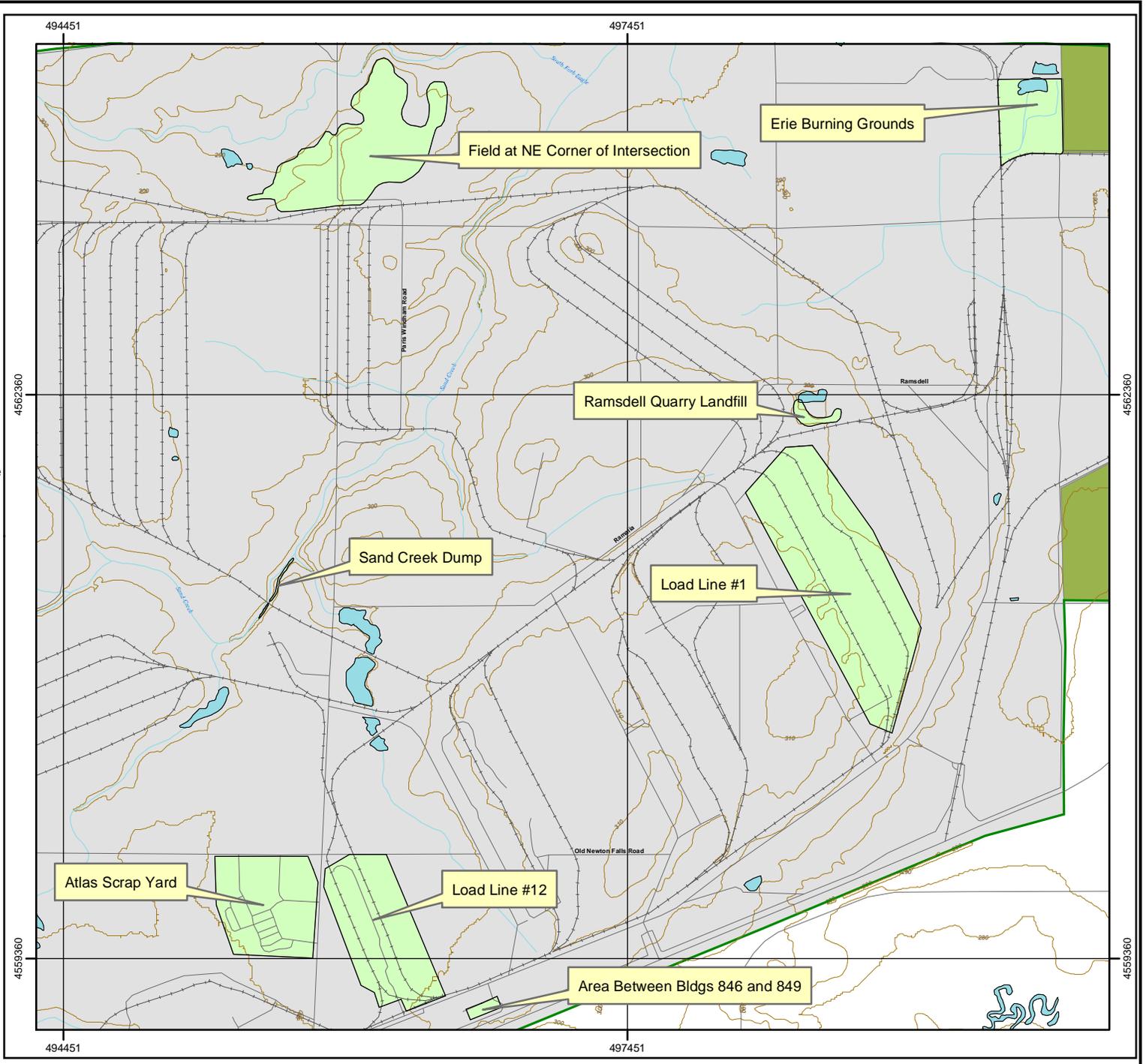
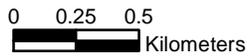
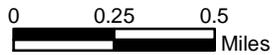


Legend

- Contours
 - Installation Boundary
 - Railroads
 - Roads
 - Streams
 - Water
- Range or UXO-DMM-MC Site Status
- A/I
 - Non-range, Non-UXO-DMM-MC site
 - Closed
 - Transferred
 - Transferring

Projection UTM, Zone 17
Horizontal Datum NAD 83
Units Meters
Grid Interval 3,000 meter
Contour Interval 5 meters

1:30,000



CTT Range,
UXO, DMM and MC
Site Map
Ravenna AAP
Western Section

Figure E-3

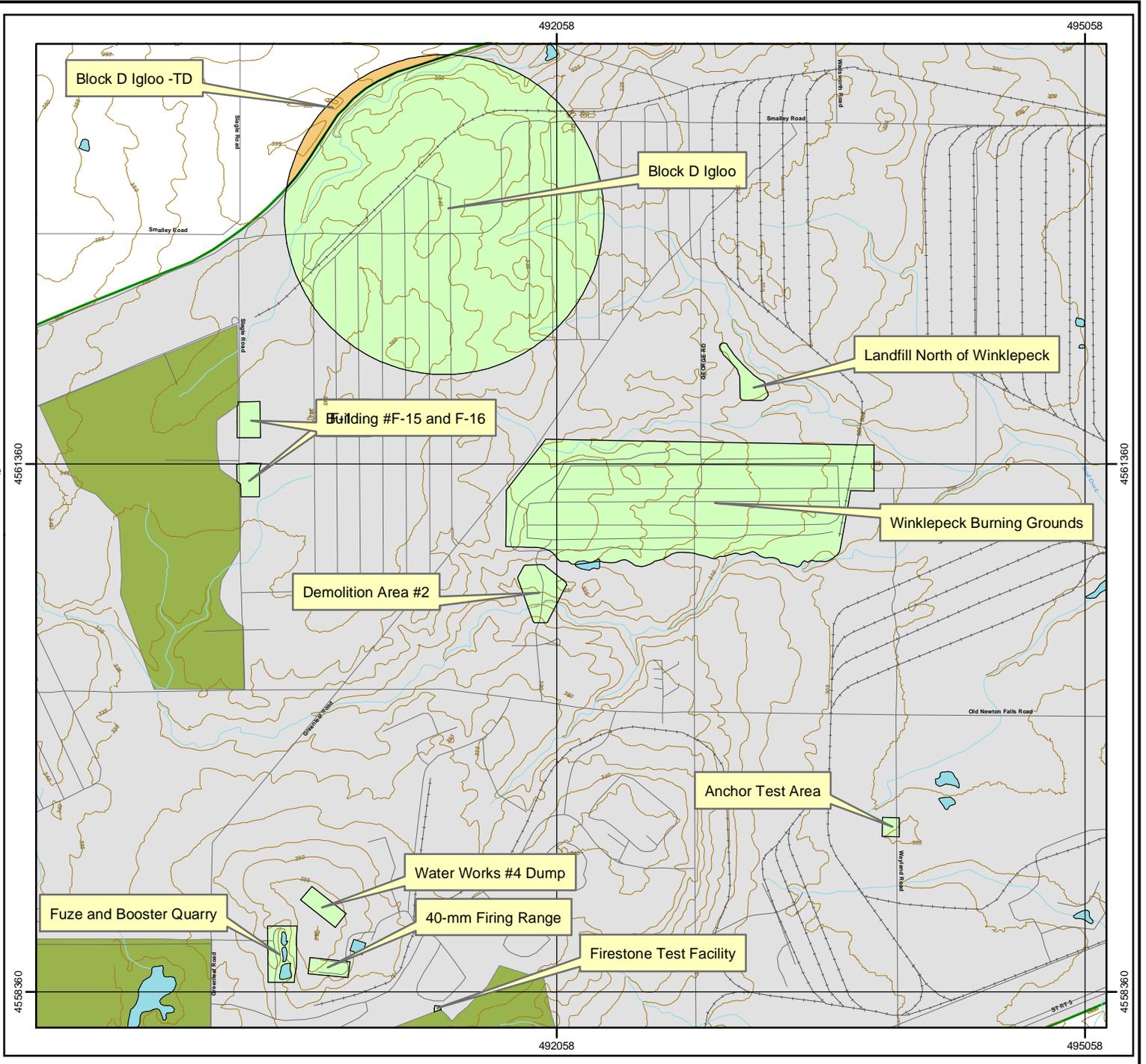


Legend

- Contours
 - Installation Boundary
 - Railroads
 - Roads
 - Streams
 - Water
- Range or UXO-DMM-MC Site Status
- A/I
 - Non-range, Non-UXO-DMM-MC site
 - Closed
 - Transferred
 - Transferring

Projection UTM, Zone 17
Horizontal Datum NAD 83
Units Meters
Grid Interval 3,000 meter
Contour Interval 5 meters

1:32,000



Ravenna Army Ammunition Plant

MILITARY MUNITIONS RESPONSE PROGRAM

SITE DESCRIPTIONS

RVAAP-001-R-01

RAMSDELL QUARRY LANDFILL

SITE DESCRIPTION

The Ramsdell Quarry Landfill is an unlined approximately 4 acre landfill in the bottom of an abandoned quarry to the north of Load Line 1 in the eastern portion of RVAAP. The AOC is associated with the AEDB-R ID RVAAP-01. During the period 1946 to 1950, the AOC was used to thermally treat waste explosives and napalm bombs. No historic information has been located for the period of 1950-1976. Since 1976, the AOC has been used as a non-hazardous solid waste landfill. The AOC was permitted as a sanitary landfill in 1978 by the State of Ohio until its closure in 1990. It is possible that MC exists on areas of this AOC not remediated under landfill closure process. This AOC is in the MMRP. Groundwater monitoring has been conducted as part of the landfill closure and is planned to continue under an RI. Constituents of concern include explosives and metals. No Further Action is anticipated under the ER,A program (IRP), because funding is anticipated under other programs. The area is currently undeveloped. The June 2004 ASR indicates that the area is considered to have potential MEC presence.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil

PHASES	Start	End
PA	200209	.....200312
SI	200503	.....200612
RI	200710	.....200809
RA(C)	201010	.....201109
RC expected: 201109		

CLEANUP STRATEGY

MC is being addressed under the IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. LTM consisting of annual inspection of signs and stakes will continue indefinitely. The land use control for this AOC will continue indefinitely, restrict access, and prohibit digging.

RVAAP-002-R-01

ERIE BURNING GROUNDS

SITE DESCRIPTION

The Erie Burning Grounds was in operation from 1941 to 1951 and covers approximately 35 acres. The burning grounds are situated on the northeastern corner of the facility next to the Portage/Trumbull County line and are composed primarily of wetlands. The AOC is associated with the AEDB-R ID RVAAP-02. The AOC was used to thermally treat bulk, obsolete, or off-specification propellants, conventional explosives, rags, and large explosive contaminated items (e.g. railcars) by open burning on the ground surface. The ash residue from the burns was left on AOC. An IRP Phase I RI was completed in July 1999, and a final report has been issued (SAIC, December 2001). Constituents of concern include explosives, metals, and SVOCs. An IRP Phase II RI is underway. The AOC is currently undeveloped. Photos in the June 2004 ASR confirm the presence of MEC.

STATUS

RAC Score: 1

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater, Surface Water,
Sediment

<u>PHASES</u>	<u>Start</u>	<u>End</u>
PA	200209	200312
SI	200503	200612
RI	200710	200809
RA(C)	201010	201109
RC expected: 201109		

CLEANUP STRATEGY

MC is being addressed under the IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. Remedial actions will include land use controls. Land use control for this AOC will restrict access with no digging allowed. LTM consisting of annual inspection of signs and stakes will continue indefinitely.

Currently this area is used for permitted wetlands access for waterfowl hunting and trapping.

Future end uses include using water for fire suppression, dust control, trapping and fishing.

RVAAP-004-R-01 DEMOLITION AREA #2

SITE DESCRIPTION

The Demolition Area #2 was used from 1948 to 1991 to detonate large caliber munitions and off-spec bulk explosives. The AOC was also used to dispose of white phosphorus and bombs. The AOC is associated with the AEDB-R ID RVAAP-04. The demolition area is situated in the central portion of the facility north of Newton Falls Road, north of the fuze & booster lines. The area consists of approximately 25 acres of land within which there is a 1.5 - acre RCRA unit for demolition of munitions. Detonations were performed in pits. After detonation, metal parts were removed from the AOC. This AOC is in the MMRP. An IRP Phase I RI was completed in February 1998. Constituents of concern at this AOC are explosives and metals. A live grenade was found on site. A 1.5-acre area north of Sand Creek was cleared of UXO, including fuzes, fuze components, burster tubes and projectiles, to a depth of four feet from 2000-2001. An IRP Phase II RI was conducted in 2003. The AOC is currently undeveloped. The June 2004 ASR indicates that this area is considered to have confirmed MEC presence.

STATUS

RAC Score: 1

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI	200503	.....200612
RI	200710	.....200809
RD	201010	.....201104
RA(C)	201105	.....201209
RC expected: 201209		

CLEANUP STRATEGY

MC: Soil removal and groundwater monitoring wells and treatment are part of the IRP. MC is being addressed under the IRP. An RD will follow.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A five-year review is included. Remedial actions will include land use controls. Land use control for this AOC will restrict access with no digging allowed. LTM consisting of fence maintenance and annual inspection of signs and stakes will continue indefinitely.

A removal action of a 0.10 acre at a dump site known as Rocket Ridge is assumed.

RVAAP-005-R-01

WINKLEPECK BURNING GROUNDS

SITE DESCRIPTION

The Winklepeck Burning Grounds operated from 1941 to 1992. Prior to 1980 open burning was carried out in pits, on pads, and in ditches along the roads within a (200-acre operational) 317-acre area. The area is located in the central portion of RVAAP and is associated with the AEDB-R ID RVAAP-05. Prior to 1980, burning was conducted on the bare ground and the ash was abandoned at the AOC. From 1980 to 1992, scrap explosives, propellants and explosive - contaminated materials were burned in raised refractory-lined trays within a 0.25-acre operational area. Constituents of concern include metals and explosives. A RD/RA of soil removal in conjunction with UXO removal is underway (BRAC OMA Funded). After the RI, RD/RA is planned. During RD/RA, if UXO is found, it will be removed.

STATUS

RAC Score: 1

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI.....	200503	.....200612

RC expected: 20612

A portion of this AOC had interim status under RCRA as an OB/OD unit, but the permit request was withdrawn by the US Army and the AOC has not operated since 1992. The AOC is currently being developed as a MK19 range by the OHARNG. The June 2004 ASR indicated that this area is considered to have confirmed MEC presence.

CLEANUP STRATEGY

This area will be a fenced surface danger zone in support of the Mark 19 grenade machine gun range, a dud-producing live fire range. This area is closed to all normal training and range administrative/support activities, with the exception of the Mark-19. Digging operations related to training activities are prohibited. Digging operations associated with authorized range support activities and conducted by authorized personnel are permitted. Individuals unfamiliar with the hazards/restrictions will be escorted by authorized personnel at all times while in the restricted area. Land use controls will be funded and managed by NGB and the OHARNG.

Recommend to RC when remedial actions are complete. No future MMRP funds are anticipated for this AOC.

MC is being addressed under the IRP.

RVAAP-008-R-01 LOAD LINE 1

SITE DESCRIPTION

Load Line 1 operated from approximately 1941 to 1971 for loading various types of projectiles. Ordnance was demilitarized at this AOC from 1973 to 1974. Load Line 1 is located in the southeastern portion of RVAAP and is associated with the AEDB-R ID RVAAP-08. The area used for the demilitarizing operations is approximately 2 acres. Propellant pellets and a 152mm projectile were found on AOC. This AOC consists of an AOC delineated during the initial investigation of the Load Line. Constituents of concern identified during the IRP Phase II RI include explosives, metals, and SVOCs. Most above-ground structures at Load Line 1 were demolished in 2000. An IRP Phase II RI was conducted in the fall of 2000. Currently, the AOC is undeveloped. The June 2004 ASR indicates that the area is considered to have confirmed MEC presence.

STATUS

RAC Score: 3

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809

RC expected: 200809

CLEANUP STRATEGY

Currently, part of this area, known as Criggy's Pond, is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

Future AOC use will be an armored vehicle maneuver lane, with mounted training and no digging.

MC is included in IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No RD or RA is expected.

RVAAP-012-R-01

LOAD LINE 12

SITE DESCRIPTION

Load Line #12, located in the southeastern portion of RVAAP operated from 1941 to 1993. From 1941 to 1943 and again in 1946, ammonium nitrate was produced. From 1949 to 1993 artillery projectiles were demilitarized. During IRP work in the fall of 1999, empty 90mm artillery projectiles were found just below the ground surface just north of the access road in the northwest corner of the Load Line #12 area. The AOC is associated with the AEDB-R ID RVAAP-12, with explosives and metals as constituents of concern. The AOC is approximately three acres in size and is undeveloped currently. The June 2004 ASR indicates that the area is considered to have potential MEC presence.

CLEANUP STRATEGY

MC is being addressed under IRP.

Future AOC use consists of mounted training and no digging.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A removal action is assumed.

STATUS

RAC Score: 3

CONTAMINANTS: MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI.....	200503	200612
RI	200708	200809
RD.....	201010	201104
RA(C)	201105	201209
LTM.....	201410	204409

RC expected: 201209

RVAAP-016-R-01

FUZE AND BOOSTER QUARRY

SITE DESCRIPTION

The Fuze and Booster Quarry operated from 1945 to 1993. The AOC consists of three ponds situated end to end and separated by earthen berms in an abandoned rock quarry. The AOC is associated with the AEDB-R ID RVAAP-16. In 1998, this AOC was expanded to include additional shallow settling ponds and two debris piles. Prior to 1976, the quarry was used for open burning. Any type of munitions produced at the plant may have been destroyed here. Constituents of concern include explosives and metals. The Fuze and Booster Quarry is approximately 13 acres and located in the south central portion of RVAAP. A PA/SI was completed for this AOC in 1989 and an RI/FS is underway. The AOC is currently undeveloped. MEC may be present at the bottom of the quarry. The June 2004 ASR states that the area is considered to have potential MEC presence.

STATUS

RAC Score: 1

CONTAMINANTS: MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809
RD	201010	201104
RA(C)	201105	201209
LTM	201410	204409

RC expected: 201209

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A removal action and LTM are assumed.

Future AOC use consists of mounted training and no digging.

Currently this area is used for permitted wetlands access for waterfowl hunting and trapping. Future end uses include using water for fire suppression, dust control, trapping and fishing.

RVAAP-019-R-01

LANDFILL NORTH OF WINKLEPECK

SITE DESCRIPTION

This area is an approximately 10 acre unlined landfill used for disposal of general plant refuse, including explosive wastes residue. In addition, open burn waste from the Winklepeck burning grounds was disposed here, including flares and booster cups. This AOC consists of an AOC delineated during the initial investigation of the landfill and is associated with the AEDB-R ID RVAAP-19. The appearance of the land surface suggests trench and fill type disposals. Constituents of concern include explosives and metals. This AOC was used from 1969 to 1976. This AOC is in the central portion of RVAAP. Currently, this AOC is in the IRP RI/FS phase. The AOC is undeveloped.

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No removal action is anticipated, but land use controls may be required.

Future AOC use consists of dismantled training and no digging.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI	200503	.....200612
RI	200710	.....200809
RA(C)	201010	.....201109
LTM	201409	.....204409

RC expected: 201109

RVAAP-032-R-01 40 MM FIRING RANGE

SITE DESCRIPTION

This range was reported by former workers at Ravenna AAP to have been used for test firing 40mm grenade cartridges. The dates of operation for this area were from 1969 to 1971. This range is associated with the AEDB-R ID RVAAP-32. This range is located in the southwestern portion of Ravenna AAP, north of Load Line 8. The range is approximately 5 acres and undeveloped. Constituents of concern are metals. The range is currently in the IRP RI/FS phase. According to the June 2004 ASR, the area is considered to potentially have MEC presence; however, the range was cleared as testing occurred.

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No removal action or LTM is anticipated.

Future AOC use consists of mounted training and no digging.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI	200503	.....200612
RI	200710	.....200809

RC expected: 200809

RVAAP-033-R-01 FIRESTONE TEST FACILITY

SITE DESCRIPTION

The Firestone Test Facility is located in the south central portion of RVAAP. This facility (also known as the Shaped Charge Test Facility) is located within the Load Line 6 Fuze & Booster Area. The Load Line 6 Fuze & Booster area is associated with the AEDB-R ID RVAAP-33. Constituents of concern for RVAAP-33 include lead azide, explosives, and metals. The Firestone Test Facility includes a pond area where the shaped charges were tested underwater. The facility occupies approximately one acre and according to personnel interviews it was used to test tube-launched, optically-tracked, wire-guided (TOW) and Dragon missiles from 1970 to 1992. The facility has five separate areas within Load Line 6 that may have been used for shaped charge testing. The Facility is in the IRP RI/FS process; however, no UXO investigations have been performed at the facility. The AOC is undeveloped.

STATUS

RAC Score: 2

CONTAMINANTS: MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809
RD	201010	201104
RA(C)	201105	201209
LTM	201409	204409

RC expected: 201209

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. An RA will determine if further remedial action is warranted in the test chamber areas.

Future AOC use consists of mounted training and no digging.

RVAAP-034-R-01 SAND CREEK DUMP

SITE DESCRIPTION

The Sand Creek Dump was used as a construction landfill for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. The AOC is associated with the AEDB-R ID RVAAP-34. During an IRA performed in October 2003, two 75-mm inert projectiles were discovered at this AOC. Other types of MC and DMM are suspected at this AOC. Constituents of concern include heavy metals and asbestos. The dump is approximately 1 acre and is located adjacent to Sand Creek in the central portion of the eastern half of RVAAP. Materials were dumped at the AOC from 1950 to 1960. This AOC is currently undeveloped. A removal action was completed under the IR Program in 2003.

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No remedial action or LTM is anticipated.

Future AOC use consists of dismantled training and no digging.

STATUS

RAC Score: 3

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809

RC expected: 200809

RVAAP-046-R-01 BUILDING F-15 AND F-16

SITE DESCRIPTION

Building F-15 and F-16 were used from approximately 1941 to 1992. Building F-15 is still standing, yet is not maintained and Building F-16 has been demolished. The AOC consists of approximately 12 acres and is located in the northwestern portion of RVAAP. The AOC is associated with the AEDB-R ID RVAAP 46. Limited soil sampling has been completed; however, a comprehensive RI has not yet been completed. The AOC has not yet been evaluated for UXO/MEC contamination. Constituents of concern include explosives and metals. Large caliber artillery projectiles, void of HE, have been found outside the building. An IRP AOC characterization was conducted in 2004. The AOC is currently undeveloped.

STATUS

RAC Score: 3

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809
RD	201010	201104
RA(C)	201105	201209

RC expected: 201209

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A limited removal action will be needed to clear an area approximately 500 square feet. No LTM is anticipated.

Future AOC use consists of dismantled training and digging.

RVAAP-048-R-01 ANCHOR TEST AREA

SITE DESCRIPTION

The Anchor Test Area was operated from approximately 1941 to 1952. The area's function was to test fire anchoring devices into the ground. RVAAP personnel believe that small explosive devices were used to drive anchors for ropes or cables into the ground. The AOC is approximately 2.5 acres (range is 0.1 acre) and currently consists of several dirt mounds and a nearby sand pit. The Anchor Test Area is located in the south central portion of RVAAP. Some metal debris has been found in the area. The AOC has not been evaluated for presence of UXO/MEC. This range is currently undeveloped.

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A limited removal action will be needed to clear an area approximately 0.1 acre. No LTM is anticipated.

Future AOC use consists of mounted training and no digging.

STATUS

RAC Score: 2

CONTAMINANTS: MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809
RD	201010	201104
RA(C)	201105	201209

RC expected: 201209

RVAAP-050-R-01 ATLAS SCRAP YARD

SITE DESCRIPTION

The Atlas Scrap Yard, located in the southeastern area of RVAAP is the AOC of the original camp built to house workers during the construction of RVAAP. The area is approximately 66 acres (AOC is a combination of 3 acres and 1 acre plot). Most of the buildings were demolished following World War II. Since that time the area has been used as a scrap yard for miscellaneous materials. During the RI, UXO was uncovered in the southwest corner of the AOC. Most of the MEC and MEC scrap was removed from the AOC in 2003. Any of the munitions or munitions constituents made at or used at the plant may have been disposed of here.

CLEANUP STRATEGY

MC is included under IRP.

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A RA is needed for the one-acre plot, and LTM is anticipated.

Future AOC use consists of mounted training and no digging.

STATUS

RAC Score: 1

CONTAMINANTS: MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI	200503	200612
RI	200710	200809
RD	201010	201104
RA(C)	201105	201209
LTM	201409	204409

RC expected: 201209

RVAAP-060-01 BLOCK D IGLOO

SITE DESCRIPTION

The “D” Block of igloos, located in the north-central part of RVAAP, was used to store ordnance and explosives. This block of igloos is now inactive. Bombs were stored in the igloos after they were built in 1941. On 24 March 1943 bombs in igloo number 7-D-15 exploded. There were multiple fatalities from this accident. Shrapnel and demolished material was propelled up to 2.9 miles away. A majority of the material landed up to 2 miles to the northeast within the RVAAP boundary. Facility personnel made a map showing the distribution of the debris after the explosion. Cluster bombs may have been propelled from the igloo; however, no UXO was reported to be found from the explosion. Ravenna Ordnance Plant personnel reported that the AOC was considered clean of UXO some time after the explosion. No documented evidence of UXO removal was identified. The igloo was 0.04 acres in size. The AOC boundary is a circle approximately 3,000 feet in diameter centered on the igloo (a total of 126 acres). A portion of the circle extends beyond the installation boundary and is considered separately as a transferred AOC. The AOC is currently undeveloped.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI.....	200503	.....200612

RC expected: 200612

CLEANUP STRATEGY

MC: No investigation

MEC: An installation-wide SI will begin in FY05 and will include this AOC. A removal action or LUC may be needed.

Future AOC use consists of dismantled training with digging.

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

SITE DESCRIPTION

The “D” Block of igloos, located in the north-central portion of RVAAP, was used to store ordnance and explosives. This area consists of the portion of the Maximum Fragmentation Distance (MFD) circle that extends beyond the installation boundary, a total of 19.25 acres (check this). Bombs stored in igloo 7-D-15 exploded on 24 March 1943. There were multiple fatalities from this accident. Shrapnel and demolished material was propelled up to 2.9 miles away to the northeast, off RVAAP land. A majority of the material landed up to 2 miles to the northeast within the RVAAP boundary. Cluster bombs may have been propelled from the igloo. No other documented evidence of UXO removal was identified. The AOC is currently undeveloped.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI.....	200503	.....200612

RC expected: 200612

CLEANUP STRATEGY

MC: No investigation

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No RA or LUC is anticipated.

Future AOC use consists of dismantled training with digging.

RVAAP-062-R-01 WATER WORKS #4 DUMP

SITE DESCRIPTION

The Water Works #4 Dump is a wooded area that has nonexplosive metal parts from Mark-1 shrapnel rounds scattered on the ground surface and partially buried. No other components of the projectiles were found. The AOC is approximately 6 acres and is immediately west of Water Works #4, and Load Line 7, in the southwestern portion of RVAAP. No MEC investigations have been performed on site. This AOC is currently undeveloped.

CLEANUP STRATEGY

MC: No investigation

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No RA or LUC is anticipated.

Future land use includes dismantled training with digging.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI.....	200503	.....200612

RC expected: 200612

RVAAP-063-R-01

AREA BETWEEN BLDGS 846 AND 849

SITE DESCRIPTION

The area between buildings 846 and 849 is disturbed land that is currently undeveloped. The area is in the immediate vicinity of buildings used actively for storage of OHARNG vehicles and equipment. Vehicles and equipment move about the area. The land area between the buildings had been used for burning construction debris and rubbish. The AOC is approximately 2.5 acres and consists of most of the area between buildings 846 and 849. The AOC is located along the southern boundary of the central portion of RVAAP. In 1996, one "hammerhead" anti-personnel bomb was found on the ground surface at the AOC. OHARNG personnel discovered the bomb. In addition, one inert 175 mm projectile was found on the ground surface on the AOC. The AOC has not been evaluated for presence of UXO/MEC, and no remedial investigations have been performed at the AOC.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	200312
SI.....	200503	200612

RC expected: 200612

CLEANUP STRATEGY

MC: No investigation

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No RA or LUC is anticipated.

Future land use includes dismantled training with digging.

FIELD AT NE CORNER OF INTERSECTION

SITE DESCRIPTION

The field at the northeastern corner of the intersection of Paris-Windham Road and Smalley Road is approximately 91 acres and is located in the central-northeastern section of Ravenna AAP. The area was formerly used for agricultural purposes by lease between the opening of RVAAP in 1942 and 1991 when the land was reassigned to RTLS in 1992. One inert anti-tank landmine was discovered in the northern central portion of the AOC in 1996. The AOC is currently undeveloped.

CLEANUP STRATEGY

MC: No investigation

MEC: An installation-wide SI will begin in FY05 and will include this AOC. No RA or LUC is anticipated.

Future land use includes dismantled training with digging.

STATUS

RAC Score: 2

CONTAMINANTS:
MEC

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	200209	.....200312
SI.....	200503	.....200612

RC expected: 200612

PAST MILESTONES

PA Completion Year: 2003

PROJECTED MILESTONES

Phase Completion Milestones:

ROD/DD Approval Dates: 2008

Construction Completion: 2012

Completion Date of all RA(C) Activities: 2012

Completion Date of IRP (including LTM phase): 2044

Schedule

Ravenna AAP MMRP Installation Action Plan Schedule (Based on Cost-to-Complete)

AEDB-CC#	SITE NAME	PHASE	FY06	FY07	FY08	FY09	FY10+
RVAAP-001-R-01	RAMSDELL QUARRY LANDFILL	RIFS					
		RA(C)					
RVAAP-002-R-01	ERIE BURNING GROUNDS	RIFS					
		RA(C)					
RVAAP-004-R-01	DEMOLITION AREA #2	RIFS					
		RD					
		RA(C)					
RVAAP-008-R-01	LOAD LINE #1	RIFS					
RVAAP-012-R-01	LOAD LINE #12	RIFS					
		RD					
		RA(C)					
		LTM					
RVAAP-016-R-01	FUZE AND BOOSTER QUARRY	RIFS					
		RD					
		RA(C)					
		LTM					
RVAAP-019-R-01	LANDFILL NORTH OF WINKLEPECK	RIFS					
		RA(C)					
		LTM					
RVAAP-032-R-01	40-MM FIRING RANGE	RIFS					
RVAAP-033-R-01	FIRESTONE TEST FACILITY	RIFS					
		RD					
		RA(C)					
		LTM					
RVAAP-034-R-01	SAND CREEK DUMP	RIFS					
RVAA-046-R-01	BUILDING #F-15 AND F-16	RIFS					
		RD					
		RA(C)					
RVAAP-048-R-01	ANCHOR TEST AREA	RIFS					
		RD					
		RA(C)					
RVAAP-050-R-01	ATLAS SCRAP YARD	RIFS					
		RD					
		RA(C)					
		LTM					

PRIOR YEAR FUNDING

FY03 \$25,000

CURRENT YEAR FUNDING

FY05 \$450,000

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: \$9,216,000

TOTAL IRP PROGRAM COSTS: \$9,595,000

Ravanna AAP MMRP Unconstrained Cost-To-Complete

AEDB-R#	SITE TITLE	PHASE	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	PHASE TOTAL	SITE TOTAL	ACTIVITY DESCRIPTION	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
RVAAP-001-R-01	RAMSDELL QUARRY LANDFILL	RIFS			645								645		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						60					60	705	MEC INSTITUTIONAL CONTROLS	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-002-R-01	ERIE BURNING GROUNDS	RIFS			274								274		MEC SITE CHARACTERIZATION			DEJESUS 02/05
		RA(C)						60					60	334	MEC INSTITUTIONAL CONTROLS	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-004-R-01	DEMOLITION AREA #2	RIFS			271								271		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						9					9		REMEDIAL DESIGN-PERCENT	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						261					261	541	MEC INSTITUTIONAL CONTROLS, MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-008-R-01	LOAD LINE #1	RIFS			132								132	132	MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-012-R-01	LOAD LINE #12	RIFS											122			R	INVENTORY REPORT	DEJESUS 02/05
		RD						47					47		REMEDIAL DESIGN	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						1,877					1,877		MEC INSTITUTIONAL CONTROLS, MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05
		LTM										522	522	2,568	MEC MONITORING - 6 EVENTS	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-016-R-01	FUZE AND BOOSTER QUARRY	RIFS			233								233		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						17					17		REMEDIAL DESIGN-PERCENT	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						478					478		MEC INSTITUTIONAL CONTROLS, MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05
		LTM										775	775	1,503	MEC MONITORING - 6 EVENTS, FIVE YEAR REVIEW	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-019-R-01	LANDFILL NORTH OF WINKLEPECK	RIFS			147								147		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						60					60		MEC INSTITUTIONAL CONTROLS	R	INVENTORY REPORT	DEJESUS 02/05
		LTM										522	522	729	MEC MONITORING - 6 EVENTS	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-032-R-01	40-MM FIRING RANGE	RIFS			141								141	141	MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-033-R-01	FIRESTONE TEST FACILITY	RIFS			106								106		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						8					8		REMEDIAL DESIGN	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						216					216		MEC INSTITUTIONAL CONTROLS, MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05
		LTM										522	522	852	MEC MONITORING - 6 EVENTS	R	INVENTORY REPORT	DEJESUS 02/05
RVAAP-034-R-01	SAND CREEK DUMP	RIFS			106								106	106	MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
RVAA-046-R-01	BUILDING #F-15 AND F-16	RIFS			137								137		MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						5					5		REMEDIAL DESIGN	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						156					156	298	MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05

Ravanna AAP MMRP Unconstrained Cost-To-Complete

AEDB-R#	SITE TITLE	PHASE	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	PHASE TOTAL	ACTIVITY DESCRIPTION	Cost Est. Source	Supporting Documentation	Estimator & Date Prepared
RVAAAP-048-R-01	ANCHOR TEST AREA	RIFS			132								132	MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						6					6	REMEDIAL DESIGN-PERCENT	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						162					162	MEC REMOVAL ACTION		INVENTORY REPORT	DEJESUS 02/05
													300				
RVAAAP-050-R-01	ATLAS SCRAP YARD	RIFS											215	MEC SITE CHARACTERIZATION	R	INVENTORY REPORT	DEJESUS 02/05
		RD						9					9	REMEDIAL DESIGN-PERCENT	R	INVENTORY REPORT	DEJESUS 02/05
		RA(C)						261					261	MEC INSTITUTIONAL CONTROLS, MEC REMOVAL ACTION	R	INVENTORY REPORT	DEJESUS 02/05
		LTM										522	522	MEC MONITORING - 6 EVENTS	R	INVENTORY REPORT	DEJESUS 02/05
													1,007				
	TOTALS IN THOUSANDS OF \$		0	0	347	0	0	438	0	0	0	522	1,307				