

Draft

**Modified Proposed Plan
for Soil and Dry Sediment at the
RVAAP-01 Ramsdell Quarry Landfill**

**Ravenna Army Ammunition Plant
Ravenna, Ohio**

**Contract No. GS-10F-0076J
Delivery Order No. W912QR-12-F-0020**

Prepared for:



**US Army Corps
of Engineers®**

**United States Army Corps of Engineers
Louisville District**

Prepared by:



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February 3, 2012

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14. ABSTRACT This modified Proposed Plan presents the recommended new alternative to address soil and dry sediment at RVAAP-01 Ramsdell Quarry Landfill. During implementation of original Alternative 3 - Excavation and Off-site Disposal ~ Security Guard/Maintenance Worker Land Use, unforeseen conditions were encountered that impacted the Overall Protection of Human Health and the Environment, short-term effectiveness, implementability, and cost of the alternative. In accordance with USEPA guidance, the U.S. Army considered these conditions and declared a Fundamental Post-ROD Change was warranted. An Engineering Evaluation was developed to re-evaluate remedial alternatives to address these new conditions and achieve remedy-in-place (RIP) at Ramsdell Quarry Landfill (RQL). Consequently, the U.S. Army, in consultation with the Ohio Environmental Protection Agency, is recommending Alternative 8 - Perimeter Fence ~ Restricted Land Use.					
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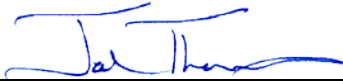
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February 3, 2012

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Modified Proposed Plan for Soil and Dry Sediment at the RVAAP-01 Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.



Jed Thomas, P.E.
Study/Design Team Leader

02/01/12

Date



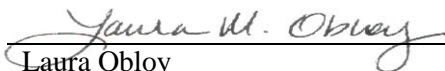
Kevin Jago, P.G.
Independent Technical Review Team Leader

02/01/12

Date

Significant concerns and the explanation of the resolution are as follows:

Internal SAIC Independent Technical Review was conducted on the Draft version of this document. Subsequent versions of this document (e.g., Final) incorporated changes based on the technical reviews of USACE, the Ohio Army National Guard, and the Ohio Environmental Protection Agency. Internal SAIC Independent Technical Review comments are recorded on a Document Review Record per SAIC quality assurance procedure QAAP 3.1. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader. As noted above, all concerns resulting from independent technical review of the project have been considered.



Laura Obloy
Principal w/ A-E firm

02/01/12

Date

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Modified Proposed Plan
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Ravenna Army Ammunition Plant
Ravenna, Ohio

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NGB = National Guard Bureau

OHARNG = Ohio Army National Guard

Ohio EPA-NEDO = Ohio Environmental Protection Agency-Northeast District Office

REIMS = Ravenna Environmental Information Management System

RVAAP = Ravenna Army Ammunition Plant

SAIC = Science Applications International Corporation

USACE = United States Army Corps of Engineers

USAEC = United States Army Environmental Command

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LIST OF ACRONYMS

ACM	Asbestos-containing Material
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	Chemical of Concern
CUG	Cleanup Goal
FS	Feasibility Study
IRP	Installation Restoration Program
ISM	Incremental Sampling Method
HHRA	Human Health Risk Assessment
LUC	Land Use Control
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGB	National Guard Bureau
O&M	operations and maintenance
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PPE	Personal Protective Equipment
RAFLU	Reasonable and Anticipated Future Land Use
RI	remedial investigation
ROD	Record of Decision
RQL	Ramsdell Quarry Landfill
RVAAP	Ravenna Army Ammunition Plant

1.0 INTRODUCTION

This modified Proposed Plan presents new remedial alternatives and identifies a modified preferred alternative for remediation of contaminated soil and dry sediment within the Ramsdell Quarry Landfill (RQL) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio (Figure 1). The U.S. Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), issues this Proposed Plan, providing the rationale for this preference and modification.

In March 2009, the U.S. Army published the *Record of Decision for Soil and Dry Sediment for the RVAAP-01 Ramsdell Quarry Landfill* (USACE 2009) that documents the originally recommended Alternative 3: Excavation and Off-site Disposal (Security Guard/Maintenance Worker Land Use) to remediate soil and dry sediment at RQL. This alternative was presented to the public and approved by the Ohio EPA and U.S. Army. During implementation of this alternative in July 2010, it was discovered that site conditions were different than originally anticipated, as large amounts of subsurface construction and miscellaneous debris were identified within the remedial action excavation footprint. The U.S. Army identified this as a Fundamental Post-Record of Decision (ROD) Change, as prescribed under the *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (USEPA 1999). Consequently, the U.S. Army, in consultation with the Ohio EPA, re-evaluated remedial alternatives using current site knowledge to address soil and dry sediment and amend the original ROD.

This Proposed Plan provides the public with information necessary to comment on the selection of a modified remedial alternative to address soil and dry sediment at RQL. The U.S. Army, in consultation with Ohio EPA, will select the remedy for this area of concern (AOC) after reviewing and considering all comments submitted during the 30-day public comment period. Therefore, the public is

encouraged to review and comment on all alternatives presented in this Proposed Plan.

Public Comment Period:

Month XX, 2012 to Month XX, 2012

Public Meeting:

The U.S. Army will hold an open house and public meeting to explain the modified Proposed Plan and new alternatives presented in the *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2011). Oral and written comments will also be accepted at the meeting. The open house and public meeting is scheduled for 6:00PM, Month XX, 2012, at the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio 44444.

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The U.S. Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 *Code of Federal Regulations* 300). Selection and implementation of a remedy will also satisfy the requirements of the Ohio EPA *Director's Final Findings and Orders* dated June 10, 2004 (Ohio EPA 2004).

This Proposed Plan summarizes information that can be found in greater detail in the combined *Phase I Remedial Investigation Report for Ramsdell Quarry Landfill* (USACE 2005), *Feasibility Study for Ramsdell Quarry Landfill* (USACE 2006), *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2011), and other documents contained in the Administrative Record file for RQL. The U.S. Army encourages the public to review these documents to gain a more comprehensive understanding of the AOC and activities that have been conducted to date.

2.0 RVAAP BACKGROUND

When the RVAAP Installation Restoration program (IRP) began in 1989, RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by Ohio Army National Guard (OHARNG) over a 2-year period (2002 and 2003) and the total acreage of the property was found to be 21,683.289 acres. As of February 2006, a total of 20,403 acres of the former 21,683-acre RVAAP has been transferred to the National Guard Bureau (NGB) and subsequently licensed to OHARNG for use as a military training site.

The current RVAAP consists of 1,280 acres scattered throughout the OHARNG Camp Ravenna Joint Military Training Center, herein referred to as Camp Ravenna. Camp Ravenna is in northeastern Ohio, within Portage and Trumbull counties, approximately 3 miles (4.8 km) east-northeast of the city of Ravenna and approximately 1 mile (1.6 km) northwest of the city of Newton Falls. The RVAAP portions of the property are solely located within Portage County. RVAAP/Camp Ravenna is a parcel of property approximately 11 miles (17.7 km) long and 3.5 miles (5.6 km) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (Figures 1 and 2). Camp Ravenna is surrounded by several communities: Windham on the north; Garrettsville 6 miles (9.6 km) to the northwest; Newton Falls 1 mile (1.6 km) to the southeast; Charlestown to the southwest; and Wayland 3 miles (4.8 km) to the south.

When RVAAP was operational, Camp Ravenna did not exist, and the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document are considered to be inclusive of the historical extent of RVAAP, which is inclusive of the combined acreages of

the current Camp Ravenna and RVAAP, unless otherwise specifically stated.

3.0 RAMSDELL QUARRY LANDFILL HISTORY, DESCRIPTION, AND CHARACTERISTICS

RQL was initially a stone quarry that operated until 1941. During operations, the quarry was excavated 30 to 40 ft below existing grade. The excavated sandstone and quartzite pebble conglomerate was used for road and construction ballast. From 1946 to the 1950s, the bottom of the quarry was used to burn waste explosives from Load Line 1. Reportedly, 18,000 500-lb (225-kg) incendiary or napalm bombs were burned in the quarry, and liquid residues from annealing operations were disposed there.

Between 1941 and 1989, the western and southern sections of the abandoned quarry were used for landfill operations (USATHAMA 1978). Following World War II, napalm bombs were burned in Ramsdell Quarry. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the State of Ohio. Only nonhazardous solid waste was placed in the sanitary landfill until it was closed in 1990 under State of Ohio solid waste regulations. A clay cap was placed on the landfill, covering approximately 4 acres of the AOC. Five groundwater monitoring wells were installed and are monitored semi-annually, in accordance with State of Ohio post-closure requirements for the landfill.

RQL encompasses approximately 14 acres in the northeastern portion of RVAAP. The environmental setting at RQL includes old-field communities, with patches of forests and grasslands. The land surface in a large portion of the AOC slopes into the quarry bottom, which occupies most of the AOC.

The quarry bottom is approximately 40 ft below the surrounding area. Former quarry operations resulted in the removal of much of the original soil. Surface water runoff collects in an isolated, low quality wetland in the bottom of the quarry bottom. There is no surface water drainage

outlet from the quarry bottom. The extent of the wetland varies widely, depending on the season and rainfall, and it is sometimes completely dry. When water is present in the wetland, the depth is usually less than 4 ft. The drainage ways and ditch lines outside of the quarry, located along access roads and the rail line in the southern part of the AOC, only contain water during rain events.

The habitat at RQL supports a variety of wildlife, including small mammals, birds, and insects. There are currently no federally-listed species or critical habitats on RVAAP property. RQL has not been previously surveyed for state-listed species; therefore, none have been documented at RQL.

The quarry bottom of RQL is considered a Munitions Response Site (MRS). Future activities under the Military Munitions Response Program may lead to remedial work to achieve remedy.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The U.S. Army intends to transfer RQL to NGB following the remediation of contaminated soil and dry sediment. The NGB will subsequently license the land to OHARNG for military use. The Reasonable and Anticipated Future Land Use (RAFLU) of Ramsell Quarry Landfill AOC is Restricted Access, No Digging. Post-closure care of the RQL cap and monitoring must be continued in accordance with State of Ohio solid waste management regulations. Excavation into or disturbance of the landfill contents is prohibited without prior approval of Ohio EPA.

The remedial alternative for groundwater, surface water, and wet sediment will be addressed in separate documentation. However, the selected remedy for soil and dry sediment at RQL must also be protective of groundwater, which is routinely monitored under the post-closure provisions of State of Ohio solid waste management regulations and the RVAAP Facility-Wide Groundwater

Monitoring Program conducted in accordance with the Ohio EPA *Director's Final Findings and Orders* (Ohio EPA 2004).

5.0 SUMMARY OF REMEDIAL ACTIONS TO DATE

The originally selected remedy in the RQL ROD was Alternative 3: Excavation and Off-site Disposal ~ Security Guard/Maintenance Worker Land Use. This alternative involved the removal of RQL soil with chemical of concern (COC) concentrations identified in the human health risk assessment (HHRA) that exceed cleanup goals (CUGs) for the Security Guard/Maintenance Worker (presented in Table 1). The removal of soil with COCs above CUGs was to reduce soil concentrations to acceptable risk levels for this receptor. There were no ecological risks identified at RQL, and the fate and transport modeling indicated no contaminants were predicted to migrate beyond the AOC boundary at concentrations above risk-based concentrations or drinking water maximum contaminant levels. Consequently, only soil remediation for COCs identified in the HHRA was required for RQL.

Table 1. COCs and Cleanup Goals for a Security Guard/Maintenance Worker for Soil/Dry Sediment at RQL

COC	Cleanup Goal (mg/kg)
Benz(a)anthracene	13
Benzo(a)pyrene	1.3
Benzo(b)fluoranthene	13
Dibenz(a,h)anthracene	1.3
Indeno(1,2,3-cd)pyrene	13

COC = Chemical of Concern
RQL = Ramsdell Quarry Landfill

Implementing Alternative 3 also required land use controls (LUCs) and five-year reviews to be conducted by the U.S. Army, under a 30-year Operations and Maintenance (O&M) period.

5.1 Contaminant Area and Volume Estimate

The RQL ROD identified two areas (RQL-039M and RQL-040M) requiring removal, for an estimated disposal volume (ex situ) of 423 yd³. However, Alternative 3 also required sampling of the entire quarry bottom to reassess Incremental Sampling Method (ISM) samples collected during the Phase I Remedial Investigation (RI). In May 2009 and January 2010, soil samples were collected from the bottom of RQL in accordance with the RQL ROD. These sample results were presented to the U.S. Army and Ohio EPA in technical memorandums and identified seven ISM areas that exceeded CUGs presented in the RQL ROD: RQL-039M, RQL-040M, RQL-041M, RQL-042M, RQL-043M, RQL-044M, and RQL-045M (Figure 3-1).

To assist in volume estimations during implementation of the remedial actions, soil depth to bedrock was measured using a push probe at multiple, random locations. Soil depth at the quarry bottom varied from 0 ft (exposed bedrock) to greater than 2 ft. The average depth of soil overlying bedrock at the quarry bottom was 7 inches; this average depth was used to estimate soil removal quantities. Based on the remedial design sampling and walkover survey, the area requiring soil removal increased from 282 ft² (0.006 acres) to 49,300 ft² (1.13 acres), increasing the estimated volume for soil removal from 423 yd³ to 1,597 yd³.

5.2 Implementation of Soil Removal

Implementation of soil removal within the quarry bottom was initiated in July 2010. The excavation activities began with removing soil at the eastern edge of area RQL-043M.

During soil removal activities, a large amount of construction and miscellaneous debris was encountered. Some of the debris (e.g., transite and roofing materials) was suspected to contain asbestos; therefore, the materials were sampled and analyzed for asbestos. Results revealed that transite and roofing materials

within the excavation were to be handled and disposed as asbestos-containing material (ACM), as they contained greater than 1% asbestos. Approximately 1,100 tons of soil and construction debris (all considered friable ACM) was removed from RQL and disposed at a sanitary landfill licensed to accept asbestos-containing waste.

6.0 JUSTIFICATION FOR ALTERNATIVE MODIFICATION

The discovery of ACM in RQL during the implementation of Alternative 3 invokes relevant and appropriate requirements stated in Ohio Administrative Code (OAC), Asbestos Emissions Control ~ OAC 3745-20-01. Those relevant and appropriate requirements are as follows:

1. Discharge no visible emissions to the outside air; or
2. Cover ACM with at least 6 inches of compacted non-ACM, and establish and maintain a cover of vegetation on the area adequate to prevent exposure to the ACM; or
3. Cover ACM with at least 2 ft compacted non-ACM and maintain the cover to prevent exposure to the ACM.

In addition, Ohio EPA National Emission Standards for Hazardous Air Pollutants (NESHAPs) guidance is also considered, wherein if excavation has occurred that exposes ACM, then ACM must be removed as encountered or addressed (regardless of whether it occurs outside of the areas requiring remediation to address COCs identified in the RQL ROD). Removal is confirmed through visual inspection and soil sampling.

The *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2011) re-evaluated the originally selected remedial alternative and evaluated additional alternatives to determine if the remedy for soil at RQL required change, given the change of site conditions. Re-

evaluation of remedial alternatives is allowed under the *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (USEPA 1999). The change in waste type encountered (ACM) falls under Significant or Fundamental Change. As defined in Section 7.2 of the guidance document, the change in conditions included an appreciable change in scope, performance, and cost. The discovery of ACM provided a basis for re-evaluation of alternatives in the Engineering Evaluation with respect to potential ARARs. The additional alternatives evaluated in the Engineering Evaluation provided potential remedies for the identified COCs in the RQL quarry bottom and addressed the relevant and appropriate requirements established from the identification of ACM in the contaminated areas.

7.0 SUMMARY OF ADDITIONAL REMEDIAL ALTERNATIVES

The additional alternatives were developed in the *Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill* (USACE 2011) and are summarized below.

7.1 Alternative 5 – Excavation of Soil and Off-site Disposal as Friable ACM ~ Security Guard/Maintenance Worker Land Use

Estimated Implementation Cost: \$644,309
30-year O&M Cost: \$112,846
Estimated Total Cost: \$757,155

Alternative 5 consists of excavating soil with COCs exceeding CUGs for the Security Guard/Maintenance Worker in addition to other locations within RQL that contain ACM. The Engineering Evaluation estimates 1,614 yd³ of contaminated soil requires excavation for off-site disposal, in addition to the 1,100 tons of soil and construction debris removed in July 2010. The remedy requires placement of soil for backfill and adequate restoration of the low quality wetland within the quarry bottom.

Upon completion of this alternative, potential for exposure to contaminated soil and ACM for National Guard receptors will be reduced. LUCs would be necessary, as planned excavation will not attain CUGs for Residential Land Use and would not include excavation of contaminated soil below 1 ft, unless ACM is also encountered at that depth.

Alternative 5 requires coordination of excavation and LUC activities with Ohio EPA, OHARNG, and the U.S. Army. Coordinating with stakeholders during the implementation of the excavation minimizes health and safety risks to on-site personnel and potential disruptions of RVAAP/Camp Ravenna activities. The amount of time to complete this removal action is estimated to be 2 months. In addition, this alternative contains a 30-year O&M period to implement LUCs.

7.2 Alternative 6 – Capping ~ Security Guard/Maintenance Worker

Estimated Implementation Cost: \$239,533
30-year O&M Cost: \$101,057
Estimated Total Cost: \$340,590

Alternative 6 consists of putting a 12-inch compacted cover (cap) of native fill and topsoil on the remaining areas within RQL that exceed CUGs for the COCs, with the exception of the area identified on the existing sanitary landfill cap. An estimated 33,200 ft² requires capping. Capping will leave soil containing COCs and ACM in place. The purpose of this cap is to prevent exposure of the Security Guard/Maintenance Worker to COCs and to be in compliance with OAC requirements to “cover the asbestos-containing waste material with at least six inches of compacted non-ACM.” A cover of vegetation would be established on the area adequate to prevent exposure of the ACM, and adequate restoration of the low quality wetland within the quarry bottom would be conducted.

Once capping is complete, this alternative mitigates risk by physically preventing exposure of National Guard receptors to contaminated soil and ACM. LUCs would be

necessary to prevent digging and because the cap will not reduce exposure to meet residential CUGs.

7.3 Alternative 7 – Quarry Bottom Fence ~ Restricted Land Use

Estimated Implementation Cost: \$157,217

30-year O&M Cost: \$91,936

Estimated Total Cost: \$249,153

Alternative 7 consists of installing a fence (e.g., chain link security fence or five-strand high tensile wire fence) and signage around the quarry bottom at RQL (to restrict access to the AOC) and removing ACM at the ground surface within the quarry bottom. Installation of chain link security fence and signage provides a physical control for the AOC. This physical control will be combined with administrative LUCs for access control into the quarry bottom and use restrictions to ensure there is no digging. These controls will eliminate or reduce receptor exposure to COCs and comply with requirements of OAC 3745-20-07(A)(1) by reducing the potential of discharging visible emissions to the outside air due to disturbance of the AOC. Signage notifying personnel of the presence of asbestos in the quarry bottom will be placed on the fence.

The physical and administrative controls under this alternative further restrict access to soil at the AOC that exceeds CUGs. Administrative LUCs include access and digging restrictions and personnel training or briefings for access-authorized persons on potential hazards and safety precautions [e.g., appropriate personal protective equipment (PPE) usage to prevent dermal exposure to soil, and appropriate steps to avoid disturbing ACM]. All individuals unfamiliar with RQL would be properly briefed on the hazards/restrictions prior to entry into the AOC.

Workers accessing the fenced area would be required to use appropriate PPE to prevent dermal exposure to soil and take appropriate steps to avoid disturbing ACM.

Installing a fence (with signage) around the area containing ACM is adequate protection for future land use of general foot traffic by U.S. Army and OHARNG personnel who have awareness that ACM was left in place. After the fence is put in place, there is no additional requirement for ACM removal. However, as part of this remedy, a best management practice (BMP) to remove surficial ACM through non-intrusive, no digging methods will be implemented.

7.4 Alternative 8 – Perimeter Fence ~ Restricted Land Use

Estimated Implementation Cost: \$154,349

30-Year O&M Cost: \$95,613

Estimated Total Cost: \$249,962

Alternative 8 consists of installing a security fence and signage around the perimeter of RQL and removing ACM at the ground surface within the quarry bottom. The fence will be a combination of a chain link security fence and high tensile wire fence.

Installation of this fence encompasses all areas contaminated with COCs and ACM. Signage notifying personnel of the presence of asbestos in the quarry bottom will be placed on the fence. The fence will also provide the U.S. Army and NBG access control for, and protection of, the adjacent closed, sanitary landfill. After the fence is put in place, there is no additional requirement for ACM removal. However, as part of this remedy, a BMP to remove ACM at the ground surface will be implemented. The ACM will be removed using non-intrusive, no digging methods to minimize the potential for personnel exposure in the event the ACM is disturbed.

Physical control provided by the fence will be combined with administrative LUCs. Administrative LUCs include access and digging restrictions and personnel training or briefings on potential hazards and safety precautions (e.g., appropriate PPE usage to prevent dermal exposure to soil, and appropriate steps to avoid disturbing ACM) for access-authorized persons. RQL is managed as

1 “restricted access” due to post-closure care and
2 monitoring requirements for the closed,
3 sanitary landfill until the year 2040. RQL is
4 closed to all standard training and
5 administrative activities, and installation of
6 this fence will help enforce these restrictions.
7 Surveying; sampling; and essential security,
8 safety, periodic maintenance, natural resources
9 management, and other directed activities may
10 be conducted at RQL only after personnel have
11 been properly briefed on potential
12 hazards/sensitive areas. Appropriate personnel
13 will be granted access to the AOC after being
14 properly briefed on the hazards/restrictions.
15 Once the fence is complete and LUCs are in
16 place, this alternative will result in reduced
17 potential for exposure to contaminated soil by
18 National Guard receptors. This alternative will
19 also protect the MRS and landfill cap on the
20 closed, sanitary landfill within RQL.

21 22 **8.0 EVALUATION AND** 23 **COMPARATIVE ANALYSIS OF** 24 **ALTERNATIVES** 25

26 The alternatives were evaluated with respect to
27 the nine comparative analysis criteria, as
28 outlined by CERCLA (Table 2). The nine
29 criteria are categorized into three groups:
30 threshold criteria, primary balancing criteria,
31 and modifying criteria. These criteria are as
32 follows:

33
34 Threshold Criteria – must be met for the
35 alternative to be eligible for selection as a
36 remedial option.

- 37
38 1. Overall protection of human health
39 and the environment.
40 2. Compliance with applicable or
41 relevant and appropriate requirements
42 (ARARs).
43

44 Balancing Criteria – used to weigh major
45 trade-offs among alternatives.
46

- 47 3. Long-term effectiveness and
48 permanence.
49 4. Reduction of toxicity, mobility, or
50 volume through treatment.

51 5. Short-term effectiveness.

52 6. Implementability.

53 7. Cost.
54

55 Modifying Criteria – may be considered to the
56 extent that information is available during
57 development of the feasibility study (FS) but
58 can be fully considered only after public
59 comment on this Proposed Plan.
60

61 8. State acceptance.

62 9. Community acceptance.
63

64 The comparative analysis evaluates the relative
65 performance of Alternatives 5 through 8 with
66 respect to each of the nine criteria. Identifying
67 the advantages and disadvantages of each
68 alternative, with respect to each other, helps
69 identify the relative strengths of the preferred
70 alternative. These strengths, combined with
71 risk management decisions made by the
72 U.S. Army and Ohio EPA, as well as input
73 from the community, will serve as the basis for
74 selecting the remedy.
75

1 **Table 2. CERCLA Evaluation Criteria**

Overall Protection of Human Health and the Environment – considers whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

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

Long-term Effectiveness and Permanence – considers the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals (CUGs) have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment – considers the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-term Effectiveness – considers the speed with which the remedy achieves protection, as well as the potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability – considers the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost – considers capital costs and operation and maintenance costs associated with the implementation of the alternative.

State Acceptance – indicates whether the state concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance – will be addressed in the Record of Decision (ROD) following a review of the public comments received on the remedial investigation (RI) report, focused feasibility study report, and the Proposed Plan.

2
3 Table 3 presents a summary for the
4 comparative analysis of remedial alternatives
5 for RQL from the Engineering Evaluation.
6 Criterion 1, Overall Protectiveness, is rated as
7 either “protective” or “not protective.”

8 Criterion 2, Compliance with ARARs, is rated
9 as either “compliant” or “not compliant.” The
10 remaining five primary balancing criteria are
11 rated as high, medium, or low, with a rating of
12 high indicating alternative(s) that performs the
13 best and a rating of low indicating alternative(s)
14 that performs the worst (e.g., an alternative with
15 a high cost will be scored “low” for Criterion 7,
16 Cost).

17
18 Alternatives 5 and 6 provide overall
19 protectiveness and long-term effectiveness and
20 permanence for a Security Guard/Maintenance
21 Worker Land Use by removing contaminated
22 soil in Alternative 5 and capping contaminated
23 soil in Alternative 6. These alternatives have
24 significant short-term risks associated with
25 these alternatives, as these activities will be
26 conducted in the presence of friable ACM.
27 Alternative 5 has a high cost associated with
28 disposal of ACM and restoration of the
29 excavated area. Both Alternatives 5 and 6 will
30 impact the low quality wetland and have costs
31 associated with restoration and future
32 monitoring of co-located wetlands.

33
34 Alternative 7 provides overall protectiveness
35 and long-term effectiveness and permanence
36 for the expected Restricted Access Land Use.
37 Administrative controls will be put in place to
38 prevent access to COCs and ACM in the
39 quarry bottom. There are moderate risks
40 associated with fence installation in
41 Alternative 7, as it will be installed near the
42 ACM and within the MRS.

43
44 Alternative 8 provides overall protectiveness
45 and long-term effectiveness and permanence
46 for the expected Restricted Access Land Use.
47 Administrative controls will be put in place to
48 prevent access to COCs and ACM in the
49 quarry bottom. In addition, this alternative
50 provides protection to the adjacent sanitary
51 landfill. Implementation of Alternative 8 can
52 be done with little risk to workers, as the fence
53 will be installed outside of the MRS and
54 sanitary landfill and away from the ACM.
55 Alternative 8 will have less impact to the
56 environment, as most of the fence will be
57 installed inside of the woods surrounding
58 RQL.

Table 3. Summary of Comparative Analysis of Remedial Alternatives

NCP Evaluation Criteria	Alternative 5: Excavation of Soil and Off-site Disposal as Friable ACM ~ Security Guard/Maintenance Worker		Alternative 6: Capping ~ Security Guard/Maintenance Worker		Alternative 7: Quarry Bottom Fence ~ Restricted Land Use		Alternative 8: Perimeter Fence ~ Restricted Land Use	
Threshold Criteria	Result		Result		Result		Result	
1. Overall Protectiveness of Human Health and the Environment	Protective		Protective		Protective		Protective	
2. Compliance with ARARs	Compliant		Compliant		Compliant		Compliant	
Balancing Criteria	Ranking	Score	Ranking	Score	Ranking	Score	Ranking	Score
3. Long-Term Effectiveness and Permanence	High	3	Medium	2	Medium	2	Medium	2
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Medium	2	Low	1	Low	1	Low	1
5. Short-Term Effectiveness	Low	1	Medium	2	Medium	2	High	3
6. Implementability	Low	1	Low	1	Medium	2	High	3
7. Cost	Low	1	Medium	2	High	3	High	3
Balancing Criteria Score	8		8		10		12	

ACM = Asbestos-Containing Material

ARAR = Applicable or relevant and appropriate requirement

NCP = National Oil and Hazardous Substances Pollution Contingency Plan

9.0 PREFERRED ALTERNATIVE

The U.S. Army, in consultation with Ohio EPA, is recommending Alternative 8: Perimeter Fence ~ Restricted Land Use be implemented as the modified preferred remedy at RQL. This remedy for soil and dry sediment includes installation of a fence at the perimeter of RQL and implementing a BMP to remove surficial ACM through non-intrusive, no digging methods. Installation of the fence and signage provides a physical control for the AOC to minimize or eliminate the potential for exposure to receptors that are not granted access to RQL. Additionally, this preferred alternative will also provide access restrictions and protection to the landfill cap on the closed, sanitary landfill within RQL.

19

The physical and administrative controls under this alternative will further restrict access to the portion of the AOC with soil containing COCs exceeding CUGs. The fence and signage will further deter entry by any other receptors that are not granted access to RQL. Once the fence is complete and LUCs are in place, this alternative will result in reduced potential for exposure to contaminated soil and ACM by National Guard receptors. Fencing will ensure compliance with the requirement that all personnel be properly briefed on potential hazards, including the use of appropriate PPE to prevent dermal exposure to soil, and appropriate steps to take to avoid disturbing ACM.

36

1 In addition, fencing around the perimeter of
2 RQL may also provide a remedy for surface
3 water and wet sediment media that currently
4 exists at this AOC. Although the CERCLA
5 process for these two media has not been fully
6 implemented, a fencing option for soil and dry
7 sediment, a fencing option for soil and dry
8 sediment may be a suitable remedy for surface
9 water and wet sediment. Alternative 8 has an
10 estimated cost of \$249,962 that includes a
11 \$154,349 implementation cost and \$95,613
12 O&M cost.

13
14 This recommendation is not a final decision.
15 The U.S. Army, in consultation with Ohio EPA,
16 will select the remedy for this AOC after
17 reviewing and considering all comments
18 submitted during the 30-day public comment
19 period.

21 10.0 COMMUNITY PARTICIPATION

23 10.1 Community Participation

24
25 Public participation is an important component
26 of remedy selection. The U.S. Army and
27 Ohio EPA are soliciting input from the
28 community on the preferred alternative. The
29 comment period extends from Month XX, 2012
30 to Month XX, 2012. This period includes a
31 public meeting at which the U.S. Army will
32 present the Proposed Plan as agreed to by Ohio
33 EPA. The U.S. Army will accept both oral and
34 written comments at this meeting.

POINT OF CONTACT FOR WRITTEN COMMENTS

Facility Manager
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
Office: (330) 358-7311
Fax: (330) 358-7314

36 10.2 Public Comment Period

37
38 The 30-day comment period is from Month
39 XX, 2012 to Month XX, 2012, and provides an

40 opportunity for public involvement in the
41 decision-making process for the modified
42 proposed action. All public comments will be
43 considered by the U.S. Army and Ohio EPA
44 before selecting the final remedy. The public is
45 encouraged to review and comment on this
46 Proposed Plan. During the comment period,
47 the public is encouraged to review documents
48 pertinent to RQL. This information is available
49 at the Information Repository and online at
50 www.rvaap.org. To obtain further information,
51 contact the RVAAP Facility Manager.

53 10.3 Written Comments

54
55 If the public would like to comment in writing
56 on the Proposed Plan or other relevant issues,
57 please deliver comments to the U.S. Army at
58 the public meeting or mail written comments
59 (postmarked no later than Month XX, 2012).

61 10.4 Public Meeting

62
63 The U.S. Army will hold an open house and
64 public meeting on this Proposed Plan on
65 Month XX, 2012 at 6:00PM, in the Newton
66 Falls Community Center, 52 East Quarry
67 Street, Newton Falls, Ohio, 44444 to accept
68 comments. This meeting will provide an
69 opportunity for the public to comment on the
70 proposed action. Comments made at the
71 meeting will be transcribed.

INFORMATION REPOSITORIES

Reed Memorial Library

167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827

Hours of operation:

9AM – 8PM Monday – Friday
9AM – 5PM Saturday
1PM – 5PM Sunday (between Labor Day
and Memorial Day)

Newton Falls Public Library

204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282

Hours of operation:

10AM – 8PM Tuesday - Friday
9AM – 5PM Friday and Saturday

1 **10.5 U.S. Army Review of Public Comments**

2
3 The U.S. Army will review the public's
4 comments as part of the process in reaching a
5 final decision on the most appropriate action to
6 be taken. A Responsiveness Summary, a
7 document that summarizes the U.S. Army's
8 responses to comments received during the
9 public comment period, will be included in an
10 amendment to the original ROD. The U.S.
11 Army's final choice of action will be
12 documented in the ROD Amendment. The
13 ROD Amendment will be added to the
14 RVAAP Administrative Record and
15 information repositories.

ADMINISTRATIVE RECORD FILE

RVAAP

Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314

Note: Access is restricted to the Ravenna
Army Ammunition Plant (RVAAP), but the
file can be obtained or viewed with prior
notice to RVAAP.

16 **GLOSSARY OF TERMS**

17
18 **Administrative Record:** a collection of
19 documents, typically reports and
20 correspondence, generated during site
21 investigation and remedial activities.
22 Information in the Administrative Record
23 represents the information used to select the
24 preferred alternative. It is available for public
25 review at RVAAP, Building 1037; call (330)
26 358-7311 for an appointment.

27
28 **Comprehensive Environmental Response,**
29 **Compensation, and Liability Act**
30 **(CERCLA):** a federal law passed in 1980,
31 commonly referred to as the Superfund
32 Program. It provides liability, compensation,
33 cleanup, and emergency response in
34 connection with the cleanup of inactive

35 hazardous substance release sites that endanger
36 public health or the environment.

37
38 **Chemical of Concern (COC):** site-specific
39 chemical substance that potentially poses
40 significant human health or ecological risks.
41 COCs are typically further evaluated for
42 remedial action.

43
44 **National Oil and Hazardous Substances**
45 **Pollution Contingency Plan (NCP):** the
46 regulations that implement CERCLA and
47 address responses to hazardous substances and
48 pollutants or contaminants.

49
50 **Receptor:** a hypothetical person, based on
51 current or potential future land use, who may be
52 exposed to an adverse condition.

53
54 **Record of Decision (ROD):** legal record
55 signed by the U.S. Army and Ohio EPA. It
56 describes the cleanup action or remedy selected
57 for a site, the basis for selecting that remedy,
58 public comments, responses to comments, and
59 the estimated cost of the remedy.

60
61 **Remedial Investigation (RI):** CERCLA
62 investigation that involves sampling
63 environmental media, such as air, soil, and water,
64 to determine the nature and extent of
65 contamination and to calculate human health and
66 environmental risks that result from the
67 contamination.

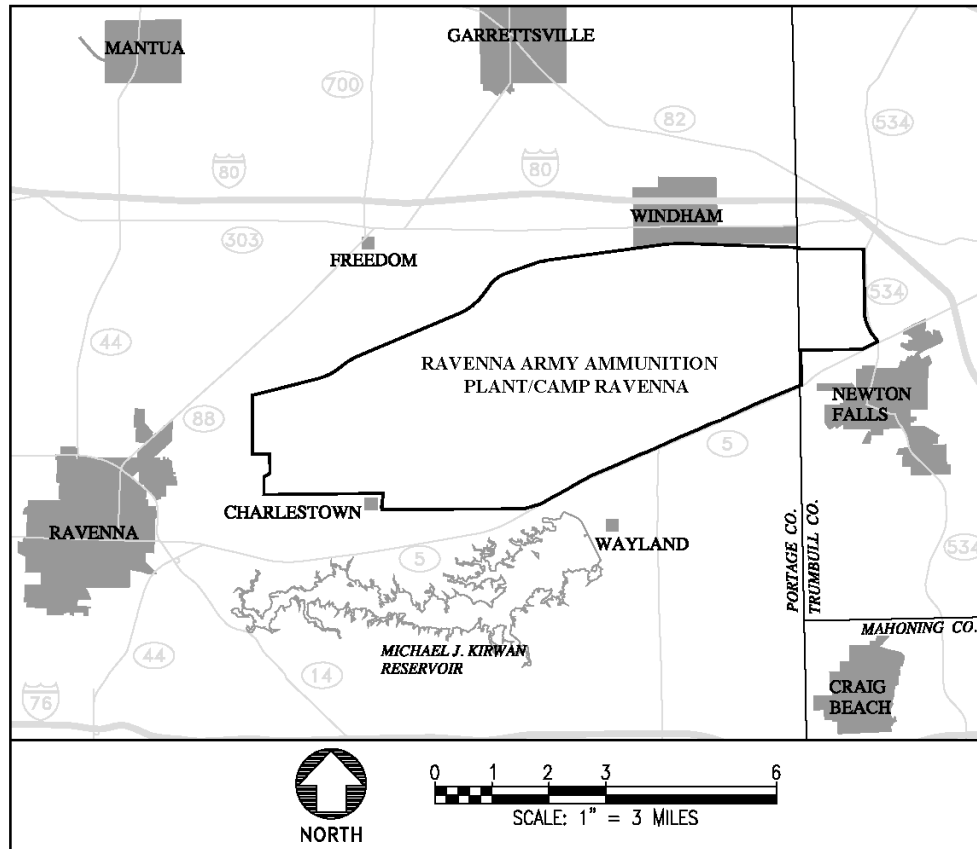
68
69 **Responsiveness Summary:** a section of the
70 ROD where the U.S. Army documents and
71 responds to written and oral comments received
72 from the public about the Proposed Plan.

73
74 **Risk Assessment:** an evaluation that
75 determines potential harmful effects, or lack
76 thereof, posed to human health and the
77 environment due to exposure to chemicals
78 found at a CERCLA site.

REFERENCES

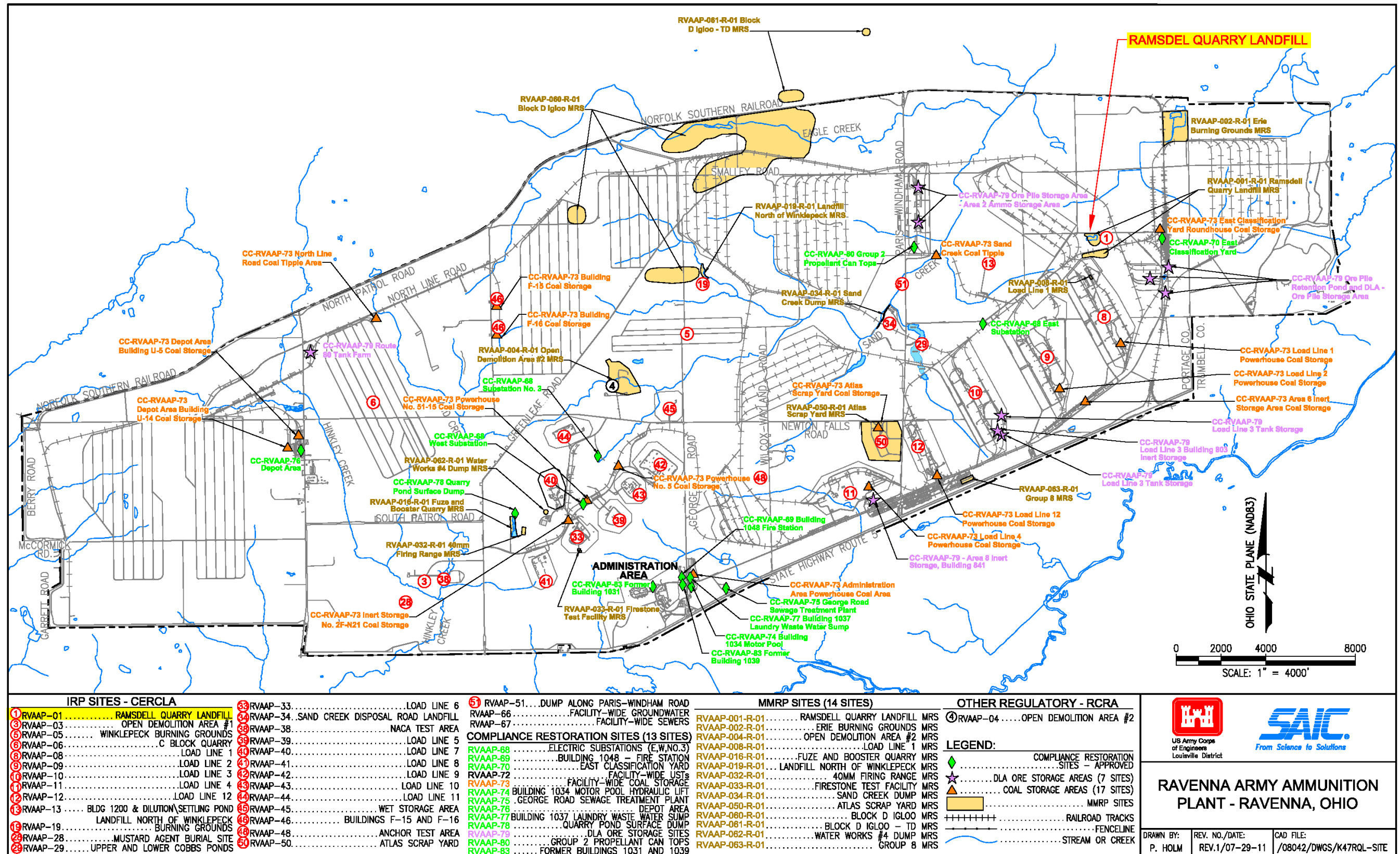
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- USEPA (United States Environmental Protection Agency) 1999. *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. July 1999.

FIGURES



1

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



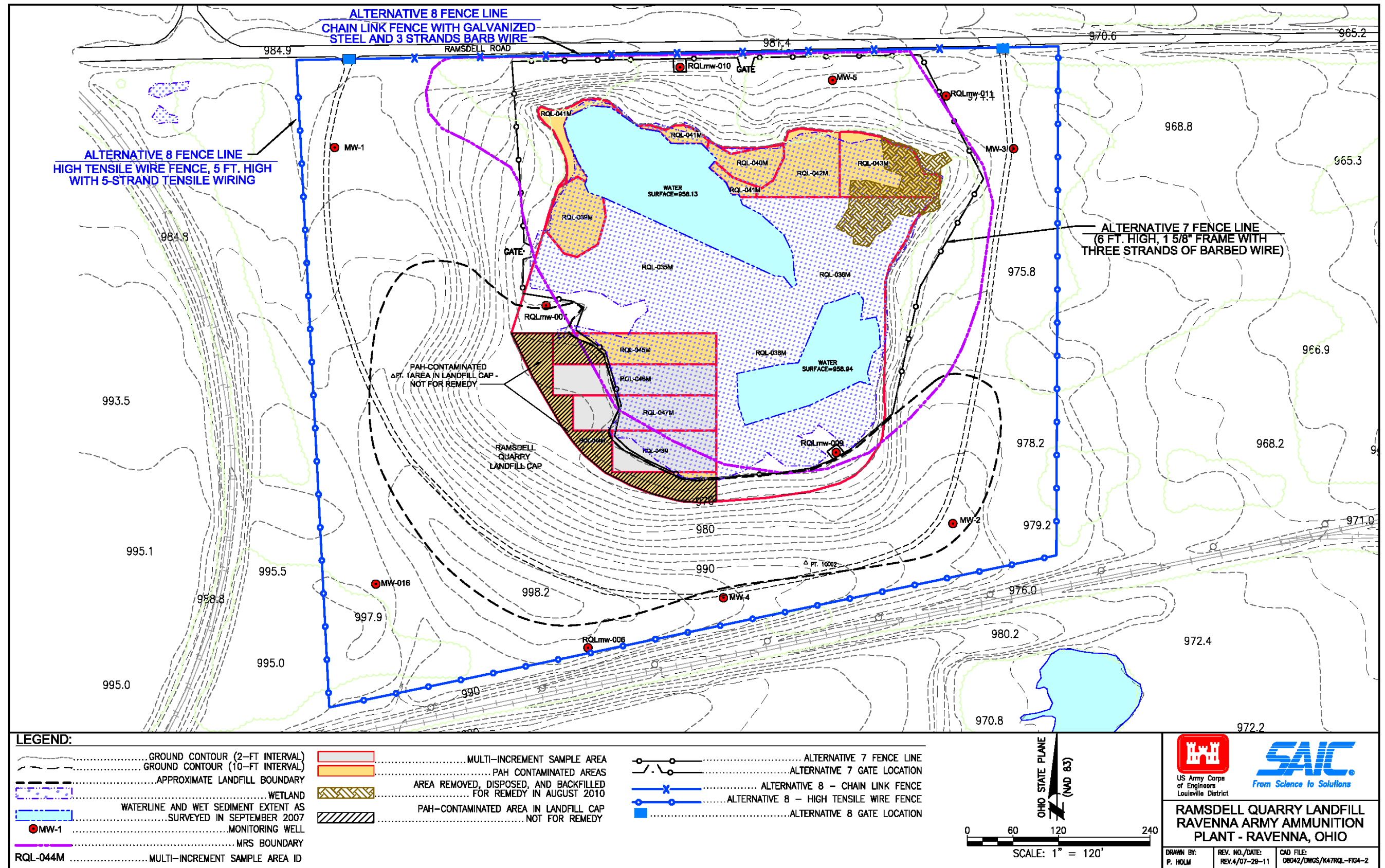


Figure 3. RQL Site Features and Fencing Extent Under Alternative 8