

**Proposed Plan
for the
Remediation of Soils at Load Lines 1 through 4
at the
Ravenna Army Ammunition Plant
Ravenna, Ohio**

Contract Number DACA45-03-D-0026
Task Order 0001

Prepared for:



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

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TABLE OF CONTENTS

1.0	INTRODUCTION AND PURPOSE	1
1.1	RVAAP Site Description.....	1
1.2	RVAAP Site History	2
1.3	Nature and Extent of Contamination	2
2.0	SUMMARY OF THE SITE RISKS	2
2.1	Human Health Risk Assessment	2
2.2	Ecological Risk Assessment	3
2.3	Estimation of Soil Volume	4
3.0	SUMMARY OF REMEDIAL ALTERNATIVES	4
3.1	Alternative SDS1: No Action	4
3.2	Alternative SDS2: Excavation and On-Site Capping	4
3.3	Alternative SDS3: Excavation and Off-Site Disposal	5
4.0	EVALUATION OF REMEDIAL ALTERNATIVES....	6
4.1	Overall Protection of Human Health and the Environment	6
4.2	Compliance with ARARs	7
4.3	Long-Term Effectiveness and Permanence	7
4.4	Reduction of Toxicity, Mobility or Volume	7
4.5	Short-Term Effectiveness.....	7
4.6	Implementability	7
4.7	Cost	7
4.8	State Acceptance.....	7
4.9	Community Acceptance.....	7
4.10	Summary of the Preferred Alternative ...	7
5.0	COMMUNITY PARTICIPATION.....	8
5.1	Public Comment Period	8
5.2	Point of Contact and Written Comments	8
5.3	Public Meeting	8
5.4	US Army Review of Public Comments ..	8

List of Tables

Table 1	COCs in Soil for National Guard Trainee at LLs 1-4
Table 2	Clean-up Criteria for the National Guard Trainee for Soil at LLs 1-4
Table 3	Estimated Volume of Soil and Dry Sediment for Remediation

List of Figures

Figure 1	Site Locus Map
Figure 2	RVAAP Facility Map
Figure 3	Load Line 1 - Approximate Areas of Soil Remediation
Figure 4	Load Line 2 - Approximate Areas of Soil Remediation
Figure 5	Load Line 3 - Approximate Areas of Soil Remediation
Figure 6	Load Line 4 - Approximate Areas of Soil Remediation

1.0 INTRODUCTION AND PURPOSE

The United States Army in consultation with the Ohio Environmental Protection Agency (Ohio EPA) invite public comment on this Proposed Plan for the remediation of surface and subsurface soil and dry sediment at Load Lines 1 through 4 (LLs 1-4) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio. The Preferred Alternative is considered interim and is based on the stated future land use of National Guard mounted training (no digging).

The US Army issues 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) and in accordance with the RVAAP Community Relations Plan (U.S. Army Corps of Engineers, 2003). The Proposed Plan provides the public with information necessary to participate with the US Army and Ohio EPA in the selection of an appropriate interim remedial action for LLs 1-4 at RVAAP.

This Proposed Plan was prepared by Shaw Environmental, Inc. (Shaw) under the United States Department of Defense Installation Restoration Program, under contract number DACA45-03-D-0026, Task Order 0001, with the US Army dated September 25, 2003. This Proposed Plan provides a summary and justification for the recommendation of excavation with off-site disposal as the Preferred Alternative for remediation of surface and subsurface soil and dry sediment at LLs 1-4 to achieve an Interim Remedy in Place (IRIP) for the planned future land use of National Guard mounted training (no digging). This Proposed Plan does not address groundwater, deep soils, surface water or wet sediments. This proposal is for an interim remedy.

The public is encouraged to comment on the Preferred Alternative. The US Army and Ohio EPA will document the remedial action for the site in a Record of Decision (ROD). The remedial action will be selected after the public comment period and will reflect concerns received during the public comment period. Information about how to submit comments may be found in the "Community Participation" section at the end of this Proposed Plan.

This document summarizes more detailed information found in the Remedial Investigation (RI) reports, Focused Feasibility Study (FFS), and other reports which are available for review as part of the Administrative Record. The US Army and Ohio

EPA encourage the public to review the documents relevant to investigation activities at LLs 1-4 in order to assist in the selection of an appropriate remedial action. The titles of relevant documents are listed in the "References" section at the end of this plan.

Public Comment Period:

July 12 – August 10, 2005

The RVAAP Facility Manager, Mr. Mark Patterson, will accept written comments on the Proposed Plan during the public comment period.

Public Meeting: August 1, 2005

The US Army will hold a public meeting to explain the Proposed Plan and the alternatives presented in the FFS. Oral and written comments will also be accepted at the meeting. The meeting will be held at the **Newton Falls Community Center, 52 E. Quarry Street, Newton Falls, OH, 44444 at 6:00 PM**

The **Information Repositories**, containing information used in selecting the preferred alternative, are available for public review at the following locations:

Reed Memorial Library

167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours: Mon-Fri 10am-9pm, Sat 10am-6pm

Newton Falls Public Library

204 South Canal
Newton Falls, OH 44444
(330) 872-1282
Hours: Mon-Thurs 9am-8pm, Fri-Sat 9am-5pm

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

RVAAP

Building 1037 Conference Room
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311

Note: Access is restricted to RVAAP but the file can be obtained or viewed with prior notice to RVAAP.

1.1 RVAAP Site Description

RVAAP is a government-owned, contractor-operated (GOCO) facility. It is jointly operated by the United States Army Base Realignment and Closure Office (BRACO) and the National Guard Bureau (NGB). The BRACO controls

environmental areas of concern (AOCs). Land and some existing facilities in non-AOC areas at RVAAP are used by the Ohio Army National Guard (OHARNG) for training purposes under an operating license issued by NGB. As it is remediated, remaining acreage will be transferred from BRACO to the NGB.

RVAAP is located in northeastern Ohio within east-central Portage County and southwestern Trumbull County (Figure 1). The installation consists of 21,419 acres contained in an 11 mile-long, 3.5 mile-wide tract, bounded by State Route 534 on the east; State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garrettsville and Berry roads on the west; and the CONRAIL Railroad on the north. Surrounding communities include: Windham, Garrettsville, Charlestown, and Wayland.

1.2 RVAAP Site History

Industrial operations at RVAAP primarily consisted of 12 munitions assembly facilities referred to as "load lines." LLs 1-4 were used between 1941 and 1971 to melt and load trinitrotoluene (TNT) and Composition B (a mixture of TNT and cyclotrimethylenetrinitramine (RDX)) into large-caliber shells. Additional materials such as octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), cadmium and chromic acid, were used in processing.

Various industrial operations associated with the munitions loading process and munitions rehabilitation activities were also conducted during the operation of LLs 1-4.

RVAAP has been inactive since 1992. The only activity still being carried out from the wartime era is the infrequent demolition of unexploded ordnance found at the installation. The US Army has completed the demolition of buildings at LL 1 and has begun preparing for the demolition of excess buildings at LLs 2-4. LLs 1-4 are located along the southeastern side of the RVAAP as shown in Figure 2.

1.3 Nature and Extent of Contamination

Evaluation of data collected during the Phase I and II RIs shows that historical operations have resulted in contamination of surface and subsurface soil and dry sediment, primarily in the vicinity of former production buildings, and in some settling tanks and drainage ditches near those buildings. Contamination varied considerably within each load line by type and frequency of contaminant detected, concentration and depth. Based on the RI data, LL1 is the most contaminated (i.e., widest variety of

contaminants detected, highest frequency of detection, and highest concentrations) and LL 4 is the least contaminated of the four load lines.

2.0 SUMMARY OF THE SITE RISKS

Risks were assessed for both human and ecological receptors for each of the four load lines during the RI. Each risk assessment for LLs 1-4 was performed using the following steps:

- Identification of chemicals of potential concern (COPCs),
- Calculation of risks and hazards,
- Identification of chemicals of concern (COCs),
- Calculation of remedial goal options (RGOs); and
- Establish Clean-up Criteria.

WHAT IS IN A RISK ASSESSMENT?

A risk assessment is conducted to determine if remedial action is warranted. A risk assessment documents a variety of potential human and ecological receptor populations and identifies the COCs and chemicals of ecological concern (COECs) that could contribute to potential exposure risks. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action.

A **baseline human health risk assessment** (BHHRA) is an evaluation of cancer risks and non-cancer hazards of COPCs associated with an AOC if no remedial action was taken. An **ecological risk assessment** is an evaluation of impacts to non-human receptors.

Risk assessments also document the calculation of risk-based clean-up goals for receptors for specific media (i.e., soil and sediment), COCs, and receptor populations evaluated in the RIs.

2.1 Human Health Risk Assessment

This section of the Proposed Plan summarizes the results of the BHHRA for LLs 1-4. Based on the US Army specified future land use, the National Guard mounted training (no digging) was used as the primary receptor.

Based on the results of the BHHRA, COCs for soil for the National Guard Trainee receptor are summarized in Table 1.

Table 1 COCs in Soil for National Guard Trainee at LLs 1-4 ^a				
Chemical	COC ^b			
	LL 1	LL 2	LL 3	LL 4
Inorganics				
Aluminum		X	X	X
Antimony		X		
Arsenic	X	X	X	X
Barium			X	
Cadmium			X	
Chromium, hexavalent		X		
Manganese	X	X	X	X
Explosives				
2,4,6-TNT	X	X	X	
RDX	X	X		
Polychlorinated Biphenyls (PCBs)				
Aroclor-1254	X	X	X	X
Semivolatile Organic Compounds (SVOCs)				
Benz(a)anthracene	X			
Benzo(a)pyrene	X	X	X	
Benzo(b)fluoranthene	X			
Dibenz(a,h)anthracene	X			

^a Deep (0 to 4 feet below ground surface) surface soil is used for National Guard Trainee. Surface soils refers to the interval from 0 to 1 feet bgs and subsurface soil is greater than 1 foot bgs.

^b COCs are those contaminants that have an Incremental Lifetime Cancer Risk (ILCR) greater than 10⁻⁶ an/or a Hazard Index (HI) greater than 1 for the given land use scenario.

X – Chemical is a COC for at least one area at this load line.

RGOs are medium-specific goals that the remedial actions are expected to accomplish to protect human health and the environment. RGOs have been developed to reflect the anticipated future land use (National Guard mounted training, no digging) for LLs 14 at the RVAAP in accordance with US EPA land use policy (US EPA, 1995).

Risk-based RGOs were calculated in accordance with regulatory guidance assuming a combined exposure through ingestion, inhalation of vapors and fugitive dust, and dermal contact with soil. RGOs were then adjusted for site-specific considerations, including background concentrations and future land use, to establish clean-up criteria. Clean-up criteria are the maximum allowable concentrations which are protective of human health and the environment. The resulting clean-up criteria for the National Guard Trainee for soil at LLs 1-4 are presented in Table 2.

Table 2 Clean-up Criteria for the National Guard Trainee for Soil at LLs 1-4 ^a	
COC	Clean-up Criterion (mg/kg)
Inorganics	
Aluminum	34,942
Antimony	2,458
Arsenic	31
Barium	3,483
Cadmium	109
Chromium, hexavalent	16
Manganese (surface soils)	1,800
Manganese (subsurface soils)	3,030
Lead	1,995
Explosives	
2,4,6-TNT	1,646
RDX	838
PCBs	
Aroclor-1254	35
SVOCs	
Benz(a)anthracene	105
Benzo(a)pyrene	10
Benzo(b)fluoranthene	105
Dibenz(a,h)anthracene	10

^a Deep (0 to 4 feet below ground surface) surface soil is used for National Guard Trainee. Surface soils refers to the interval from 0 to 1 feet bgs and subsurface soil is greater than 1 foot bgs.

2.2 Ecological Risk Assessment

Multiple soil COECs with large hazard quotients (HQs) were identified for multiple ecological receptors at LLs 1-4 in the Level III baseline ecological risk assessments. These HQs are perceived to have a high degree of uncertainty and are considered conservative. Soil COECs include PCBs (primarily Aroclor-1254) and various inorganics.

Because the majority of COECs are co-located with human health COCs, remedial activities implemented to address human health COCs will serve to reduce the concentrations and number of COECs in soil to which ecological receptors are exposed, resulting in lowered ecological risk (lowering HQs). In addition, habitat alteration from remedial activities and National Guard mounted training (no digging) may be extensive and result in soil compaction (damage to ecosystem), vegetation damage and removal (simpler or missing habitat), shorter food chains (simpler ecosystem), and lower exposure (fewer organisms).

Based on the expected impact to site conditions at LLs 1-4 from remediation associated with achieving

human health clean up goals and proposed training activities, ecologically based RGOs and clean-up criteria have been determined to be unnecessary.

2.3 Estimation of Soil Volume

An estimation of the volume of soil requiring remediation was calculated from the information provided in the RI Reports for LLs 1-4 (SAIC, 2004; Shaw, 2004a, b, c) and the results of a soil sampling event conducted by Shaw in November 2004. The total volume of soil and dry sediment to be addressed by the interim remedial action is estimated to be approximately 14,600 cubic yards. Table 3 summarizes soil volumes associated with COC-specific clean-up criteria exceedances. The approximate areas of remediation are shown in plan view in Figures 3 through 6 for LLs 1-4, respectively. Actual soil volumes will be determined in the field during remediation based on targeted sampling and laboratory confirmation results.

Load Line	Volume Manganese (cy)	Volume Arsenic (cy)	Volume others* (cy)	Total Volume (cy)
LL 1	4,838	795	1,507	7,140
LL 2	757	730	823	2,310
LL 3	2,212	45	1,590	3,847
LL 4	551	1	718	1,270
TOTAL	8,358	1,571	4,638	14,567

*Others' includes inorganic COCs other than manganese or arsenic, PCBs, explosives and SVOCs.

3.0 SUMMARY OF REMEDIAL ALTERNATIVES

LLs 1-4 have undergone RIs and an FS in accordance with the CERCLA process. The RI phase is the mechanism for collecting data to characterize the site and assess potential human health and ecological risk (summarized in Sections 1.0 and 2.0). The RI phase is followed by the FS phase, which involves the development, screening and detailed evaluation of remedial alternatives. In this case, a Focused FS (FFS) was prepared to address remediation of soil and dry sediment and not groundwater or surface water. In addition, the remediation does not include soil under building slabs or sediment in the sewers. As previously stated, the objective of the FFS and this Proposed Plan is to obtain an IRIP for soil and dry sediment at LLs 1-4 for the planned future land use (National Guard mounted training, no digging) and is only an interim remedy for LLs 1-4.

The technologies used in the remedial alternatives were selected for their ability to remove or reduce

COC concentrations in soil and dry sediment (SDS) to meet clean-up criteria, support the future land use of National Guard mounted training (no digging), leave residual structures in place (e.g., building foundations), and accommodate the shallow depth to bedrock in many areas of LLs 1-4.

As in the Final FFS, this Proposed Plan evaluates three remedial alternatives for soil and dry sediment that are potentially viable for the contaminants and conditions at LLs 1-4: No Action, Excavation and On-Site Capping, and Excavation and Off-Site Disposal.

3.1 Alternative SDS1: No Action

Consideration of the no action alternative is required under US EPA guidance for removal actions under CERCLA for baseline comparison with other alternatives. Under this alternative, no action would be taken to reduce the hazards present at LLs 1-4 to potential human or ecological receptors.

The estimated costs associated with the implementation of Alternative SDS1 are as follows:

<i>Estimated Capital Cost:</i>	\$0
<i>Estimated O&M Cost:</i>	\$0
<i>Estimated Present Worth Cost:</i>	\$0
<i>Estimated Construction Time Frame:</i>	None

3.2 Alternative SDS2: Excavation and On-Site Capping

This alternative includes the following components:

- Excavation of discrete areas of contaminated surface and subsurface soil and dry sediment exceeding clean-up criteria;
- Off-site disposal of soils exceeding Toxic Substances Control Act (TSCA) and/or Resource Conservation and Recovery Act (RCRA) criteria;
- Consolidation of soils in on-site stockpile(s) on an impermeable liner and under an impermeable cap;
- Replacement of excavated material with compacted clean backfill;
- Surface water diversion and runoff controls for the cap;
- Maintenance of cap integrity;
- Regulation of intrusive activities into the cap;
- Installation and maintenance of signage and structural access barriers to prevent vehicular traffic;
- Implementation of land use controls for land use at LLs 1-4 other than National Guard mounted training (no digging);
- Periodic groundwater monitoring to ensure the remedy does not impact groundwater;

- Maintenance, inspection and repair of building slabs and foundations; and
- Five-year reviews.

Capping will contain instead of treat contaminated soil and dry sediment, so there are no treatment residuals to manage. However, the cap will require long-term maintenance to maintain the cap integrity indefinitely. In addition, the cap will prevent infiltration leaching from COCs in the soil to other media that can reach receptors. This alternative would also support the planned future land use in areas around the capped stockpile; however, the cap would be off-limits to vehicular traffic. Excavation and cap construction activities would be completed in approximately one year.

Alternative SDS2 would not impact implementation of potential future remedial actions in the load line area; however, remedial actions in the area of the cap would be strictly limited. Land use controls, including facility-perimeter fencing, warning signs, and restricted access, will be implemented and maintained for the load lines consistent with the future National Guard planned usage for a tank maneuver course. These controls will ensure that the contaminated soil is not disturbed. The location for the on-site capped stockpile will be selected such that it will not interfere with future land use, to the extent possible.

COC-impacted media will remain untreated under the cap and will pose a significant risk to human and environmental receptors if the cap fails. This alternative would provide protection of human health and the environment through the implementation of land use controls for on-site soils. It is reasonable to expect that land use controls can be successfully implemented with appropriate documentation and procedures.

While the engineering and construction of the cap are highly implementable, siting a location for a capped stockpile to remain indefinitely on the grounds of RVAAP will require a significant evaluation effort.

For this option, long-term groundwater monitoring would be performed for five years at selected existing wells in LLs 1-4 to monitor for potential remedy impacts to groundwater. In addition, the concrete slabs and building foundations that remain in place after interim remediation will be inspected periodically to assess their integrity until removed. The remedial action will be subject to five-year reviews as part of the CERCLA process to assure that human health and the environment are being protected.

The estimated costs associated with the implementation of Alternative SDS2 are as follows:

<i>Estimated Capital Cost:</i>	\$5,715,552
<i>Estimated O&M Cost:</i>	\$3,148,179
<i>Estimated Present Worth Cost:</i>	\$6,829,608
<i>Estimated Construction Time Frame:</i>	1 year
<i>Estimated Operation Time Frame:</i>	30 years

3.3 **Alternative SDS3: Excavation and Off-Site Disposal**

This alternative includes the following components:

- Excavation of discrete areas of contaminated surface and subsurface soil and dry sediment exceeding clean-up criteria;
- Temporary on-site storage via stockpiling for characterization;
- Off-site disposal of soils at a TSCA and/or RCRA permitted landfill;
- Replacement of excavated material with compacted clean backfill;
- Implementation of land use controls for land use at LLs 1-4 other than National Guard mounted training (no digging);
- Periodic groundwater monitoring to ensure the remedy does not impact groundwater;
- Maintenance, inspection and repair of building slabs and foundations; and
- Five-year review.

Removal of contaminated soil and dry sediment would eliminate the potential contact of receptors at LLs 1-4. This process does not generate treatment residuals after soil is disposed of off-site. This process is permanent and irreversible for LLs 1-4.

Alternative SDS3 would not impact implementation of potential future remedial actions in the load line area. Land use controls, including facility-perimeter fencing, warning signs, and restricted access, will be implemented and maintained for the load lines consistent with the future National Guard planned usage for a tank maneuver course. These controls will ensure that the contaminated soil is not disturbed. This alternative would also support the planned future land use. Excavation and disposal activities would be completed in approximately six months.

For this option, long-term groundwater monitoring will be performed for five years at selected existing wells in LLs 1-4 to monitor for potential remedy impacts to groundwater. In addition, the concrete slabs and building foundations that remain in place after interim remediation will be inspected periodically to assess their integrity until removed. The remedial action will be subject to five-year

reviews as part of the CERCLA process to assure that human health and the environment are being protected.

The estimated costs associated with the implementation of Alternative SDS3 are as follows:

Estimated Capital Cost: \$4,656,320
Estimated O&M Cost: \$183,658
Estimated Present Worth Cost: \$4,789,633
Estimated Construction Time Frame: 6 months
Estimated Operation Time Frame: 5 years

4.0 EVALUATION OF REMEDIAL ALTERNATIVES

Nine criteria listed in the National Contingency Plan (NCP) are used to evaluate the different remediation alternatives individually and comparatively in order to select a remedy. 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

1. Overall Protection of Human Health and the Environment, and
2. Compliance with applicable or relevant and appropriate requirements (ARARs);

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

3. Long-term Effectiveness and Permanence;
4. Reduction of Toxicity, Mobility or Volume through Treatment;
5. Short-term Effectiveness;
6. Implementability; and
7. Cost.

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

8. State Acceptance
9. Community Acceptance

An evaluation of the alternatives using these criteria is provided below.

Evaluation Criteria	SDS1	SDS2	SDS3
	No Action	Excavation and On-Site Capping	Excavation and Off-Site Disposal
Protective of Human Health and Environment	No	Yes	Yes
Complies with ARARs	No	Yes	Yes
Effective and Permanent	No	Yes	Yes
Reduces Toxicity, Mobility or Volume	No	No	Yes
Effective in Short-Term	No	Yes	Yes
Implementable	Yes	Yes	Yes
Cost			
Capital	\$0	\$5,715,552	\$4,656,320
Non-Discounted O&M	\$0	\$3,148,179	\$183,658
Total Present Worth	\$0	\$6,829,608	\$4,789,633
State Acceptance	No	No ^a	Likely ^b
Community Acceptance	Unlikely	Likely	Likely

^a inconsistent with planned future land use of National Guard mounted training (no digging).

^b with land use controls to restrict: public access, soil use inconsistent with National Guard mounted training (no digging), access to soil under building slabs, and groundwater use.

4.1 Overall Protection of Human Health and the Environment

Alternative SDS1 (No Action) will not reduce the short- or long-term risks for human or environmental receptors from potential exposure to the COCs. Alternatives SDS2 (Excavation and On-Site Capping) and SDS3 (Excavation and Off-Site Disposal) provide long-term protection of human health by removing the source of contamination from potential human exposure through ingestion, inhalation or contact. These two alternatives also eliminate the mobility of COCs from the impacted soils and dry sediments and therefore, protect environmental receptors from potential exposure to COC-impacted media. Removing the most grossly contaminated soil and dry sediment will reduce the toxicity, mobility, and volume of the COCs and protect National Guard Trainee receptors in the long-term. Both alternatives include land use controls, such as fencing, warning signs, and access and digging restrictions, to provide additional protection of human health while supporting the future planned National Guard use of

the site for tank maneuver training. Under Alternative SDS2, all vehicles would be prohibited within the capped area. These land use controls will be implemented, maintained, and enforced. Short-term exposure risks will be mitigated through the use of best management practices (BMPs), Occupational Safety and Health Administration (OSHA) training and the use of appropriate personal protective equipment (PPE).

4.2 Compliance with ARARs

Each alternative, except Alternative SDS1 (No Action), could be designed and implemented to meet respective ARARs.

4.3 Long-Term Effectiveness and Permanence

Alternative SDS3 (Excavation and Off-Site Disposal) would afford the highest degree of long-term effectiveness and permanence. Alternative SDS3 would provide for removal of COCs that exceed acceptable risk levels. The alternative would reduce risk and could be implemented in approximately six months.

The long-term effectiveness and permanence of Alternative SDS2 (Excavation and On-Site Capping) would be less reliable because contaminated soil would remain on-site and long-term controls would be necessary to prevent disturbance to the cap. The cap would require about one to two months longer to implement than SDS3 (Excavation and Off-Site Disposal). Long-term maintenance of the cap would be required as long as COCs remain at LLs 1-4 and above acceptable risk levels. Alternative SDS1 (No Action) is neither effective nor permanent in the long-term.

4.4 Reduction of Toxicity, Mobility or Volume

Alternative SDS3 (Excavation and Off-Site Disposal) will permanently reduce the toxicity, mobility and volume of COCs in soil and dry sediment at LLs 1-4 through removal from RVAAP. Alternative SDS2 (Excavation and On-Site Capping) would reduce the mobility of COCs by preventing infiltration of precipitation through capped soils. However, this alternative does not reduce the toxicity or volume of COCs in the soil and dry sediment at LLs 1-4. Alternative SDS1 (No Action) does not reduce the toxicity, mobility or volume of COCs in soil and dry sediment at LLs 1-4.

4.5 Short-Term Effectiveness

Alternative SDS2 (Excavation and On-Site Capping) would have the greatest short-term

effectiveness because it would present the least risk to the community by maintaining the majority of contaminated soils on-site. Alternative SDS3 (Excavation with Off-Site Disposal) would require potential exposure controls, but could be effective in the short-term and would be completed in less time than Alternative SDS2. Alternative SDS1 (No Action) is not effective in the short-term.

4.6 Implementability

Alternative SDS1 (No Action) would involve no implementability issues. Alternative SDS2 (Excavation and On-Site Capping) would be moderately easy to implement by requiring excavation of several discrete areas, materials handling for consolidation and capping. Alternative SDS3 (Excavation with Off-Site Disposal) would be moderately easy by requiring excavation of several discrete areas and materials handling/transportation.

4.7 Cost

Alternative SDS1 (No Action) does not have capital or O&M costs. The capital costs for SDS3 (Excavation with Off-Site Disposal) and Alternative SDS2 (Excavation and On-Site Capping) are similar with some relative savings for Alternative SDS3. However, the O&M costs for Alternative SDS3 are significantly lower than those for Alternative SDS2.

4.8 State Acceptance

Based on previous discussions with Ohio EPA, it is anticipated that Ohio EPA will concur with the selection of the Preferred Alternative for soils and dry sediments at LLs 1-4.

4.9 Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated at the conclusion of the 30-day public comment period. Responses to the public's comments will be prepared prior to the selection of the remedial action. Community acceptance will be addressed in the Responsiveness Summary prepared for the ROD.

4.10 Summary of the Preferred Alternative

The Preferred Alternative for surface and subsurface soil and dry sediment contamination at LLs 1-4 of the RVAAP is **Alternative SDS3 – Excavation with Off-Site Disposal**. This alternative was selected as the Preferred Alternative for remediation due to its expediency, permanency, consistency with approved future land use, moderate relative cost, feasibility and implementability. This alternative would meet the NCP criteria and would be protective of human health.

5.0 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 **July 12 to August 10, 2005** (30 days). 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.

A critical component of RVAAP's program to keep the public informed about the facility's environmental cleanup activities is the Restoration Advisory Board (RAB). The RAB gives community members, particularly those who may be affected by the cleanup activities, and government representatives a chance to exchange information and participate in a meaningful dialogue. Prior RAB meetings have involved the discussion of the proposed activities at LLs 1-4.

5.1 Public Comment Period

The US Army is providing a 30-day comment period from **July 12, 2005 to August 10, 2005**, to provide an opportunity for public involvement in the decision-making process for the Preferred Alternative. If any significant new information or public comments are received during the public comment period, the US Army, in consultation with Ohio EPA, may modify the Preferred Alternative outlined in this Proposed Plan or select another response action. The public is encouraged, therefore, to review and comment on this Proposed Plan. During the comment period, the public is encouraged to review the following report and other documents pertinent to LLs 1-4: *Final Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4, RVAAP* (Shaw, 2005). This information is available at the Information Repositories.

INFORMATION REPOSITORIES

Reed Memorial Library

167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours: Mon-Fri 10am-9pm, Sat 10am-6pm

Newton Falls Public Library

204 South Canal
Newton Falls, OH 44444
(330) 872-1282
Hours: Mon-Thurs 9am-8pm, Fri-Sat 9am-5pm

5.2 Point of Contact and Written Comments

To obtain further information, the RVAAP Facility Manager may be contacted. If the public would like to comment in writing on the Proposed Plan or other relevant issues, please deliver comments to the RVAAP Facility Manager at the public meeting or mail written comments (postmarked no later than **August 10, 2005**).

POINT OF CONTACT AND WRITTEN COMMENTS

Mark Patterson, RVAAP Facility Manager
RVAAP Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
Office: (330) 358-7311
Fax: (330) 358-7314

5.3 Public Meeting

The US Army will hold a public meeting on this Proposed Plan on **August 1, 2005** at 6:00 p.m. at the **Newton Falls Community Center (52 E. Quarry Street, Newton Falls, OH, 44444)** to accept comments. This meeting will provide an opportunity for the public to comment on the Preferred Alternative. Comments made at the meeting will be transcribed. A copy of the transcript will be included in the ROD Responsiveness Summary and will be added to the RVAAP Administrative Record and information repositories.

5.4 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. The US Army's final choice of action will be issued in a ROD. A Responsiveness Summary, a document that summarizes The US Army's responses to comments received during the public comment period, will be issued with the ROD. Once community response and input are received and the US Army and Ohio EPA sign the ROD, it will become part of the Administrative Record.

ADMINISTRATIVE RECORD

RVAAP

Building 1037, Conference Room
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311

Note: Access is restricted to RVAAP but the file can be obtained or viewed with prior notice to RVAAP.

LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern	SAIC	Science Applications International Corporation
ARARs	Applicable or Relevant and Appropriate Requirements	SBHHRA	Supplemental Baseline Human Health Risk Assessment
BHHRA	Baseline human health risk assessment	SDS	Soil and Dry Sediment
BMPs	Best Management Practices	SHHRA	Screening human health risk assessment
BRACO	Base Realignment and Closure Office	SVOCs	Semivolatile organic compounds
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	TNT	Trinitrotoluene
COCs	Chemicals of concern	TSCA	Toxic Substances Control Act
COEC	Chemicals of ecological concern	US EPA	United States Environmental Protection Agency
COPECs	Chemicals of potential ecological concern	VOCs	Volatile organic compounds
COPCs	Chemicals of potential concern		
ERA	Ecological Risk Assessment		
FFS	Focused Feasibility Study		
GOCO	Government Owned Contractor Operated		
HHRA	Human Health Risk Assessment		
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine		
HQ	Hazard Quotient		
ILCR	Individual Lifetime Cancer Risk		
IRIP	Interim Remedy in Place		
LL #	Load Line 1, 2, 3, or 4		
NCP	National Contingency Plan		
NGB	National Guard Bureau		
NPL	National Priorities List		
OHARNG	Ohio Army National Guard		
Ohio EPA	Ohio Environmental Protection Agency		
O&M	Operation and maintenance		
OSHA	Occupational Safety and Health Administration		
PCBs	Polychlorinated biphenyls		
PPE	Personal protective equipment		
PRG	Preliminary Remediation Goal		
RAB	Restoration Advisory Board		
RCRA	Resource Conservation and Recovery Act		
RDX	Cyclotrimethylenetrinitramine or hexahydro-1,3,5-trinitro-1,3,5-triazine		
RGO	Remedial Goal Option		
RI	Remedial Investigation		
ROD	Record of Decision		
RVAAP	Ravenna Army Ammunition Plant		

GLOSSARY OF TERMS

Administrative Record: This is a collection of documents (including plans, correspondence and reports) generated during site investigation and remedial activities. Information in the Administrative Record is used to select the recommended alternative and is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal and state requirements that a selected remedy will attain. These requirements may vary among sites and alternatives.

Capital Cost: This includes costs associated with construction, treatment equipment, site preparation, services, transportation, disposal, health and safety, installation and start-up, administration, legal support, engineering, and design associated with remedial alternatives.

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

Chemical of Concern (COC): Site-specific chemical substance that potentially poses significant human health and/or ecological risks. COCs are typically further evaluated for remedial action.

Feasibility Study (FS): This CERCLA document reviews the COCs at a site, and evaluates multiple remedial technologies for use at the site. It finally identified the most feasible remedial action alternatives. A Focused Feasibility Study (FFS) is a FS that evaluates remedial alternatives for a specific portion of the site.

National Contingency Plan (NCP): The National Oil and Hazardous Substances Pollution Contingency Plan. These CERCLA regulations provide the federal government the authority to respond to the problems of abandoned or uncontrolled hazardous waste disposal sites as well as to certain incidents involving hazardous wastes (e.g., spills).

National Priorities List (NPL): A list of sites that are qualified to receive expenditures of CERCLA funds.

Operation and Maintenance (O&M) Cost: Annual post-construction cost necessary to ensure the continued effectiveness of a remedial action.

Present Worth Cost: Used to evaluate expenditures that occur over different time periods by discounting all future costs to a common base year. This allows the cost of the remedial alternatives to be compared on the basis of a single figure representing the amount of money that would be sufficient to cover capital and O&M costs associated with each remedial alternative over its planned life.

Proposed Plan: This CERCLA document provides the public with information necessary to participate in the selection of a remedy. It is designed to solicit public comment on a preferred alternative before a ROD is established.

Record of Decision (ROD): This legal record is signed by the US Army and Ohio EPA. It provides 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 Investigation (RI): An investigation under CERCLA that involves sampling environmental media such as air, soil, and water to determine the nature and extent of contamination and human health and environmental risks that result from the contamination.

Resource Conservation and Recovery Act (RCRA): A congressional act that addresses the handling of hazardous waste at facilities currently operating and those yet to be constructed.

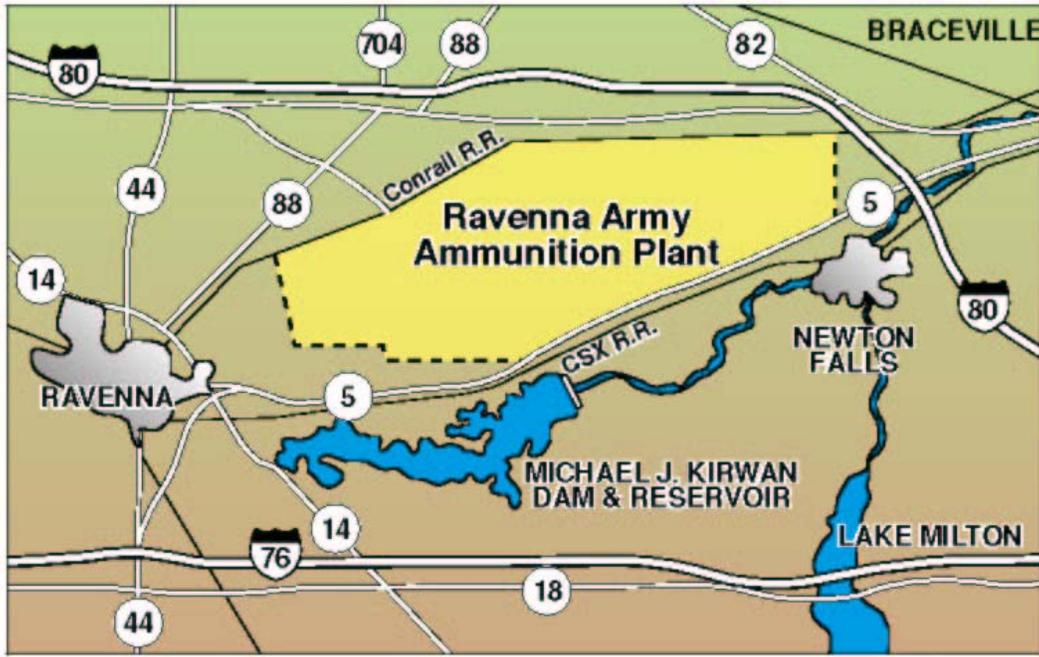
Responsiveness Summary: A part of the ROD in which the US Army documents and responds to written and oral comments received from the public about the Proposed Plan.

Toxic Substances Control Act (TSCA): This federal law is intended to protect the public and the environment from exposure to numerous chemical substances and mixtures. It regulates the importation, manufacture and distribution of chemicals in the U.S. PCBs are regulated under this legislation.

REFERENCES

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4. Shaw (Shaw Environmental, Inc.), 2004a. *Phase II Remedial Investigation Report for Load Line 2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. May 2004.
5. Shaw, 2004b. *Phase II Remedial Investigation Report for Load Line 3 at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. June 2004.
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7. Shaw, 2004d. *Supplemental Baseline Human Health Risk Assessment for Load Line 1 Alternative Receptors at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. July 2004.
8. Shaw, 2004e. *Final Proposed Remedial Goal Options for Soil at Load Lines 1, 2, 3, and 4 at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. September 2004.
9. Shaw, 2005. *Final Focused Feasibility Study for the Remediation of Soil at Load Lines 1 through 4 at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. May 2005.
10. USACE (United States Army Corps of Engineers), 1998. *Phase I Remedial Investigation Report for High-Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. DACA62-94-D-0029, D.O. Nos. 0010 and 0022, Final, February 1998.
11. USACE, 2001. *Phase II Remedial Investigation Report for the Winklepeck Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. DACA62-94-D-0029, D.O. 0060, Final, April 2001.
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13. US EPA, 1995. *Land Use in the CERCLA Remedy Selection Process*. OSWER Directive 9355.7-04. May 1995.

Figures



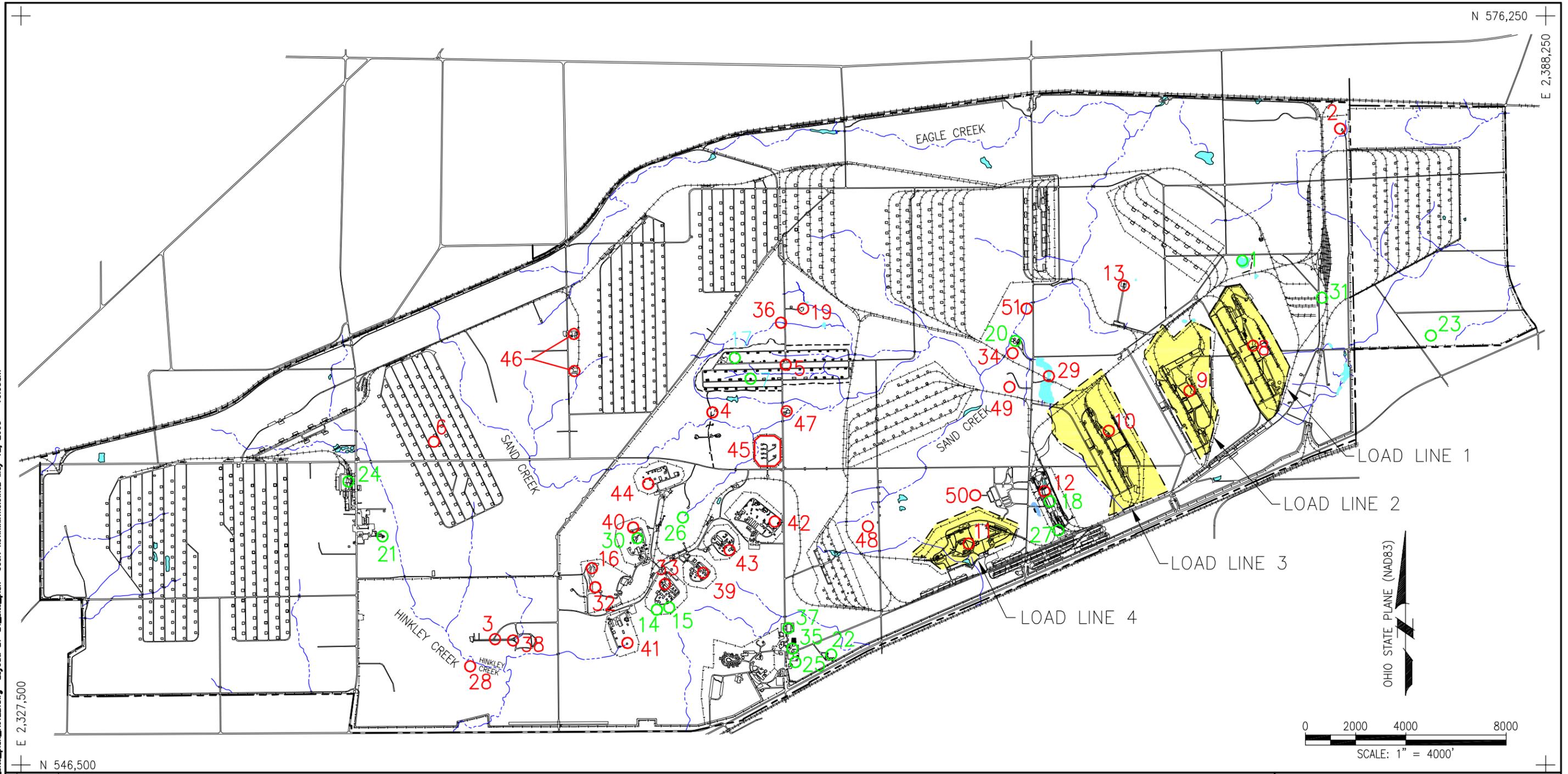
SCALE IN MILES

LOCATION MAP



G03-0075 LL4 Location 1

Figure 1 – Site Locus Map



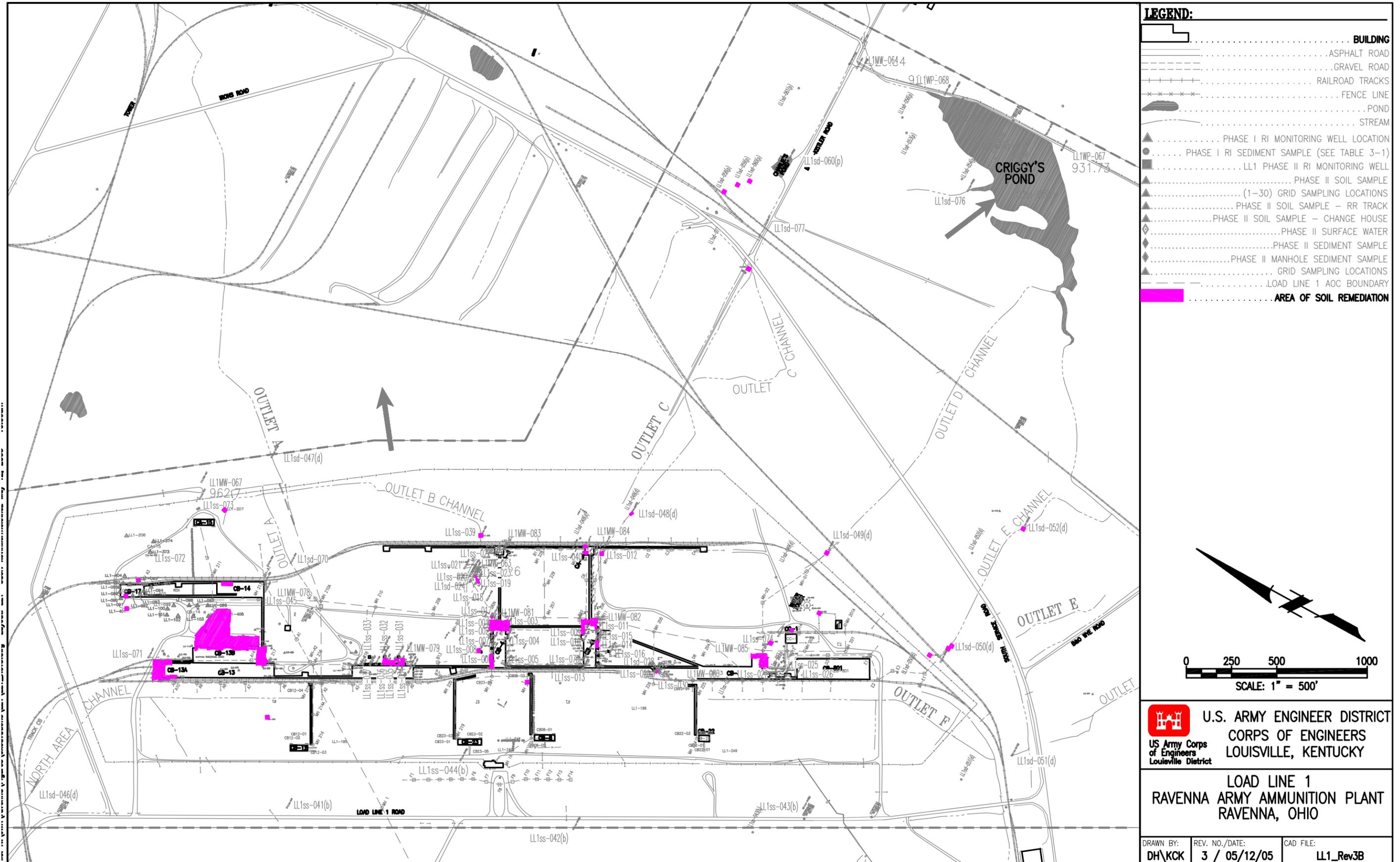
Legend	
1..... RAMSDELL QUARRY LANDFILL	15..... LOAD LINE 6, TREATMENT PLANT
2..... ERIE BURNING GROUNDS	16..... QUARRY LANDFILL/FORMER FUZE AND BOOSTER BURNING PITS
3..... DEMOLITIONS AREA #1	17..... DEACTIVATION FURNACE
4..... DEMOLITIONS AREA #2	18..... LOAD LINE 12 PINK WASTEWATER TREATMENT
5..... WINKLEPECK BURNING GROUNDS	19..... LANDFILL NORTH OF WINKLEPECK BURNING GROUND
6..... C BLOCK QUARRY	20..... SAND CREEK SEWAGE TREATMENT PLANT
7..... BUILDING 1601 HAZARDOUS WASTE STORAGE	21..... DEPOT SEWAGE TREATMENT PLANT
8..... LOAD LINE 1 AND DILUTION/SETTLING POND	22..... GEORGE ROAD SEWAGE TREATMENT PLANT
9..... LOAD LINE 2 AND DILUTION/SETTLING POND	23..... UNIT TRAINING SITE WASTE OIL TANK
10..... LOAD LINE 3 AND DILUTION/SETTLING POND	24..... RESERVE UNIT MAINTENANCE AREA WASTE OIL TANK
11..... LOAD LINE 4 AND DILUTION/SETTLING POND	25..... BUILDING 1034 MOTOR POOL WASTE OIL TANK
12..... LOAD LINE 12 AND DILUTION/SETTLING POND	26..... FUZE BOOSTER AREA SETTLING TANKS
13..... BUILDING 1200 AND DILUTION/SETTLING POND	27..... BUILDING 854 PCB STORAGE
14..... LOAD LINE 6, EVAPORATION UNIT	28..... MUSTARD AGENT BURIAL SITE
29..... UPPER AND LOWER COBB'S POND COMPLEX	30..... LOAD LINE 7 PINK WASTEWATER TREATMENT PLANT
31..... ORE PILE RETENTION POND	32..... 40- AND 60-MM FIRING RANGE
33..... FIRESTONE TEST FACILITY	34..... SAND CREEK DISPOSAL ROAD LANDFILL
35..... BUILDING 1037 LAUNDRY WASTEWATER SUMP	36..... PISTOL RANGE
37..... PESTICIDE STORAGE BUILDING T-4452	38..... NACA TEST AREA
39..... LOAD LINE 5/FUZE LINE 1	40..... LOAD LINE 7/BOOSTER LINE 1
41..... LOAD LINE 8/BOOSTER LINE 2	42..... LOAD LINE 9/DETONATOR LINE
43..... LOAD LINE 10/PERCUSSION ELEMENT	44..... LOAD LINE 11/ARTILLERY PRIMER
45..... WET STORAGE AREA	46..... BUILDINGS F-15 AND F-16
47..... BUILDING T-5301 DECONTAMINATION	48..... ANCHOR TEST AREA
49..... CENTRAL BURN PITS	50..... ATLAS SCRAP YARD
51..... DUMP ALONG PARIS-WINDHAM ROAD	
..... FENCE LINE	
..... PROPERTY BOUNDARY	
..... STREAM OR CREEK	
..... BUILDING	
..... ASPHALT ROAD	
..... RAILROAD TRACKS	
..... POND	
..... SURVEY CONTROL POINT	
..... RCRA	
..... AOC BOUNDARY	
..... AOC UNDER IRP/JMC USE AREAS	
..... SWAMP	


U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 LOUISVILLE, KENTUCKY
 US Army Corps of Engineers
 Louisville District

RAVENNA ARMY AMMUNITION PLANT
 RAVENNA, OHIO

DRAWN BY: P.H. / S.D. REV. NO./DATE: REV. 2 / 05/12/05 CAD FILE: LL1-4_site_plan_Rev2B

Figure 2. RVAAP Facility Map



LEGEND:

- BUILDING
- ASPHALT ROAD
- GRAVEL ROAD
- RAILROAD TRACKS
- FENCE LINE
- POND
- STREAM
- PHASE I RI MONITORING WELL LOCATION
- PHASE I RI SEDIMENT SAMPLE (SEE TABLE 3-1)
- LL1 PHASE II RI MONITORING WELL
- PHASE II SOIL SAMPLE
- (1-30) GRID SAMPLING LOCATIONS
- PHASE II SOIL SAMPLE - RR TRACK
- PHASE II SOIL SAMPLE - CHANGE HOUSE
- PHASE II SURFACE WATER
- PHASE II SEDIMENT SAMPLE
- PHASE II MANHOLE SEDIMENT SAMPLE
- GRID SAMPLING LOCATIONS
- LOAD LINE 1 AOC BOUNDARY
- AREA OF SOIL REMEDIATION

0 250 500 1000
SCALE: 1" = 500'

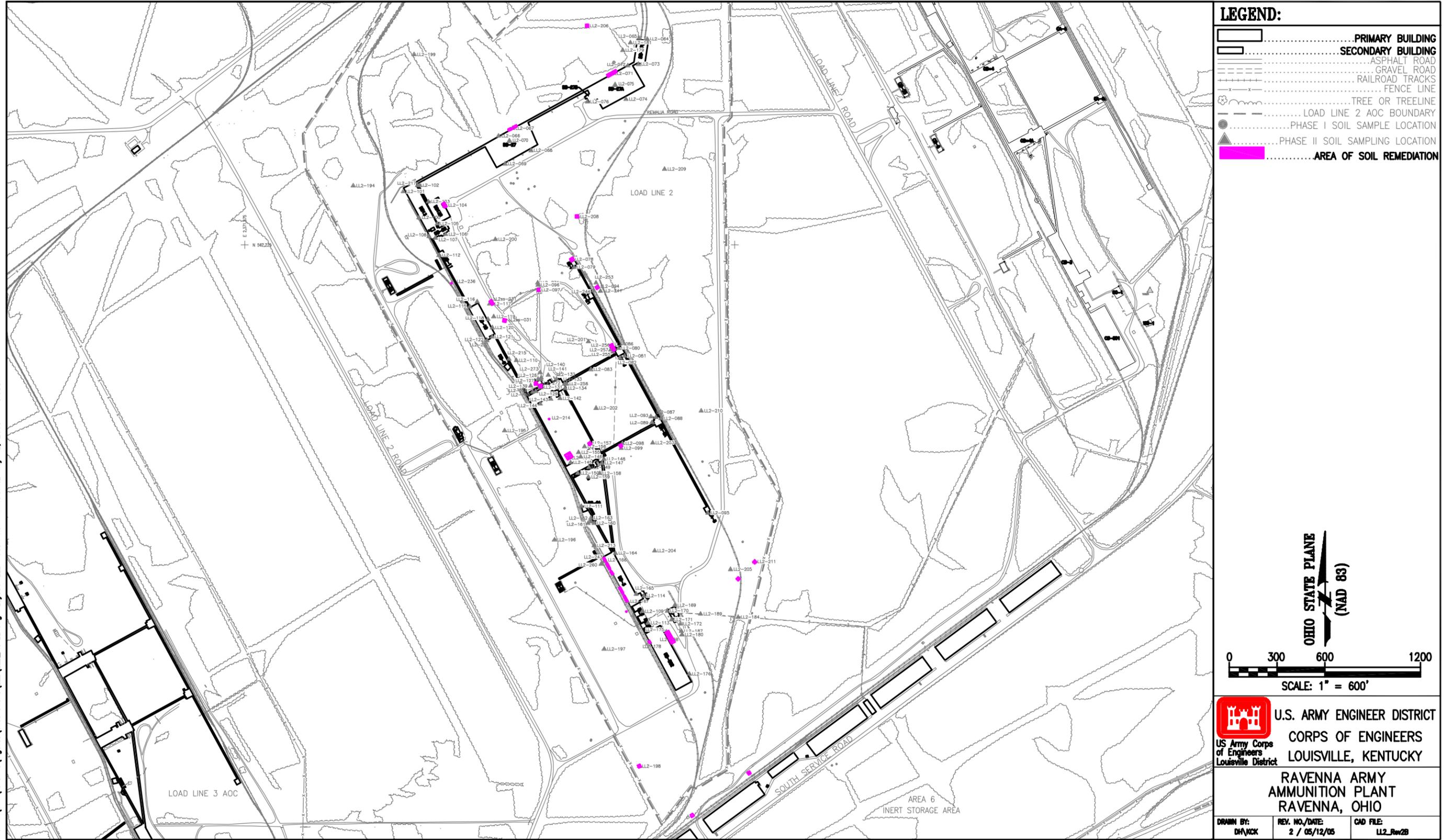
U.S. ARMY ENGINEER DISTRICT
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LOUISVILLE, KENTUCKY

LOAD LINE 1
RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY: DH/KCK	REV. NO./DATE: 3 / 05/12/05	CAD FILE: LL1_Rev3B
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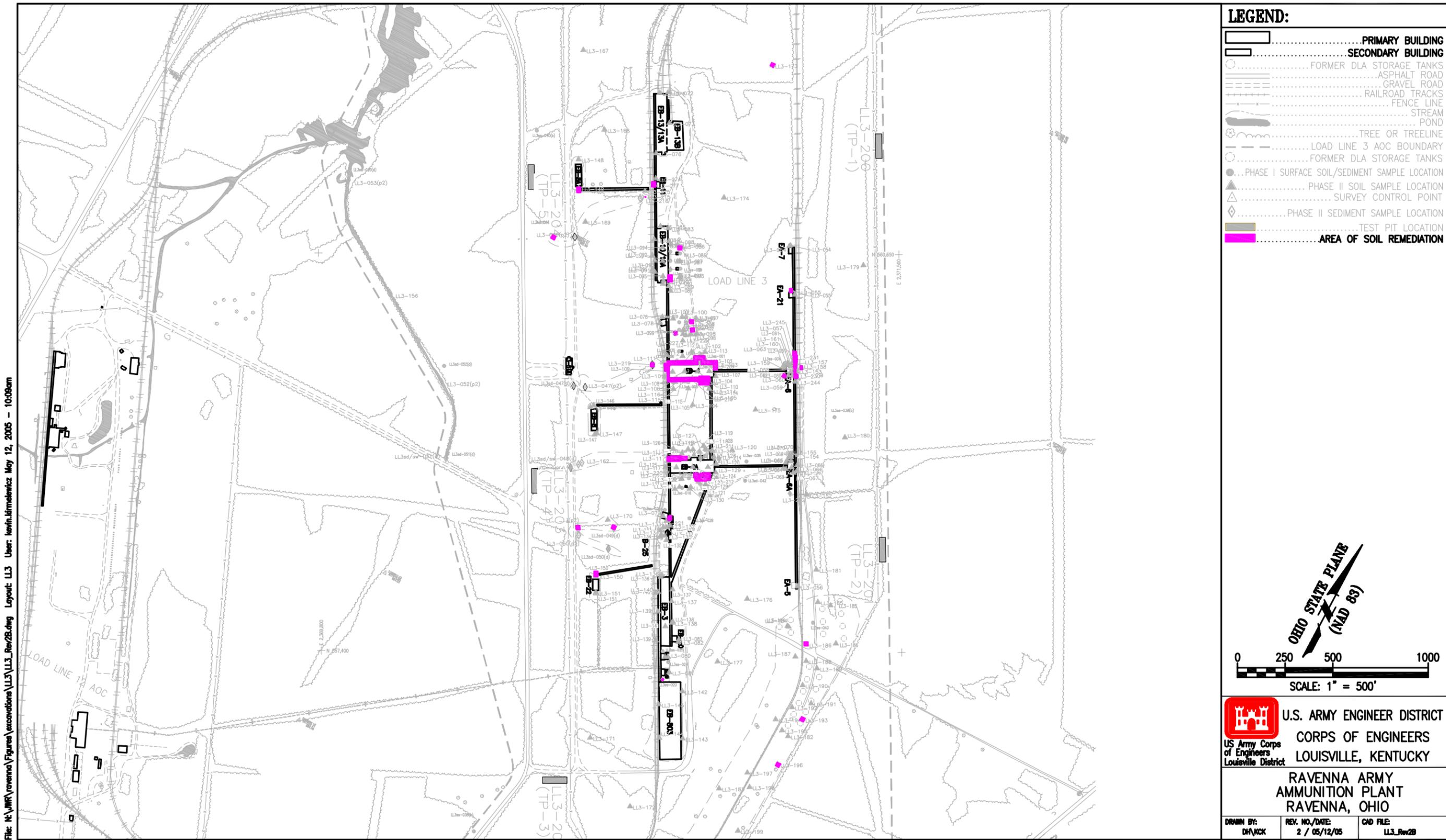
Figure 3. Load Line 1 - Approximate Areas of Soil Remediation

RVAAP Load Lines 1-4 Feasibility Study



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Figure 4. Load Line 2 - Approximate Areas of Soil Remediation



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LEGEND:

- PRIMARY BUILDING
- SECONDARY BUILDING
- FORMER DLA STORAGE TANKS
- ASPHALT ROAD
- GRAVEL ROAD
- RAILROAD TRACKS
- FENCE LINE
- STREAM
- POND
- TREE OR TREELINE
- LOAD LINE 3 AOC BOUNDARY
- FORMER DLA STORAGE TANKS
- PHASE I SURFACE SOIL/SEDIMENT SAMPLE LOCATION
- PHASE II SOIL SAMPLE LOCATION
- SURVEY CONTROL POINT
- PHASE II SEDIMENT SAMPLE LOCATION
- TEST PIT LOCATION
- AREA OF SOIL REMEDIATION

OHIO STATE PLANS
(MAD 83)

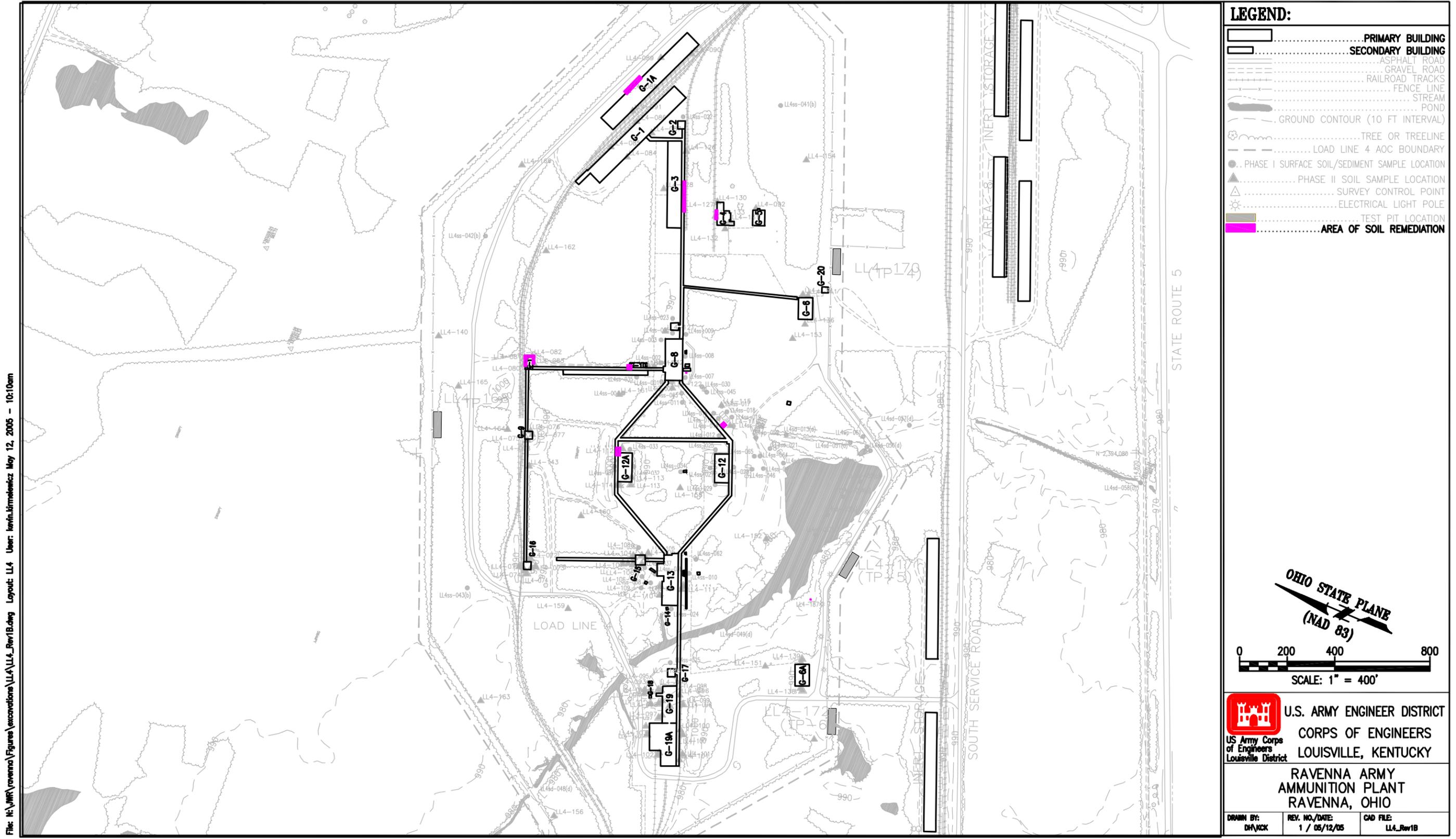
SCALE: 1" = 500'

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LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

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Figure 5. Load Line 3 - Approximate Areas of Soil Remediation



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Figure 6. Load Line 4 - Approximate Areas of Soil Remediation

- LEGEND:**
- PRIMARY BUILDING
 - SECONDARY BUILDING
 - ASPHALT ROAD
 - GRAVEL ROAD
 - RAILROAD TRACKS
 - FENCE LINE
 - STREAM
 - POND
 - GROUND CONTOUR (10 FT INTERVAL)
 - TREE OR TREELINE
 - LOAD LINE 4 AOC BOUNDARY
 - PHASE I SURFACE SOIL/SEDIMENT SAMPLE LOCATION
 - PHASE II SOIL SAMPLE LOCATION
 - SURVEY CONTROL POINT
 - ELECTRICAL LIGHT POLE
 - TEST PIT LOCATION
 - AREA OF SOIL REMEDIATION

**OHIO STATE PLANE
(NAD 83)**

0 200 400 800

SCALE: 1" = 400'

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

**RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO**

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