Final

Proposed Plan for Soil and Dry Sediment at Load Line 12 (RVAAP-12)

Ravenna Army Ammunition Plant
Ravenna, Ohio

March 2007

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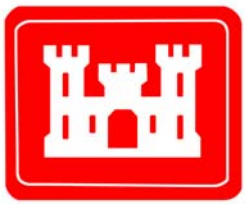

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LIST OF ACRONYMS

AOC	area of concern
ARARs	Applicable or Relevant and Appropriate Requirements
BGS	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
EPC	Exposure Point Concentration
FS	feasibility study
GRA	general response action
HHRA	human health risk assessment
IRP	Installation Restoration Program
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGB	National Guard Bureau
O&M	operations and maintenance
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
RAO	remedial action objective
RI	remedial investigation
ROD	Record of Decision
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SVOC	semivolatile organic compound
USACE	U. S. Army Corps of Engineers

1.0 INTRODUCTION

This Proposed Plan presents remedial alternatives and identifies the preferred alternative for cleanup of contaminated soil and dry sediment within Load Line 12 at the Ravenna Army Ammunition Plant (RVAAP), in Ravenna, Ohio (Figure 1), and provides the rationale for this preference. The US Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), issues this Proposed Plan. The Proposed Plan provides the public with information to comment upon the selection of an appropriate response action. The US Army, in consultation with Ohio EPA, will select the remedy for the 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.

The US 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, June 10, 2004.

The Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) Reports (U. S. Army Corps of Engineers [USACE] 1998 and 2004), the Feasibility Study (FS) (USACE 2006), and other documents contained in the Administrative Record file for Load Line 12. The US 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.

Public Comment Period:
April 4, 2007 to May 3, 2007

Public Meeting:
The US Army will hold an open house and public meeting to explain the Proposed Plan and the alternatives presented in the Feasibility Study (USACE 2006). Oral and written comments will also be accepted at the meeting. The open house and public meeting is scheduled for 6:00PM, April 10, 2007, at the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio 44444.

Information Repositories:
Information used in selecting the preferred alternative is available for public review at the following locations:

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
10AM – 8:45PM Monday – Friday
10AM – 5:45PM Saturday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9AM – 8PM Monday – Thursday
9AM – 5PM Friday and Saturday
12PM – 5PM Sunday

The **Administrative Record File**, containing information used in selecting the preferred alternative, is available for public review at the following location:

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.

2.0 RVAAP AND AREA OF CONCERN BACKGROUND

RVAAP is approximately 4.8 km (3 miles) east-northeast of the city of Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls (Figure 1). 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 OHARNG over a 2-year period (2002 and 2003) and the actual total acreage of the property was found to be 21,683 acres. As of February 2006, a total of 20,403 acres of the former RVAAP have 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 RTLS. The current RVAAP portions of the property are solely located within Portage County.

The RVAAP IRP includes investigation and cleanup related to past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document include the historical extent of RVAAP, which is the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated.

RVAAP is approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) 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 (Figure 1). RVAAP is surrounded by several communities: Windham on the north; Garrettsville 9.6 km (6 miles) to the northwest; Newton Falls 1.6 km (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 km (3 miles) to the south.

RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading and placed on standby status in 1950. Production activities were resumed during 1954 to 1957 and 1968 to 1972. Demilitarization activities, including disassembly of munitions and explosives melt-out and recovery, continued until 1992. When RVAAP was operational, the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The only activities still being carried out at RVAAP are environmental restoration, ordnance clearance and infrequent demolition of any unexploded ordnance discovered during investigation and remediation activities, and building decontamination and demolition.

Load Line 12, designated as AOC RVAAP-12, covers about 80 acres in the southeastern portion of RVAAP (Figures 2 and 3). Load Line 12 was originally known as the Ammonium Nitrate Plant and started operations on November 25, 1941. Structures related to the production of the ammonium nitrate were the Neutral Liquor Building (Building FF-19) and seven evaporation/crystallization units (Buildings 900, 901, 902, 903, 904, 905, and 906). Other structures, such as Water Works No. 2 and Power House No. 3 (Building FE-17), housed support operations. The western half of the AOC contained former production areas. The eastern half was previously cleared, but did not contain any known production facilities. The RIs also identified an area immediately north of the AOC (informally termed the Team Track Area) that was apparently used for offloading and staging of materials used in Load Line 12 production activities.

In May 1943, production of ammonium nitrate was terminated. From 1946 to 1950, a private contractor leased Load Line 12 to produce fertilizer-grade ammonium nitrate. From 1965 to 1967, a private contractor leased Building FF-19 for the production of aluminum chloride. The US Army terminated the lease early due to environmental concerns related to air emissions and wastewater discharges to Cobb's Pond.

In June 1944, Buildings 900, 904, and 905 were converted for demilitarization of munitions. Rinsate from demilitarization operations was initially allowed to flow out of

the buildings and directly onto the ground or to drainage ditches. In 1981, the Load Line 12 Pink Water Treatment Plant was built to treat the demilitarization effluent prior to discharge. After the termination of demilitarization operations, the treatment plant was used under a National Pollutant Discharge Elimination System permit to treat explosives-tainted stormwater from Load Line 12 and other RVAAP locations.

Currently, there are no above-grade structures remaining at the AOC. Demolition of Buildings 901, 902, 906, and FF-19 took place between 1973 and 1975. Building FN-54 (bagging and shipping facility) was demolished in the 1980s. In 1999, approximately 1,500 ft^3 of soil was removed from four pits near Building 904 and taken to a former warehouse at Load Line 4 as part of an explosives composting pilot study. Demolition of all remaining structures took place between 1998 and 2000. A former blast berm near Building 903 was removed and used as fill/groundcover for areas around Buildings 903 and FE-17.

The following environmental reports have been completed for Load Line 12:

- Preliminary Assessment (USACE 1996);
- Phase I RI (USACE 1998);
- Phase II RI (USACE 2004); and
- Feasibility Study (USACE 2006).

3.0 AREA OF CONCERN CHARACTERISTICS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on the RIs conducted from 1998 through 2004 (USACE 1998 and 2004).

Elevations across Load Line 12 range from approximately 970 to 987 ft above mean sea level. Surface water drainage flows generally from south to north across the AOC. A prominent drainage ditch (Main Ditch) divides the AOC in half, as seen in Figure 3. A stream traverses the AOC from west to east and intercepts the Main Ditch near the northern boundary of the AOC. Beaver activity produced a large marshy area in the western portion of the AOC near Buildings 904, 905, and 906. Drainage ditches within the AOC are primarily dry, except during rain storms.

Silty to clayey soil and glacial sediments overlie shale bedrock at Load Line 12, except where disturbed by RVAAP activities. A majority of the AOC was re-graded and soil was disturbed during demolition activities that occurred between 1998 and 2000. Soil in the former production areas contains a mix of sandy fill, sand, ballast material, slag, and residual debris (e.g., metal, brick, and concrete).

The general groundwater flow pattern in most of the AOC is to the north, which mimics the topography and surface water drainage patterns. In the southernmost portion of the AOC, groundwater flow is to the southeast.

Contamination in soil at Load Line 12 is primarily confined to between 0 and 4 ft below ground surface (BGS). Contaminants identified in soil include metals and explosive compounds and some residual semivolatile organic compounds (SVOCs) from the burning of fossil fuel at the Power Plant. The highest concentrations of metals occur in the vicinity of former Building FF-19 and in the southern part of the Main Ditch. Explosive compounds were detected primarily in the soil and drainage ditches in the vicinity of former Buildings 900, 904, and 905.

Groundwater sampling shows detectable quantities of explosives and metals in many wells in the AOC. Wells in the northern half of Load Line 12 contain the highest concentrations of contaminants. Nitrate is present in several wells near former ammonium nitrate production buildings. Data suggest contaminants have not migrated far

from source areas. Groundwater monitoring will be conducted under the facility-wide groundwater monitoring program.

Groundwater contaminant migration was modeled as part of the RI/FS. Modeling included evaluation of potential leaching of contaminants from soil to groundwater. Also, the potential for contaminants to migrate from sources to the AOC boundary was evaluated. Modeling results presented in the FS indicate one metal (antimony) may leach from soil to groundwater at concentrations above Ohio drinking water maximum contaminant levels. Antimony was not predicted to migrate beyond the AOC boundary.

A facility-wide investigation of surface water at RVAAP (USACE 2005) showed that surface water quality in the unnamed tributary flowing north from Load Line 12 to Lower and Upper Cobb's Ponds exhibits full attainment of warm water habitat. For example, no chemical concentration exceeded the Ohio Water Quality Standards aquatic life maxima, the stream habitat was good, fish indices were very good, macro-invertebrates were fair to good, and there was no evidence of impairment. Sediment samples were not chemically contaminated and metals were below Ohio reference values in the reach of the stream extending 4,000 ft downstream of Load Line 12. Surface water monitoring may be conducted in the future if conditions warrant.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The US Army intends to transfer Load Line 12 to NGB following the remediation of contaminated soil/dry sediment. OHARNG plans to use Load Line 12 for National Guard training. Specifically, the AOC will be used for mounted training, which includes operation of wheeled and tracked vehicles.

Remediation of groundwater, surface water, and underwater (wet) sediment is not included in the scope of this action. These media will be addressed under future actions. However, the selected remedy for soil/dry sediment at Load Line 12 must be protective of these other media.

Groundwater at Load Line 12 is also monitored under the RVAAP Facility-Wide Groundwater Monitoring program conducted in accordance with the Ohio EPA Director's Final Findings and Orders (Ohio EPA 2004a). Monitoring of surface water may be conducted in the future if conditions warrant.

5.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

A human health risk assessment (HHRA) was conducted to evaluate potential risks from current and predicted future exposures to soil/dry sediment contaminants at Load Line 12 (USACE 2004). Installation personnel visit infrequently to conduct power line maintenance and timber harvesting and check the status of beaver dams. A Security Guard/Maintenance Worker, Hunter/Trapper, Child Trespasser, National Guard Trainee, Open Recreator, Open Industrial Worker, and Resident Farmer (adult and child) were evaluated in the RI/FS as receptors to cover a range of possible future land uses. The National Guard Trainee and the Security Guard/Maintenance Worker are considered the reasonably anticipated future land uses.

OHARNG plans to use Load Line 12 for National Guard mounted training. The National Guard Trainee was identified as the most sensitive receptor under this future land use. The HHRA also evaluated a residential (unrestricted) land use scenario to provide a full comparative range of risks and remedial alternatives. A Resident Subsistence Farmer (adult and child) was identified as the most sensitive receptor under future unrestricted land use. The facility will be retained by the U. S. government (i.e., a federal facility) for use by the OHARNG for military training. Therefore, this HHRA summary focuses on health effects for National Guard use. Risk information for other receptors is located in the HHRA (USACE 2004) and FS (USACE 2006).

OHARNG future use could include four National Guard receptors (Trainee, Security Guard/Maintenance Worker, Fire/Dust Suppression Worker, and Hunter/Trapper). The National Guard Trainee is exposed to soil/dry sediment through incidental ingestion, dermal contact, and inhalation of vapors and fugitive dust for 24 hrs/day, 39 days/year (for a total of 936 hrs/year) over a period of 25 years. The other three National Guard receptors are exposed for much shorter periods of time.

Because the National Guard Trainee is assumed to have the highest levels of exposure to contaminants among the four National Guard receptors, the preliminary cleanup goals established for the National Guard Trainee are also protective of other National Guard receptors. The National Guard Trainee, therefore, is the representative receptor for the intended land use. The National Guard Trainee is also protective of a Trespasser, who is assumed to visit the site 2 hrs/day, 50 to 100 days/year (100 to 200 hrs/year) over a period of 10 to 30 years.

Nine soil and three sediment constituents of concern (COCs) were identified for the National Guard Trainee in the HHRA for Load Line 12 (USACE 2004). All of these COCs, except arsenic, were eliminated from further consideration because the corresponding exposure point concentrations (EPCs) did not exceed the preliminary cleanup goals. Also, the distribution of COCs in soil was limited to isolated occurrences (e.g., no definite areas or hotspots of contamination).

Arsenic in dry sediment in the Main Ditch was recommended as a COC for evaluation of remedial alternatives in the FS. Arsenic is present well above the preliminary cleanup goal in the southern portion of the Main Ditch. Based on these results, dry sediment in the Main Ditch is a candidate for remedial action.

Total carcinogenic risk to a National Guard Trainee exposed to contaminated sediment at the Main Ditch was calculated as 1.8E-05, which slightly exceeds the Ohio EPA target risk of 1E-05. The chemical hazard index was 0.23, indicating no unacceptable hazard.

Ecological habitats at the approximately 80 acres in Load Line 12 include forests, grasslands, herbaceous fields, and low, marshy areas. There are four drainage ditches at Load Line 12 that receive stormwater runoff from within the AOC and adjacent areas. There are also two unnamed ponds within the AOC. Two of the ditches and the smaller of the unnamed ponds contain water year-round. These habitats support a variety of wildlife, including small mammals, birds, insects, and fish. There are currently no federally-listed species or critical habitats on RVAAP property. State-endangered, State-threatened, State species-of-concern, and State special-interest species have been identified at RVAAP. Load Line 12 has not been previously surveyed for State-listed species; therefore, none have been documented at Load Line 12.

The ecological risk assessment for Load Line 12 evaluated risk to plants and animals from contaminants in soil, surface water, and sediment. Contaminants of ecological concern identified for these media include metals, one explosive compound, pesticides, and SVOCs. The FS (USACE 2006) presents a weight-of-evidence evaluation and recommends that no quantitative ecological preliminary cleanup goals be developed at Load Line 12.

As a result, the response action is limited to addressing arsenic in dry sediment at the Main Ditch to protect future National Guard Trainees under a restricted land use scenario.

6.0 REMEDIAL ACTION OBJECTIVES

The remedial action objective (RAO) references cleanup goals and target risk levels that are considered protective of human health under current and reasonably anticipated future use scenarios. The RAO for this remedy is to prevent National Guard Trainee exposure to contaminants in soil and dry sediment that exceed the preliminary cleanup goals to a depth of 4 ft BGS.

Table 1. Constituent of Concern and Preliminary Cleanup Goal for a National Guard Trainee for Soil/Dry Sediment at Load Line 12[a]

COC[b]	Target Risk	Cleanup Goal (mg/kg)
Arsenic	1E-05	31

[a]Sediment from the Main Ditch.
[b]Total carcinogenic risk to a National Guard Trainee from contaminants in the Main Ditch was calculated as 1.8E-05. The chemical hazard index was 0.23 (less than 1) indicating no unacceptable hazard.

Soil and dry sediment to be cleaned up under this Proposed Plan extend to a maximum depth of 4 ft BGS because future land use will not require disturbance of soil below that depth. Table 1 presents the risk-based cleanup goal for the remedy.

7.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES

The following general response actions (GRAs) were considered in the FS for interim remedy of contaminated soil/dry sediment at Load Line 12:

- No action,
- Land use controls and monitoring,
- Containment,
- Removal,
- Treatment, and
- Disposal and handling.

Technologies under each GRA were screened and selected for their ability to reduce exposure to contaminants in soil/dry sediment. Because soil and dry sediment contain chemical contamination above preliminary cleanup goals, the technologies were evaluated for their ability to remove or reduce contaminants in the shortest timeframe.

Technologies selected under these GRAs were combined into the following six alternatives for detailed analysis. Costs are estimated for each alternative.

7.1 Feasibility Study Alternative 1 – No Action

Cost: $0

This remedial alternative provides no further remedial action and is required under NCP as a baseline for comparison with other remedial alternatives. Under this alternative, there is no reduction in toxicity, mobility, or volume of contaminated soil and dry sediment. Access restrictions and environmental monitoring would be discontinued. The site would have no legal, physical, or administrative land use controls. Environmental monitoring would not be performed. Five-year reviews would not be conducted in accordance with CERCLA 121(c).

7.2 Feasibility Study Alternative 2 – Limited Action

Estimated Implementation Cost: $20,888
Operations and Maintenance (O&M) Cost (estimated 30 years): $188,306
Estimated Total Cost: $209,194

This remedial alternative involves implementation of land use controls and periodic monitoring (i.e., CERCLA 5-year reviews) to detect any changes in the nature or extent of contamination at the site and to deter unauthorized access and protect human receptors. Five-year reviews would be conducted in accordance with CERCLA 121(c). The remedial alternative includes an O&M period to detect any changes in nature and extent at the AOC.

7.3 Feasibility Study Alternative 3 – Excavation of Soils/Dry Sediments with Offsite Disposal – National Guard Trainee Land Use

Estimated Implementation Cost: $176,483
O&M Cost (estimated 30 years): $188,306
Estimated Total Cost: $364,789

This remedial alternative involves the removal of chemical contaminants in soil/dry sediment above the preliminary cleanup goal for the National Guard Trainee and disposal offsite at a licensed disposal facility. Approximately 1,161 yd^3 of contaminated dry sediment in the Main Ditch would be excavated and transported to an offsite disposal facility licensed and permitted to accept these wastes. Confirmation sampling would be conducted to ensure the National Guard Trainee preliminary cleanup goal has been achieved. Areas successfully remediated would be backfilled with clean soils.

The US Army and OHARNG would develop and implement land use controls to deter unauthorized access and to protect human receptors. Environmental monitoring would be conducted to assess potential contaminant migration off of the AOC. Five-year reviews would be conducted in accordance with CERCLA 121(c). The remedial action includes an O&M period to account for the post-implementation activities, including land use controls.

7.4 Feasibility Study Alternative 4 – Excavation of Soils/Dry Sediments and Offsite Disposal – Resident Subsistence Farmer Land Use

Estimated Implementation Cost: $1,794,453
O&M Cost: $0
Estimated Total Cost: $1,794,453

This remedial alternative involves the removal of chemical contaminants in soil/dry sediment above Resident Subsistence Farmer land use preliminary cleanup goals and disposal offsite at a licensed disposal facility. Approximately 18,197 yd^3 (ex situ) of soil/dry sediment would be excavated and transported to an offsite disposal facility licensed and permitted to accept these wastes. Confirmation sampling would be conducted to ensure residential land use preliminary cleanup goals have been achieved. Areas successfully remediated would be backfilled with clean soils. Alternative 4 does not include O&M because this alternative achieves Resident Subsistence Farmer land use cleanup goals and land use controls would not be required.

7.5 Feasibility Study Alternative 5 – Excavation of Soils/Dry Sediments, Treatment, and Offsite Disposal – National Guard Trainee Land Use

Estimated Implementation Cost: $466,757
O&M Cost (estimated 30 years): $188,306
Estimated Total Cost: $655,064

This remedial alternative involves the removal of chemical contaminants in soil/dry sediment above the preliminary cleanup goal for the National Guard Trainee followed by treatment and disposal offsite at a licensed disposal facility. Approximately 1,161 yd^3 of contaminated dry sediment in the Main Ditch would be excavated and transported to a central treatment area. Treatment would include mixing chemicals with the soil to stabilize and solidify the material. A treatability study to identify the proper types and amounts of treatment chemicals would be performed prior to remediation. Treated soil/dry sediment would then be transported to an offsite disposal facility licensed and permitted to accept the wastes. Confirmation sampling would be conducted to ensure the National Guard Trainee land use preliminary cleanup goal has been achieved.

The US Army and OHARNG would develop and implement land use controls to deter unauthorized access and to protect human receptors. Environmental monitoring would be conducted to assess potential contaminant migration off of the AOC. Five-year reviews would be conducted in accordance with CERCLA 121(c). The remedial action includes an O&M period to account for the post-implementation activities, including land use controls.

7.6 Feasibility Study Alternative 6 – Excavation of Soils/Dry Sediments, Treatment, and Offsite Disposal – Resident Subsistence Farmer Land Use

Estimated Implementation Cost: $3,958,169
O&M Cost: $0
Estimated Total Cost: $3,958,169

This remedial alternative involves the removal of chemical contaminants in soil/dry sediment above the preliminary cleanup goals for the Resident Subsistence Farmer followed by treatment and disposal offsite at a licensed disposal facility. Approximately 18,197 yd^3 (ex situ) of impacted soil/dry sediment would be excavated and transported to a central treatment area. Treatment would include mixing chemicals with the soil to stabilize and solidify the material. A treatability study to identify the proper types and amounts of treatment chemicals would be performed prior to remediation. Treated soil/dry sediment would then be transported to an offsite disposal facility licensed and permitted to accept the wastes. Confirmation sampling would be conducted to ensure the Resident Subsistence Farmer land use preliminary cleanup goals have been achieved. Alternative 6 does not include O&M because this alternative achieves the Resident Subsistence Farmer land use cleanup goals and land use controls would not be required.

8.0 EVALUATION OF FEASIBILITY STUDY ALTERNATIVES

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

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

Table 2. CERCLA Evaluation Criteria[a]

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 – 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 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 following a review of the public comments received on the Remedial Investigation Report, Focused Feasibility Study, and the Proposed Plan.

[a]CERCLA-Comprehensive Environmental Response and Liability Act

Overall protection of human health and the environment.

1. Compliance with applicable or relevant and appropriate requirements.

Primary Balancing Criteria – used to weigh major trade-offs among alternatives.

2. Long-term effectiveness and permanence.
3. Reduction of toxicity, mobility, or volume through treatment.
4. Short-term effectiveness.
5. Implementability.
6. Cost.

Modifying Criteria – may be considered to the extent that information is available during development of the FS, but can be fully considered only after public comment on this Proposed Plan.

7. State acceptance.
8. Community acceptance.

The comparative analysis evaluates the relative performance of Alternatives 1 through 6 with respect to each of the nine criteria. Identifying the advantages and disadvantages of each alternative, relative to one another, helps to identify the relative strengths of the preferred alternative. These strengths, combined with risk management decisions made by the US Army and Ohio EPA, as well as input from the community, will serve as the basis for selecting the remedy.

Table 3 presents a summary for the comparative analysis of remedial alternatives for Load Line 12 from the FS. Criterion 1, Overall Protectiveness, is rated as either "protective" or "not protective." Criterion 2, Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), is rated as either "compliant" or "not compliant." The remaining seven criteria are rated as high, medium, or low. A rating of "high" indicates the alternative performs the best and a rating of "low" indicates the alternative performs the worst. An alternative with a high cost will be scored "low" under Criterion 7, Cost.

Alternative 1, No action, will provide no protection of human health or the environment from the AOC contaminants beyond current conditions. No effort will be taken to prevent or minimize human or ecological exposure to contaminated soil/dry sediment. Concentrations of contaminants could pose future risk to both the National Guard Trainee or Resident Subsistence Farmer.

For the remaining alternatives, the evaluation shows Alternative 2 does not offer protectiveness or substantial long-term effectiveness and permanence for a National Guard training land use because of its reliance entirely on land use controls.

Alternative 3 provides a high degree of overall protectiveness and long-term effectiveness and permanence for a National Guard training land use by removing contaminated soil. Alternative 3 can be readily and quickly implemented at a comparatively low cost. The addition of soil treatment (Alternative 5) satisfies the CERCLA preference for alternatives that reduce contaminant mobility, toxicity, and volume, but does not offer increased overall protectiveness or long-term effectiveness compared to Alternative 3.

Alternatives 4 and 6 provide additional protection and allow residential future land use, but are much more difficult and expensive to implement. Remediation of Load Line 12 to achieve residential cleanup goals is not warranted at this time because the reasonable and foreseeable land use at Load Line 12 will be for National Guard training purposes.

9.0 PREFERRED FEASIBILITY STUDY ALTERNATIVE

The US Army, in consultation with Ohio EPA, is recommending Alternative 3 (Excavation of Dry Sediment with Offsite Disposal – National Guard Trainee Land Use) be implemented as the remedial action at Load Line 12.

Table 3. Summary of Comparative Analysis of Remedial Alternatives for Load Line 12

NCP Evaluation Criteria[a]	Alternative 1 No Action	Alternative 2 Limited Action	Alternative 3 Excavation of Soils/Dry Sediments and Offsite Disposal ~ National Guard Trainee Land Use	Alternative 4 Excavation of Soils/Dry Sediments and Offsite Disposal ~ Resident Subsistence Farmer Land Use	Alternative 5 Excavation of Soils/Dry Sediments, Treatment, and Offsite Disposal ~ National Guard Trainee Land Use	Alternative 6 Excavation of Soils/Dry Sediments, Treatment, and Offsite Disposal ~ Resident Subsistence Farmer Land Use
1. Overall Protectiveness	Not protective	Not protective	Protective	Protective	Protective	Protective
2. Compliance with ARARs	Compliant	Compliant	Compliant	Compliant	Compliant	Compliant
3. Long-Term Effectiveness and Permanence	Low	Medium	High	High	High	High
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Low	Low	Low	Low	Medium	Medium
5. Short-Term Effectiveness	High	High	Medium	Medium	Low	Low
6. Implementability	High	High	Medium	Medium	Medium	Low
7. Cost	High $0	Medium $209,194	Medium $364,789	Low $1,794,453	Low $655,064	Low $3,958,169

[a]Criterion 1, Overall Protectiveness, is rated as either "protective" or "not protective." Criterion 2, Compliance with ARARs, is rated as either "compliant" or "not compliant." The remaining five criteria are rated as High [alternative(s) that performs the best], Medium (moderate alternative performance), or Low [alternative(s) that performs the worst].
ARAR = Applicable or relevant and appropriate requirement.
NCP = National Oil and Hazardous Substances Pollution Contingency Plan.

This recommendation is not a final decision. The US Army, in consultation with Ohio EPA, will select the remedy for this AOC after reviewing and considering all comments submitted during the 30-day public comment period.

This alternative is protective for the reasonably anticipated future land use, is cost effective, and can be performed in a timely manner. Based on the available risk assessment information, the preferred alternative will achieve the RAO, which is to prevent National Guard Trainee exposure to contaminants in soil and dry sediment that exceed the preliminary cleanup goals to a depth of 4 ft BGS. In addition, low risks to ecological receptors will be further reduced.

Using engineering controls, personal protective equipment, erosion and sediment controls, proper waste handling practices, and monitoring will mitigate short-term effects during construction. Following remediation, land use controls will be implemented by the US Army and OHARNG to deter unauthorized access to Load Line 12. CERCLA 5-year reviews will be conducted to ensure protectiveness of the remedy

10.0 COMMUNITY PARTICIPATION

10.1 Community Participation

Public participation is an important component of remedy selection. The US Army and Ohio EPA are soliciting input from the community on the preferred alternative. The comment period extends from April 4, 2007 to May 3, 2007. This period includes a public meeting at which the US Army will present the Proposed Plan as agreed to by Ohio EPA. The US Army will accept both oral and written comments at this meeting.

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.

10.2 Public Comment Period

The 30-day comment period is from April 4, 2007 to May 3, 2007, and provides an opportunity for public involvement in the decision-making process for the proposed action. All public comments will be considered by the US Army and Ohio EPA before selecting the remedy. The public is encouraged to review and comment on this Proposed Plan. During the comment period, the public is encouraged to review documents pertinent to Load Line 12.

This information is available at the Information Repository and online at www.rvaap.org. To obtain further information, contact the RVAAP Facility Manager.

10.3 Written Comments

If the public would like to comment in writing on the Proposed Plan or other relevant issues, please deliver comments to the US Army at the public meeting or mail written comments (postmarked no later than May 3, 2007).

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

10.4 Public Meeting

The US Army will hold an open house and public meeting on this Proposed Plan on April 10, 2007, at 6:00PM, in the Newton Falls

Community Center, 52 East Quarry Street, Newton Falls, Ohio, 44444 to accept comments. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

10.5 US Army Review of Public Comments

The US Army will review the public's comments as part of the process in reaching a final decision on the most appropriate action to be taken.

A Responsiveness Summary, a document that summarizes the US Army's responses to comments received during the public comment period, will be included in the Record of Decision (ROD). The US Army's final choice of action will be documented in the ROD. The ROD will be added to the RVAAP Administrative Record and Information Repositories.

INFORMATION REPOSITORIES

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
10AM – 8:45PM Monday – Friday
10AM – 5:45PM Saturday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9AM – 8PM Monday – Thursday
9AM – 5PM Friday and Saturday
12PM – 5PM Sunday

GLOSSARY OF TERMS

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

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): a federal law passed in 1980, commonly referred to as the Superfund Program. It provides liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous substance release sites that endanger public health or the environment.

Constituent of concern (COC): site-specific chemical substance that potentially poses significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Ecological receptor: a plant, animal, or ecosystem exposed to an adverse condition.

Exposure point concentration (EPC): The EPC is used in the human health and ecological risk assessments to quantify exposures for all or part of an area of concern. The EPC is the smaller value between the maximum detected concentration and the calculated 95% upper confidence limit (UCL_{95}) of the average concentration for the area.

Feasibility Study (FS): a CERCLA document that reviews and evaluates multiple remedial technologies under consideration at a site. It also identifies the preferred remedial action alternative.

Human receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, a National Guard Trainee is

considered to be the most sensitive human receptor under future restricted land use in this Proposed Plan.

National Contingency Plan (NCP): abbreviation for the National Oil and Hazardous Substances Pollution Contingency Plan. It is the set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

Record of Decision (ROD): legal record signed by the US Army and Ohio EPA. It describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

Remedial Action Objective (RAO): these specific goals, developed from the evaluation of ARARs, are to be protective of human health and the environment.

Remedial investigation (RI): CERCLA investigation that involves sampling environmental media, such as air, soil, and water, to determine the nature and extent of contamination and to calculate human health and environmental risks that result from the contamination.

Responsiveness summary: a section of the ROD where the US Army documents and responds to written and oral comments received from the public about the Proposed Plan.

Risk assessment: an evaluation that determines potential harmful effects, or lack thereof, posed to human health and the environment due to exposure to chemicals found at a CERCLA site.

Target risk: the Ohio EPA (2004b) identifies 1E-05 as a target for cancer risk for carcinogens and an acceptable target hazard index of 1 for non-carcinogens.

Weight-of-evidence: a procedure for identifying, organizing, and evaluating or weighing various types, quantities, and qualities of information about natural resources, ecological risk from chemicals, and likely consequences of any remediation on those plants, animals, and ecological systems.

REFERENCES

Ohio EPA 2004a. *Director's Final Findings and Orders in the matter of US Army, Ravenna Army Ammunition Plan,* June.

Ohio EPA, Division of Emergency and Remedial Response (DERR), 2004b. *Technical Decision Compendium: Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for DERR Remedial Remedial Response and Office of Federal Facility Oversight.* April 28, 2004.

USACE (U. S. Army Corps of Engineers) 1996. *Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA62-94-D-0029, Delivery Order 0009.

USACE 1998. *Phase I Remedial Investigation Report for High-Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA62-94-D-0029, DO Nos. 0010 and 0022, Final, February.

USACE 2004. *Phase II Remedial Investigation Report for Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio,* March.

USACE 2005. *Facility-wide Biological and Water Quality Study 2003, Ravenna Army Ammunition Plant. Part I – Streams,* Prepared by USACE, Louisville District, and Ohio Environmental Protection Agency, Division of Surface Water.

USACE 2006. *Final Feasibility Study for Load Line 12 (RVAAP-12), Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA62-00-D-0001, DO No. CY08, Final, August.

FIGURES

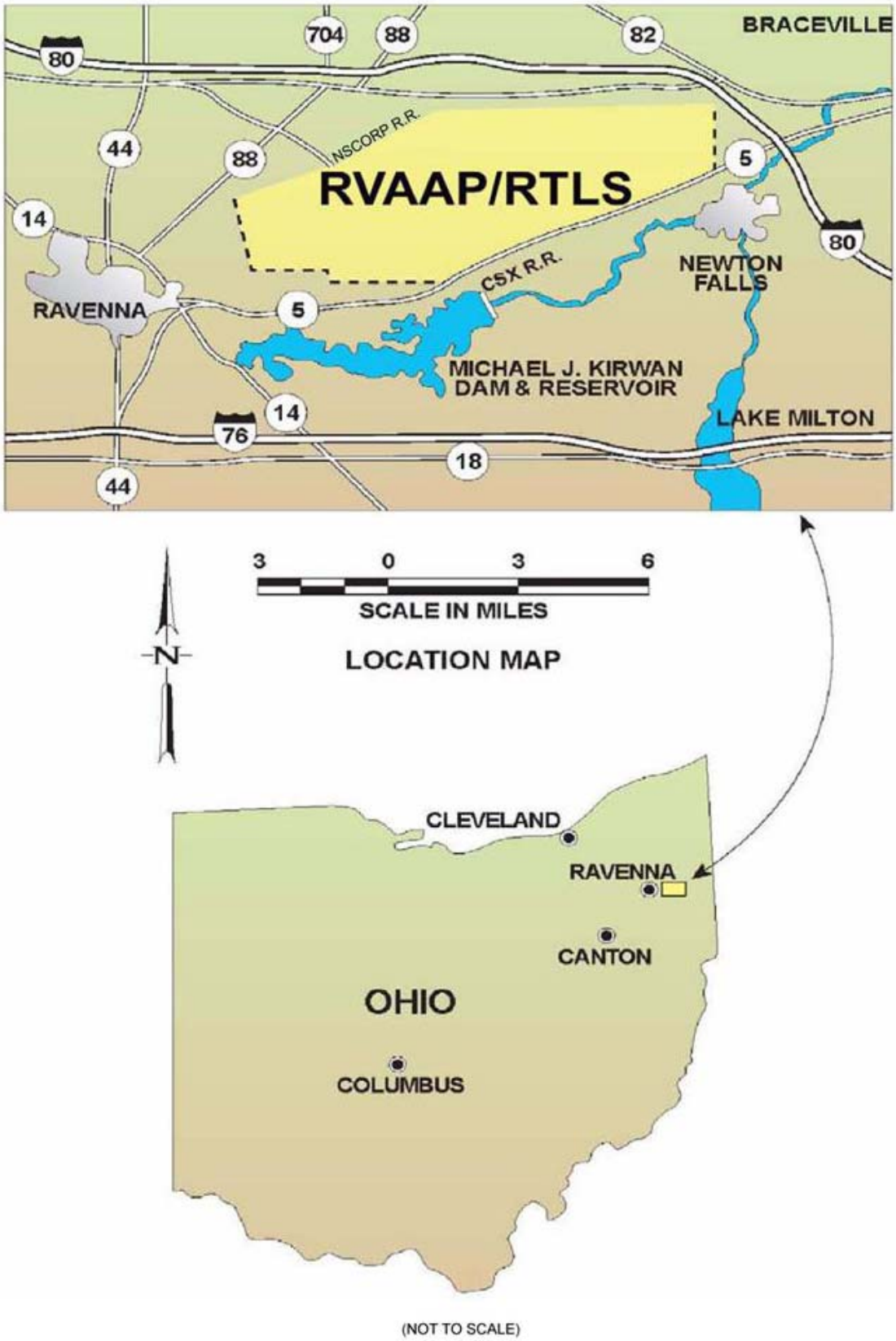

Figure 1. General Location and Orientation of RVAAP/RTLS

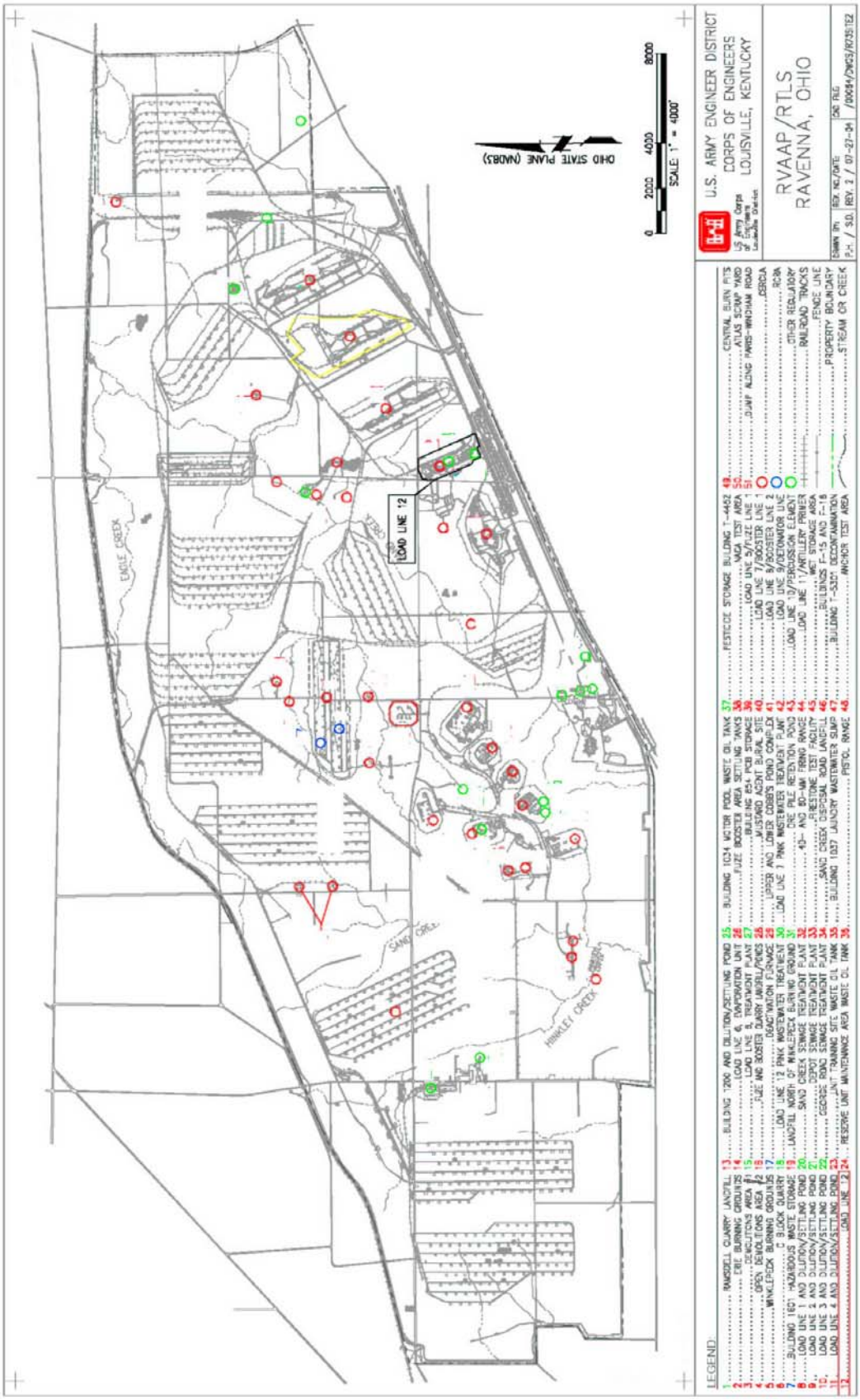

Figure 2. RVAAP/RTLS Installation Map

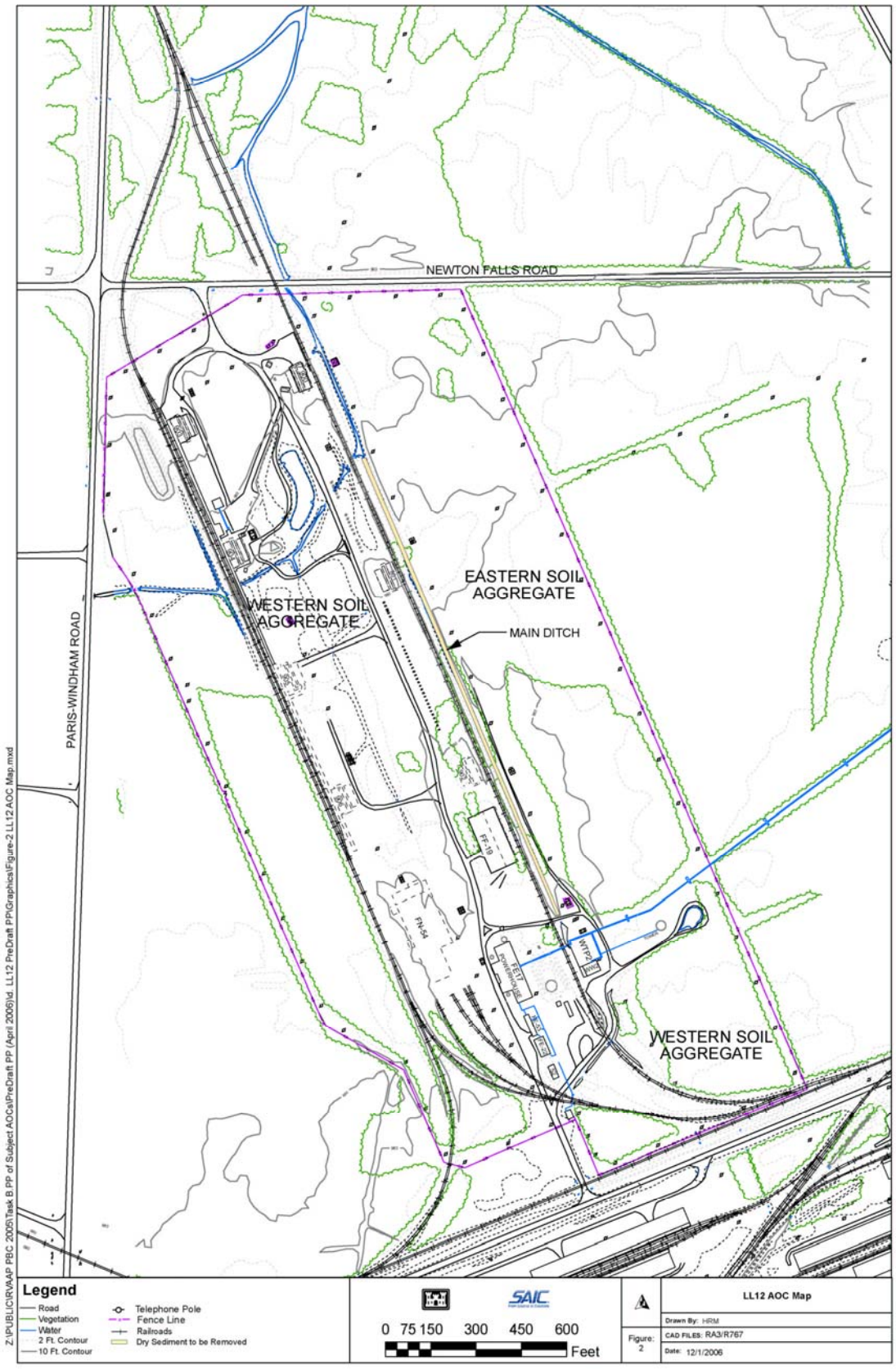

Figure 3. LL12 and Areas to be Excavated under the Preferred Alternative