

Revised Draft

**Proposed Plan
for Soil, Sediment, and Surface Water
for RVAAP-51 Dump Along Paris-Windham Road**

**Former Ravenna Army Ammunition Plant,
Camp Ravenna
Portage and Trumbull Counties, Ohio**

**Contract No. W912QR-08-D-0008
Delivery Order No. 0021**

Prepared for:

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CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-51 Dump Along Paris-Windham Road at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.



Jed Thomas, PE

Study/Design Team Leader

6/25/13

Date



W. Kevin Jago

Independent Technical Review Team Leader

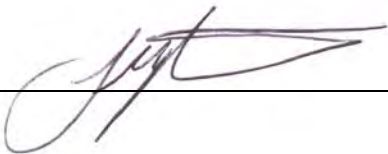
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Date

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

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

As noted above, all concerns resulting from independent technical review of the project have been considered.



6/25/13

PLACEHOLDER FOR:

**Documentation of Ohio EPA Concurrence with Final
Document**

*(Documentation to be provided once concurrence is
issued.)*

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DOCUMENT DISTRIBUTION
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Former Ravenna Army Ammunition Plant,
Camp Ravenna
Portage and Trumbull Counties, Ohio

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ARNG = Army National Guard

OHARNG = Ohio Army National Guard

Ohio EPA CO = Ohio Environmental Protection Agency, Central Office

Ohio EPA NEDO DERR = Ohio EPA, Northeast District Office, Division of Environmental Response and Revitalization

USACE = United States Army Corps of Engineers

1 **TABLE OF CONTENTS**

2

3 1.0 INTRODUCTION..... 1

4 2.0 RVAAP DESCRIPTION AND

5 BACKGROUND..... 2

6 3.0 DUMP ALONG PARIS-

7 WINDHAM ROAD DESCRIPTION

8 AND BACKGROUND 2

9 4.0 AREA OF CONCERN

10 CHARACTERISTICS..... 3

11 5.0 LIMITED REMEDIAL

12 DESIGN/REMEDIAL ACTION..... 3

13 6.0 NATURE AND EXTENT OF

14 CONTAMINATION 4

15 7.0 SCOPE AND ROLE OF

16 RESPONSE ACTION 5

17 8.0 SUMMARY OF HUMAN AND

18 ECOLOGICAL RISKS 5

19 9.0 REMEDIAL ACTION

20 OBJECTIVE..... 7

21 10.0 SUMMARY OF FEASIBILITY

22 STUDY ALTERNATIVES 8

23 10.1 Alternative 1 – No Action..... 8

24 10.2 Alternative 2 – Land Use

25 Controls..... 8

26 11.0 EVALUATION OF FOCUSED

27 FEASIBILITY STUDY

28 ALTERNATIVES 8

29 12.0 PREFERRED FEASIBILITY

30 STUDY ALTERNATIVE 10

31 13.0 COMMUNITY

32 PARTICIPATION..... 10

33 13.1 Community Participation 10

34 13.2 Public Comment Period 10

35 13.3 Written Comments 11

36 13.4 Public Meeting 11

37 13.5 U.S. Army Review of Public

38 Comments 11

39 GLOSSARY OF TERMS 11

40 REFERENCES 13

41 **LIST OF TABLES**

42

43

44 Table 1. Exposure Units at the Dump Along

45 Paris-Windham Road 6

46 Table 2. COCs and FWCUG for

47 Residential Land Use at the Dump

48 Along Paris-Windham Road 7

49 Table 3. CERCLA Evaluation Criteria 9

50

51

52 **LIST OF FIGURES**

53

54 Figure 1. General Location and Orientation

55 of Former RVAAP/Camp Ravenna.. 17

56 Figure 2. Former RVAAP/Camp Ravenna

57 Installation Map 18

58 Figure 3. Dump Along Paris-Windham

59 Road Site Features..... 19

60

61 **LIST OF ACRONYMS**

62

63 ACM Asbestos-containing Material

64 AOC Area of Concern

65 ARAR Applicable or Relevant and

66 Appropriate Requirement

67 bgs Below Ground Surface

68 CERCLA Comprehensive Environmental

69 Response, Compensation, and

70 Liability Act

71 COC Chemical of Concern

72 COPEC Chemical of Potential Ecological

73 Concern

74 ERA Ecological Risk Assessment

75 EU Exposure Unit

76 FFS Focused Feasibility Study

77 FS Feasibility Study

78 FWCUG Facility-wide Cleanup Goal

79 HHRA Human Health Risk Assessment

80 ISM Incremental Sampling Method

81 LUC Land Use Control

82 NCP National Oil and Hazardous

83 Substances Pollution

84 Contingency Plan

85 NFA No Further Action

86 O&M Operation and Maintenance

87 OHARNG Ohio Army National Guard

88 Ohio EPA Ohio Environmental Protection

89 Agency

90 PAH Polycyclic Aromatic

91 Hydrocarbon

92 PCB Polychlorinated Biphenyl

93 PMP Property Management Plan

94 PP Proposed Plan

95 RAFLU Reasonable and Anticipated

96 Future Land Use

97 RA Remedial Action

98 RAO Remedial Action Objective

99 RD Remedial Design

100 ROD Record of Decision

101 RVAAP Ravenna Army Ammunition

102 Plant

1	SC	Site Characterization
2	SR	State Route
3	SRC	Site-related Chemical
4	SSL	Soil Screening Level
5	SVOC	Semi-volatile Organic
6		Compound
7	TNT	2,4,6-Trinitrotoluene
8	USACE	United States Army Corps of
9		Engineers
10	USEPA	United States Environmental
11		Protection Agency

1 **1.0 INTRODUCTION**
2

3 This Proposed Plan (PP) presents the preferred
4 alternative to achieve a remedy for soil within
5 the Dump Along Paris-Windham Road at the
6 former Ravenna Army Ammunition Plant
7 (RVAAP) in Ravenna, Ohio (Figure 1). The
8 Dump Along Paris-Windham Road is
9 designated as RVAAP-51. This PP presents
10 remedial alternatives developed in the *Final*
11 *Site Characterization and Focused Feasibility*
12 *Study for the RVAAP-51 Dump Along Paris-*
13 *Windham Road* (USACE 2015) and provides
14 rationale for selecting the preferred alternative.
15 Permanent surface water and sediment are not
16 present at the area of concern (AOC); therefore,
17 no further action (NFA) is necessary for these
18 media and remedial alternatives only address
19 soil (inclusive of dry sediment). Intermittent
20 surface water was evaluated in the Site
21 Characterization and Focused Feasibility Study
22 (SC/FFS), and no human health chemicals of
23 concern (COCs) were identified for surface
24 water. Further, the ecological risk assessment
25 (ERA) recommended NFA with respect to
26 ecological receptors. Groundwater will be
27 addressed in a separate decision under the
28 RVAAP Facility-Wide Groundwater AOC
29 (RVAAP-66).

30
31 The U.S. Army, in coordination with the Ohio
32 Environmental Protection Agency (Ohio EPA),
33 issues this PP, which provides the public with
34 information to comment upon the selection of
35 an appropriate response action. The remedy will
36 be selected for the AOC after review and
37 consideration of all comments submitted during
38 the 30-day public comment period. Therefore,
39 the public is encouraged to review and comment
40 on all alternatives presented in this PP.

41
42 The U.S. Army is issuing this PP as part of its
43 public participation responsibilities under
44 Section 117(a) of the Comprehensive
45 Environmental Response, Compensation, and
46 Liability Act (CERCLA) of 1980, as amended
47 by the Superfund Amendments and
48 Reauthorization Act of 1986 and
49 Section 300.430(f)(2) of the [40 *Code of*
50 *Federal Regulations* 300]

Public Comment Period:
[Redacted]

Public Meeting:

The U.S. Army will hold an open house and public meeting to present the preferred alternative and additional details presented in the *Final Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road* (USACE 2015). Oral and written comments will also be accepted at the meeting. The open house and public meeting are scheduled for [Redacted] PM, [Redacted], at the [Redacted].

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:
9AM – 8PM Monday – Thursday
9AM – 6PM Friday
9AM – 5PM Saturday

Newton Falls Public Library

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

Hours of operation:
9AM – 8PM Tuesday – Thursday
9AM – 5PM Friday and Saturday

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

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)

Environmental Office
1438 State Route 534, SW
Newton Falls, Ohio 44444
(330) 872-8003

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

1 National Oil and Hazardous Substances
2 Pollution Contingency Plan (NCP). Selection
3 and implementation of a remedy will also be
4 consistent with the requirements of the
5 Ohio EPA *Director's Final Findings and*
6 *Orders*, dated June 10, 2004 (Ohio EPA 2004).
7

8 This PP summarizes information that can be
9 found in greater detail in the SC/FFS report
10 (USACE 2015) and other documents contained
11 in the Administrative Record file for the AOC.
12 The U.S. Army encourages the public to review
13 these documents to gain a more comprehensive
14 understanding of the AOC and activities that
15 have been conducted to date.

17 **2.0 RVAAP DESCRIPTION AND** 18 **BACKGROUND**

19
20 The former RVAAP is operated by the Ohio
21 Army National Guard (OHARNG) as Camp
22 Ravenna Joint Military Training Center,
23 hereafter referred to as Camp Ravenna. Camp
24 Ravenna is federally owned and licensed to the
25 OHARNG for use as a military training site.
26 Camp Ravenna is in northeastern Ohio within
27 Portage and Trumbull Counties, approximately
28 3 miles (4.8 km) east-northeast of the city of
29 Ravenna and approximately 1 mile (1.6 km)
30 northwest of the city of Newton Falls (Figure
31 1). Camp Ravenna occupies a parcel of property
32 approximately 11 miles (17.7 km) long and
33 3.5 miles (5.6 km) wide bounded by State Route
34 5, the Michael J. Kirwan Reservoir, and the
35 CSX System Railroad on the south; Garrett,
36 McCormick, and Berry roads on the west; the
37 Norfolk Southern Railroad on the north; and
38 State Route 534 on the east (Figures 1 and 2).
39 Camp Ravenna is surrounded by several
40 communities: Windham to the north,
41 Garrettsville 6 miles (9.6 km) to the northwest,
42 Newton Falls 1 mile (1.6 km) to the southeast,
43 Charlestown to the southwest, and Wayland
44 3 miles (4.8 km) to the south.

45
46 When RVAAP was operational, Camp Ravenna
47 did not exist and the entire 21,683-acre parcel
48 was a federal government-owned, contractor-
49 operated, industrial facility. The RVAAP
50 Installation Restoration Program encompasses
51 investigation and cleanup of past activities over

52 the entire 21,683 acres of the former RVAAP.
53 References to RVAAP in this document
54 indicate the historical extent of RVAAP, which
55 corresponds to the current Camp Ravenna.
56

57 Industrial operations at RVAAP consisted of 12
58 munitions-assembly facilities referred to as
59 "load lines." Load Lines 1 through 4 were used
60 to melt and load 2,4,6-trinitrotoluene (TNT) and
61 Composition B into large-caliber shells and
62 bombs. The operations on the load lines
63 produced explosive dust, spills, and vapors that
64 collected on the floors and walls of each
65 building. Periodically, the floors and walls were
66 cleaned with water and steam. Following
67 cleaning, the wastewater, containing TNT and
68 Composition B, was known as "pink water" for
69 its characteristic color. Pink water was collected
70 in concrete holding tanks, filtered, and pumped
71 into unlined ditches for transport to earthen
72 settling ponds. Load Lines 5 through 11 were
73 used to manufacture fuzes, primers, and
74 boosters. Potential contaminants at these load
75 lines include lead compounds, mercury
76 compounds, and explosives. From 1946 to
77 1949, Load Line 12 was used to produce
78 ammonium nitrate for explosives and fertilizers.
79

80 In 1950, RVAAP was placed on standby status
81 and operations were limited to renovation,
82 demilitarization, and normal maintenance of
83 equipment, along with storage of munitions.
84 Production activities were resumed from July
85 1954 to October 1957 and again from May 1968
86 to August 1972. In addition to production
87 missions, various demilitarization activities
88 were conducted at facilities constructed at Load
89 Lines 1, 2, 3, and 12. Demilitarization activities
90 included disassembly of munitions and
91 explosives melt-out and recovery operations
92 using hot water and steam processes. Periodic
93 demilitarization of various munitions continued
94 through 1992.
95

96 97 98 **3.0 DUMP ALONG PARIS-WINDHAM** 99 **ROAD DESCRIPTION AND** 100 **BACKGROUND**

1 The Dump Along Paris-Windham Road is
2 located in the east-central portion of RVAAP,
3 along a steep embankment on the west side of
4 Paris-Windham Road between the bridge over
5 Sand Creek and the intersection of Paris-
6 Windham Road with Remalia Road (Figure 2).
7 The AOC was used as an open dump for a
8 variety of miscellaneous construction and
9 demolition material, including asbestos-
10 containing material (ACM) which included
11 transite roofing and siding, laboratory bottles
12 and drums, concrete, brick, glass, scrap metal,
13 fencing, and wood debris. There are no records
14 indicating the quantities of material dumped at
15 the AOC or the dates of operation.

16
17 The following environmental reports
18 documenting investigations and removal action
19 history for the AOC have been completed for
20 the AOC:

- 21
22 • *Relative Risk Site Evaluation for Newly*
23 *Added Sites* (USACHPPM 1998);
24
- 25 • *Decision Document for a Removal Action at*
26 *Paris-Windham Road Dumpsite (RVAAP-*
27 *51)* [USACE 2003];
28
- 29 • *Final Report for Remedial Design/*
30 *Remedial Action Plan at Paris-Windham*
31 *Road Dump* (MKM 2004); and
32
- 33 • *Final Site Characterization and Focused*
34 *Feasibility Study for the RVAAP-51 Dump*
35 *Along Paris-Windham Road* (USACE
36 2015).
37

38 **4.0 AREA OF CONCERN** 39 **CHARACTERISTICS** 40

41 The AOC characteristics, nature and extent of
42 contamination, and conceptual site model are
43 based on the various investigations conducted
44 from 1998 through 2003.

45
46 The former dump was approximately 400 ft
47 long by 30 ft wide and slopes east to west, away
48 from Paris-Windham Road. The slope face
49 ranges 40 to 60 degrees from horizontal. No
50 permanent surface water features are present at

51 the AOC. Surface water occurs only
52 intermittently as storm water runoff in the
53 drainage swale located at the base of the slope
54 face of the dump during and after rainfall events
55 and periods of snow melt. Surface water runoff
56 follows the topography and flows in a westerly
57 direction through a drainage swale at the base
58 of the dump slope, entering Sand Creek. Sand
59 Creek is located to the west and north at
60 distances ranging from approximately 30 ft
61 (north end of the AOC) to 170 ft (south-central
62 portion of the AOC). The Sand Creek
63 floodplain occupies the land between the dump
64 and Sand Creek. No groundwater monitoring
65 wells are present in the AOC. Figure 3 presents
66 features of the AOC.

67 68 **5.0 LIMITED REMEDIAL** 69 **DESIGN/REMEDIAL ACTION** 70

71 In 2003, USACE, Louisville District prepared a
72 Decision Document identifying semi-volatile
73 organic compounds (SVOCs) as principle
74 contaminants with potential impact to human
75 health and cadmium, polychlorinated biphenyls
76 (PCBs), and SVOCs as principle contaminants
77 with potential impact to ecological receptors
78 (USACE 2003). The Decision Document
79 outlined four potential remedial alternatives to
80 address these contaminants, and the U.S. Army
81 conducted a public meeting and 30-day open
82 comment period resulting in the selection of
83 Alternative 4 for implementation of a removal
84 action under a limited “Remedial
85 Design/Remedial Action (RD/RA).” This
86 action was really an interim action, not a final
87 remedy.
88

89 The limited “RD/RA” was initiated in April
90 2003 and was conducted in accordance with
91 CERCLA to mitigate risks related to potential
92 contact with exposed waste material. The
93 limited “RD/RA” consisted of removal and
94 offsite disposal of surface debris, subsurface
95 debris, and visible transite without undermining
96 and compromising the integrity of Paris-
97 Windham Road (MKM 2004). The majority of
98 the subsurface transite removed during the
99 limited “RD/RA” was concentrated at the
100 southern end of the AOC; one small pocket of
101 transite debris was located near the central

1 portion of the AOC. Test pits were excavated in
2 10-ft intervals along the extent of the AOC to
3 ensure all subsurface transite was located.

4
5 Upon completion of the debris removal
6 operations, the dump area was divided into 10
7 equally sized grids to collect discrete and
8 Incremental Sampling Method (ISM) soil
9 samples for confirmation. During confirmatory
10 sampling activities, additional transite debris
11 was found in the excavated areas on the
12 southern portion of the AOC. These small
13 fragments had not been visible during the
14 removal action but were exposed following a
15 heavy rain event. RVAAP stakeholders and the
16 Akron Regional Air Quality Management
17 District agreed to proceed with AOC restoration
18 activities because further excavation had the
19 potential to undermine and compromise the
20 integrity of Paris-Windham Road (MKM 2004).
21 The transite material was subsequently covered
22 in place during AOC restoration activities. The
23 excavation area was restored to grade in
24 November 2003.

25
26 There were no detections of asbestos in soil, dry
27 sediment, or surface water confirmation
28 samples. However, the results of confirmation
29 sampling verified the presence of
30 benzo(a)anthracene, benzo(a)pyrene,
31 benzo(b)fluoranthene, indeno(1,2,3-cd) pyrene,
32 and dibenzo(a,h)anthracene in soil prior to the
33 placement of the soil cover. It was
34 recommended to conduct further evaluation of
35 risk through the SC/FFS at the AOC, followed
36 by regulatory AOC closure or additional
37 remedial efforts, as necessary.

38 39 **6.0 NATURE AND EXTENT OF** 40 **CONTAMINATION**

41
42 As presented in the SC/FFS, site-related
43 chemicals (SRCs) in soil (inclusive of dry
44 sediment) at the AOC were determined by
45 comparing chemical concentrations to facility-
46 wide background concentrations and
47 eliminating essential nutrients. No frequency-
48 of-detection screening was performed in the
49 SC/FFS because fewer than 20 discrete samples
50 were available. The prevalent SRCs detected in
51 surface soil were 11 inorganic chemicals and 23

52 SVOCs. The highest concentrations of
53 inorganic chemicals were generally observed
54 within the drainage swale. Results of the
55 contingency ISM sample collected from Grids
56 1 through 10 during the limited "RD/RA"
57 indicate detectable SVOCs, primarily
58 polycyclic aromatic hydrocarbons (PAHs),
59 were present in soil throughout the AOC prior
60 to placement of the soil cover. Nitrocellulose,
61 acetone, and PCB-1254 were also identified as
62 SRCs in surface soil.

63
64 Samples collected from intermittent surface
65 water contained substantially fewer detected
66 SRCs than surface soil. Seven inorganic
67 chemicals were identified as SRCs. No volatile
68 organic compounds, SVOCs, pesticides, or
69 PCBs were detected in surface water. However,
70 nitrocellulose was detected; therefore, it was
71 identified as a surface water SRC. Asbestos was
72 not detected in any of the surface water samples.

73
74 Groundwater will be assessed in a future report
75 as part of the RVAAP Facility-Wide
76 Groundwater AOC (RVAAP-66). A qualitative
77 assessment of the potential for soil
78 contaminants to migrate to groundwater was
79 presented in the SC/FFS report (USACE 2015).
80 The April 2003 dataset was compared to soil
81 screening levels (SSLs) for protection of
82 groundwater from the USEPA Regional
83 Screening Level table (USEPA 2010).
84 Concentrations of six SVOCs, four inorganic
85 chemicals, and one PCB in soil exceeded their
86 respective screening levels. Barium, lead, and
87 manganese had the highest frequency of SSL
88 exceedances; however, the SSLs for these three
89 inorganic chemicals are less than their
90 respective RVAAP surface soil background
91 concentrations.

92

1 Sand Creek, which lies approximately 30 ft to
2 the north of the AOC on the northern end to
3 about 170 ft west of the AOC on the southern
4 end, is assumed to be the downgradient receptor
5 for groundwater discharge. Therefore, Sand
6 Creek water quality data were evaluated to
7 identify any potential evidence for contaminant
8 migration from the AOC in surface water and
9 groundwater. Results from the RVAAP facility-
10 wide biological and water quality study Sand
11 Creek sampling station S9 were used for the
12 evaluation (USACE 2005a). This monitoring
13 station is located at river mile 1.9 at the
14 southwest corner of the Paris-Windham Road
15 bridge over Sand Creek and is immediately
16 downstream of the AOC. Results of chemical
17 and biological samples collected during the
18 facility-wide surface water study at this
19 sampling station showed that no surface water
20 chemical concentrations exceeded maximum or
21 average water quality criteria for aquatic life
22 under Ohio Water Quality Standards. No
23 chemicals exceeded criteria protective of the
24 Warm Water Habitat aquatic life use (USACE
25 2005). Overall, the sediment quality and water
26 quality was rated "excellent" and the fish
27 community was rated "good." The
28 macroinvertebrate community was rated
29 "exceptional." The evaluation did not show
30 evidence of a decline in water quality in
31 Sand Creek immediately downstream of the
32 AOC.

33 34 **7.0 SCOPE AND ROLE OF** 35 **RESPONSE ACTION** 36

37 The Reasonable and Anticipated Future Land
38 Use (RAFLU) for the Dump Along Paris-
39 Windham Road is Military Training. The
40 representative receptor is the Range
41 Maintenance Soldier. This RAFLU, in
42 conjunction with the evaluation of agricultural-
43 residential land uses and associated receptors,
44 forms the basis for identifying COCs in the
45 SC/FFS. The National Guard Trainee is not
46 considered the representative receptor because
47 the AOC is a small area, on a steep road berm,
48 and is not suitable for use by this receptor.
49 Because the AOC is located immediately
50 adjacent to a primary road, trespassers may

51 potentially visit the AOC; therefore, Adult and
52 Juvenile Trespassers were also considered.
53 The exposure assumptions for the Range
54 Maintenance Soldier are also protective of the
55 Adult and Child Trespasser. Additionally, to
56 account for the potential exposure of full-time
57 employees, the Commercial/Industrial Land
58 Use was evaluated.

59
60 The response action evaluated alternatives to
61 attain both Land Uses (Military Training and
62 Commercial/Industrial) for soil, including dry
63 sediment. Although not anticipated at RVAAP
64 or this AOC, the response action also evaluated
65 a Residential Land Use. The Resident Receptors
66 (Adult and Child) were evaluated; however, the
67 topography of the area (i.e., steep slope and
68 floodplain) precludes Residential Land Use.

69
70 Groundwater will be addressed under the
71 RVAAP Facility-Wide Groundwater AOC as a
72 separate decision. However, the selected
73 remedy for soil at the Dump Along Paris-
74 Windham Road must also be protective of
75 groundwater.

76 77 **8.0 SUMMARY OF HUMAN AND** 78 **ECOLOGICAL RISKS** 79

80 A human health risk assessment (HHRA) was
81 performed to identify COCs and provide a risk
82 management evaluation to determine COCs in
83 surface soil, subsurface soil, and surface water
84 requiring remediation based on potential risks
85 to human receptors (Range Maintenance
86 Soldier, Industrial Receptor, Trespasser, and
87 Resident Receptor).

88
89 Three soil exposure units (EUs) were evaluated
90 in the HHRA and are presented in Table 1.
91

Table 1. Exposure Units at the Dump Along Paris-Windham Road

Fill Area EU - The middle of the dump was excavated and covered with at least 2 ft of clean fill. These samples were collected from 0-1 ft below ground surface (bgs) prior to restoration. This EU is currently under at least 2 ft of clean fill; therefore, it represents subsurface soil.

Surface Area EU - The northern and southern ends of the dump area and the drainage swale lie outside the limited RD/RA excavation area. Limited, if any, backfill/cover soil was placed in these areas. Samples collected from 0-1 ft bgs in this area represent surface soil.

AOC-Wide EU - One ISM sample was collected across the entire soil grid (i.e., all 10 grid areas). This sample was collected following excavation and prior to restoration to grade. Portions of the sampled area were subsequently filled. Therefore, this EU represents a combination of surface and subsurface conditions at the AOC.

1
2 Permanent surface water and sediment are not
3 present at the AOC; however, intermittent
4 surface water was evaluated as a single EU (also
5 referred to as the Surface Water EU). COCs
6 were determined for each human receptor
7 scenario and applicable EU based on guidance
8 established in *Facility-Wide Human Health*
9 *Cleanup Goals* (USACE 2010), herein referred
10 to as the FWCUG Report.

11
12 The Range Maintenance Soldier is assumed to
13 contact soil from 0 to 4 ft bgs as specified in the
14 *Facility-Wide Human Health Risk Assessor's*
15 *Manual* (USACE 2005). Samples collected
16 from within the 0 to 4 ft bgs exposure depth
17 included those from shallow surface soil (0-1 ft
18 bgs) in the Surface Area EU and from
19 subsurface soil greater than 2 ft bgs in the Fill
20 Area EU. As discussed in Section 5.0, clean soil
21 backfill was placed in the Fill Area EU;
22 therefore, samples collected prior to placement
23 of the fill are considered to represent subsurface
24 soil exposure. The Range Maintenance Soldier
25 is not expected to contact surface water. No
26 COCs for the Range Maintenance Soldier were
27 identified in the Surface Area EU, Fill Area EU,
28 or AOC-Wide EU.
29 Trespassers are assumed to contact shallow
30 surface soil (0-1 ft bgs) and surface water in the

31 drainage conveyance at the base of the slope of
32 the former dump. No COCs were identified for
33 the Trespasser in the Surface Area or AOC-
34 wide EUs. Additionally, no surface water COCs
35 were identified for the Trespasser.

36
37 The Resident Receptor is assumed to contact
38 shallow surface soil (0-1 ft bgs) and surface
39 water. Exposure to subsurface soil is not
40 included because the foundation of a house
41 would have to be located outside the AOC due
42 to steep terrain within the dump.
43 Benzo(a)pyrene was identified as a COC for the
44 Resident Receptor in the Surface Area EU. The
45 exposure point concentration (0.33 mg/kg)
46 exceeds the facility-wide cleanup goal
47 (FWCUG) for the Resident Receptor Adult
48 (0.221 mg/kg). Benzo(a)pyrene and
49 dibenzo(a,h)anthracene were identified as
50 COCs in the AOC-Wide EU. The detected
51 concentrations of benzo(a)pyrene and
52 dibenzo(a,h)anthracene were 1.4 and
53 0.36 mg/kg, respectively. The FWCUG for the
54 Resident Receptor Adult is 0.221 mg/kg for
55 both of these chemicals. No surface water
56 COCs were identified for the Resident
57 Receptor. These two COCs for the Resident
58 Receptor were compared to the US EPA
59 January 2015 Regional Screening Levels
60 (RSLs) and were not COCs for the Industrial
61 Receptor.

62
63 No COCs were identified in surface water for
64 any receptor scenario. No COCs were identified
65 in soil for the Range Maintenance Soldier, the
66 Industrial Receptor, or Adult and Juvenile
67 Trespassers. Two PAHs were identified as
68 COCs in soil for the Resident Receptor. Due to
69 benzo(a)pyrene and dibenzo(a,h)anthracene
70 being identified as a risk to the Resident
71 Receptor at this AOC, evaluation of remedial
72 alternatives was recommended in the
73 Feasibility Study (FS).

74
75 The Dump Along Paris-Windham Road is
76 approximately 30 ft wide by 400 ft long or about
77 0.25 acres in size. Two wetlands have been
78 identified on the AOC. The primary habitat is
79 forest and is not large enough to completely
80 support cover and food for small birds and

1 mammals that typically require approximately
 2 1 acre (USEPA 1993).
 3 Currently, there are no critical habitats on Camp
 4 Ravenna. The Dump Along Paris-Windham
 5 Road has not been specifically surveyed for
 6 state listed or federally listed species; however,
 7 there have been no documented sightings of rare
 8 species at the AOC.

9
 10 A Level I ERA was conducted to evaluate if the
 11 AOC had past releases or the potential for
 12 current contamination, and if important
 13 ecological resources exist on or near the AOC.
 14 The ERA identified three surface soil chemicals
 15 of potential ecological concern (COPECs) at the
 16 Fill Area EU, eight surface soil COPECs at the
 17 Surface Area EU, and four surface water
 18 COPECs at the Surface Water EU. Although an
 19 important resource, wetlands are not a
 20 significant resource at the AOC because dry
 21 sediment and surface water sampling results do
 22 not indicate chemicals are present at
 23 concentrations of concern for ecological
 24 receptors in the wetlands/drainage swale. The
 25 closest Sand Creek biological and water quality
 26 sampling station downstream of the AOC
 27 showed no impairment, suggesting
 28 contaminants are not migrating from the landfill
 29 to the stream. Vegetation types located on and
 30 near the AOC are found elsewhere at RVAAP
 31 and in the ecoregion.
 32

33 The ERA concluded there are no significant
 34 ecological resources at the Dump Along Paris-
 35 Windham Road, and the recommendation was
 36 NFA for protection of ecological resources.

37
 38 **9.0 REMEDIAL ACTION**
 39 **OBJECTIVE**
 40

41 The remedial action objective (RAO)
 42 references FWCUGs that are considered
 43 protective of human health and the environment
 44 under current land use and RAFLU. The RAO
 45 for this remedy is to prevent exposure of the
 46 Resident Receptor to shallow surface soil (0-1
 47 ft bgs) with COC levels exceeding the target
 48 risk of 1E-05 and a hazard quotient of 1.0. Two
 49 PAHs benzo(a)pyrene and
 50 dibenzo(a,h)anthracene were identified as
 51 COCs in soil for the Resident Receptor. An
 52 FWCUG of 0.221 mg/kg for both PAHs
 53 achieves the target risk and hazard index levels
 54 for the Range Maintenance Soldier, Industrial
 55 Receptor, and Trespasser, and is also protective
 56 for the Resident Receptor.

57
 58 The response action addresses benzo(a)pyrene
 59 and dibenzo(a,h)anthracene in shallow surface
 60 soil (0-1 ft bgs). There are no COCs in surface
 61 water. Sediments are not present at the AOC.
 62 Remediation of soil to protect ecological and
 63 groundwater resources is not necessary. Table 2
 64 presents the COCs and FWCUGs for soil under
 65 this remedy.
 66

Media	Chemicals of Concern (Maximum Concentration)	FWCUG (mg/kg)
Shallow Surface Soil (0-1 ft bgs)	Benzo(a)pyrene (1.4 mg/kg) Dibenzo(a,h)anthracene (0.36 mg/kg)	0.221 0.221
Subsurface Soil (1-13 ft bgs)	Not evaluated	Not applicable
Wet Sediment	None ^a	None
Surface Water	None	None

^a Wet sediment does not exist within the boundaries of the area of concern. Dry sediment is addressed the same as surface soil in terms of contaminant nature and extent, fate and transport, and risk exposure models and is consistent with the FWCUG Report (USACE 2010).
 bgs = Below Ground Surface.
 COC = Chemical of Concern.
 FWCUG = Facility-wide Cleanup Goal.

1 **10.0 SUMMARY OF FEASIBILITY**
2 **STUDY ALTERNATIVES**

3
4 The following general response actions were
5 considered in the FFS for remediation of
6 contaminated soil at the Dump Along Paris-
7 Windham Road:

- 8
9 • No action, and
10 • Land use controls (LUCs).

11
12 Costs were estimated for each alternative.

13
14 **10.1 Alternative 1 – No Action**

15
16 *Cost: \$0*

17
18 This remedial alternative provides no further
19 RA and is required under the NCP as a baseline
20 for comparison with other remedial alternatives.
21 This alternative is not protective of human
22 health for Residential Land Use. Under this
23 alternative, there is no reduction in toxicity,
24 mobility, or volume of contaminated soil.
25 Access restrictions and environmental
26 monitoring would be discontinued. The Dump
27 Along Paris-Windham Road would have no
28 legal, physical, or administrative LUCs. While
29 the “No Action” alternative would have a \$0
30 cost, this alternative is not acceptable, because
31 the site does not meet requirements for
32 unlimited use and unrestricted exposure
33 (UU/UE).

34
35 **10.2 Alternative 2 – Land Use Controls**

36
37 *Estimated Cost: \$102,960 (Updated from the*
38 *SC/FFS to account for current pricing)*

39
40 This alternative utilizes LUCs to prevent
41 exposure of the Resident Receptor to COCs in
42 shallow surface soil and prevent exposure to
43 residual asbestos. Concentrations of
44 benzo(a)pyrene and dibenzo(a,h)anthracene in
45 shallow surface soil exceed FWCUGs for the
46 Resident Receptor. No COCs were identified
47 for the Range Maintenance Soldier (the
48 representative receptor at the AOC as
49 determined by the RAFLU), the Industrial
50 Receptor or the possible Adult and Juvenile
51 Trespassers. Disturbance and potential

52 exposure to residual ACM must also be
53 controlled.

54 Alternative 2 would leave impacted soil in place
55 and implement no active remedial measures.
56 LUCs may include a digging restriction,
57 signage, restriction on residential use, and
58 briefing prior to access to the AOC. Prior to
59 implementing Alternative 2, an RD detailing the
60 five-year review requirements and LUCs would
61 be developed. Pursuant to CERCLA, a review
62 would be conducted every five years, as COCs
63 would remain on site above FWCUGs for the
64 Resident Receptor (representative receptor for
65 Residential Land Use). Five-year reviews
66 permit evaluation of all remedy components,
67 including LUCs, to assess the presence and
68 behavior of the remaining COCs. Continued
69 surveillance through the five year review
70 ensures that the remedy is protective.
71 Subsequent to the RD, the Property
72 Management Plan (PMP) would capture all
73 LUCs prescribed by the approved RD and serve
74 as a formal tool to help manage and set forth
75 procedures for the established LUCs.

76
77 **11.0 EVALUATION OF FOCUSED**
78 **FEASIBILITY STUDY ALTERNATIVES**

79
80 The alternatives were evaluated with respect to
81 the nine comparative analysis criteria, as
82 outlined by CERCLA (Table 3). The nine
83 criteria are categorized into three groups:
84 threshold criteria, primary balancing criteria,
85 and modifying criteria. These criteria are as
86 follows.

87
88 Threshold Criteria – must be met for the
89 alternative to be eligible for selection as a
90 remedial option.

- 91
92 1. Overall protection of human health and
93 the environment.
94 2. Compliance with applicable or relevant
95 and appropriate requirements
96 (ARARs).
97

Table 3. CERCLA Evaluation Criteria

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

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

Long-term Effectiveness and Permanence – considers the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once facility wide-cleanup goals (FWCUGs) 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 (O&M) costs associated with the implementation of the alternative.

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

Community Acceptance – will be addressed in the Record of Decision (ROD) following a review of the public comments received on the site characterization (SC) report, focused feasibility study (FFS), and Proposed Plan (PP).

2 **Balancing Criteria** – used to weigh major trade-
3 offs among alternatives.

4
5 3. Long-term effectiveness and
6 permanence.

7 4. Reduction of toxicity, mobility, or
8 volume through treatment.

9 5. Short-term effectiveness.

10 6. Implementability.

11 7. Cost.

12
13 **Modifying Criteria** – may be considered to the
14 extent that information is available during
15 development of the FFS but can be fully
16 considered only after public comment on this
17 PP.

18
19 8. State acceptance.

20 9. Community acceptance.

21
22 The comparative analysis evaluates the relative
23 performance of Alternatives 1 and 2 with
24 respect to each of the nine criteria. Identifying
25 the advantages and disadvantages of each
26 alternative, with respect to each other, helps
27 identify relative strengths of the preferred
28 alternative. These strengths, combined with risk
29 management decisions made by the U.S. Army
30 and Ohio EPA, as well as input from the
31 community, will serve as the basis for selecting
32 the remedy.

33
34 Criterion 1 (Overall Protectiveness of Human
35 Health and the Environment) is rated either
36 “protective” or “not protective.” Criterion 2
37 (Compliance with ARARs) is rated either
38 “compliant” or “not compliant.” The remaining
39 seven criteria are rated as “high,” “medium,” or
40 “low.” A rating of “high” indicates the
41 alternative performs the best, and a rating of
42 “low” indicates the alternative performs the
43 worst. For example, an alternative with a high
44 cost will be scored “low” under Criterion 7
45 (Cost).

46

1 Alternative 1 (No Action) is not protective of
2 human health or the environment. No effort would
3 be taken to prevent or minimize human or
4 ecological exposure to contaminated soil.
5 Concentrations of contaminants could pose a risk
6 to future receptors (e.g., Resident Receptor) in a
7 Residential Land Use scenario.

8 Alternative 2 is considered protective regarding
9 Overall Protectiveness of Human Health and
10 the Environment and is compliant with ARARs.
11 The Long-term Effectiveness and Permanence
12 is “high.” The Reduction of Toxicity, Mobility,
13 or Volume through Treatment is considered
14 “low,” as there is no additional removal or
15 treatment with this alternative. The Short-term
16 Effectiveness is considered “medium,” as no
17 additional short-term health risks to the
18 community would occur because no additional
19 removals or treatments would be implemented.
20 Implementability is considered “medium,” as
21 Alternative 2 can be readily and quickly
22 implemented. The estimated cost of \$102,960 is
23 ranked “medium.” O&M and monitoring costs
24 are estimated for a 30-year period. The
25 development of an RD, including LUCs and
26 CERCLA five-year reviews, is included in this
27 cost. The estimated cost will be refined in the
28 RD.

30 12.0 PREFERRED FEASIBILITY 31 STUDY ALTERNATIVE

33 The U.S. Army, in coordination with Ohio EPA,
34 is recommending Alternative 2 (LUCs) be
35 implemented as the RA for soil at the Dump
36 Along Paris-Windham Road. Alternative 1 (No
37 Action) was also evaluated. However,
38 Alternative 1 was eliminated from
39 consideration since it is not protective of human
40 health and not compliant with ARARs.

41
42 COCs do not exist for the representative
43 receptor for the RAFLU (Range Maintenance
44 Soldier), the Industrial Receptor, or Adult and
45 Juvenile Trespassers. However, COCs exist
46 within shallow surface soil for the Resident
47 Receptor; therefore, LUCs are required to
48 ensure protection of this receptor. ACM is also
49 known to be present within the subsurface.
50 Alternative 2 fully complies with ARARs by

51 including signs alerting persons of the presence
52 of ACM and offers long-term effectiveness and
53 permanence when implemented and
54 maintained. Alternative 2 is easily
55 implementable in a relatively short time frame
56 and is expected to have a discounted cost of
57 approximately \$102,960. Based on the
58 available risk assessment information, the
59 preferred alternative will achieve the RAO.

60
61 This recommendation is not a final decision.
62 The U.S. Army, in coordination with Ohio EPA,
63 will select the remedy for the Dump Along
64 Paris-Windham Road after reviewing and
65 considering all comments submitted during the
66 30-day public comment period.

68 13.0 COMMUNITY PARTICIPATION

70 13.1 Community Participation

71
72 Public participation is an important component
73 of the remedy selection. The U.S. Army, in
74 coordination with Ohio EPA, is soliciting input
75 from the community on the preferred
76 alternative. The comment period extends from
77 [REDACTED]. This period includes a
78 public meeting at which the U.S. Army will
79 present this PP. The U.S. Army will accept both
80 oral and written comments at this meeting.

POINT OF CONTACT FOR WRITTEN COMMENTS

Mailing Address:

Camp Ravenna Environmental Office
Attn: Kevin Sedlak
1438 State Route 534 SW
Newton Falls, OH 44444

E-mail Address:

kevin.m.sedlak.ctr@mail.mil

81 13.2 Public Comment Period

82
83 The 30-day comment period is from [REDACTED]
84 [REDACTED], and provides an opportunity for
85 public involvement in the decision-making
86 process for the proposed action. The public is
87 encouraged to review and comment on this PP.

1 All public comments will be considered by the
2 U.S. Army and Ohio EPA before selecting a
3 remedy. During the comment period, the public
4 is encouraged to review documents pertinent to
5 the Dump Along Paris-Windham Road.

6
7 This information is available at the Information
8 Repository and online at www.rvaap.org. To
9 obtain further information, contact Kevin
10 Sedlak of the Camp Ravenna Environmental
11 Office at (614) 336-6000 ext. 2053 or
12 kevin.m.sedlak.ctr@mail.mil.

13 13.3 Written Comments

14
15 If the public would like to comment in writing
16 on this PP or other relevant issues, please
17 deliver comments to the U.S. Army at the public
18 meeting or mail written comments (postmarked
19 no later than [REDACTED]).

21 13.4 Public Meeting

22
23 The U.S. Army will hold an open house and
24 public meeting on this PP on [REDACTED], at
25 [REDACTED] PM, in the [REDACTED]
26 [REDACTED]
27 [REDACTED] to accept comments.
28

INFORMATION REPOSITORIES

Reed Memorial Library

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

Hours of operation:
9AM – 9PM Monday – Thursday
9AM – 6PM Friday
9AM – 5PM Saturday
1PM – 5PM Sunday

Newton Falls Public Library

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

Hours of operation:
10AM – 8PM Tuesday – Friday
9AM – 5PM Friday and Saturday

29 This meeting will provide an opportunity for the
30 public to comment on the proposed action.
31 Comments made at the meeting will be
32 transcribed.

34 13.5 U.S. Army Review of Public Comments

35
36 The U.S. Army will review the public's
37 comments as part of the process in reaching a
38 final decision for the most appropriate action to
39 be taken.

40
41 The Responsiveness Summary, a document that
42 summarizes the U.S. Army's responses to
43 comments received during the public comment
44 period, will be included in the Record of
45 Decision (ROD). The U.S. Army's final choice
46 of action will be documented in the ROD. The
47 ROD will be added to the RVAAP
48 Administrative Record and Information
49 Repositories.

ADMINISTRATIVE RECORD FILE

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)

Camp Ravenna Environmental Office

Attn: Gail Harris

1438 State Route 534 SW

Newton Falls, OH 44444

Phone: (330) 872-8003

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

GLOSSARY OF TERMS

50
51
52
53 **Administrative Record:** a collection of
54 documents, typically reports and
55 correspondence, generated during site
56 investigation and remedial activities.
57 Information in the Administrative Record
58 represents the information used to select the
59 preferred alternative. It is available for public
60 review at Camp Ravenna Environmental
61 Office, 1438 State Route 534; call (330) 872-
62 8003 for an appointment.
63

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

10
11 **Chemical of Concern (COC):** chemical
12 substances specific to an area of concern that
13 potentially pose significant human health or
14 ecological risks. COCs are typically further
15 evaluated for remedial action.

16
17 **Ecological Receptor:** a plant, animal, or habitat
18 exposed to an adverse condition.

19
20 **Exposure Unit (EU):** a location or area where
21 a receptor may move at random and come into
22 contact with an environmental medium (e.g.,
23 soil, surface water, and/or sediment).

24
25 **Feasibility Study (FS):** a CERCLA document
26 that reviews and evaluates multiple remedial
27 technologies under consideration at a site. It
28 also identifies the preferred remedial action
29 alternative.

30
31 **Five-Year Review:** a review conducted to
32 determine whether each AOC remedy
33 remains protective of human health and the
34 environment and functions as intended based
35 on the decision documents (USEPA 2001).

36
37 **Human Receptor:** a hypothetical person, based
38 on current or potential future land use, who may
39 be exposed to an adverse condition. For example,
40 a Range Maintenance Soldier is considered to be
41 the most sensitive human receptor under future
42 controlled land use in this Proposed Plan (PP).

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

49
50 **Property Management Plan (PMP):** a
51 management document to help manage land use

52 controls established to protect human health and
53 the environment at areas of concern and
54 management response sites. A PMP presents
55 defined land uses and land use restrictions to
56 ensure the property assumptions are appropriate
57 or will remain appropriate through restrictions
58 in the future.

59
60 **Reasonable and Anticipated Future Land**
61 **Use (RAFLU):** the U.S. Army projected land
62 use for an AOC that steers identification of
63 potential future receptors, human health risk
64 assessments for those future receptors, and
65 remedial decisions to be protective of those
66 future receptors.

67 **Record of Decision (ROD):** a legal record
68 signed by the U.S. Army following
69 coordination and concurrence with the Ohio
70 EPA as per a June 10, 2004, agreement between
71 the two parties. It describes the cleanup action
72 or remedy selected for a site, the basis for
73 selecting that remedy, public comments,
74 responses to comments, and the estimated cost
75 of the remedy.

76
77 **Remedial Action Objective (RAO):** these
78 specific goals, developed from the evaluation of
79 applicable or relevant and appropriate
80 requirements, are to be protective of human
81 health and the environment.

82
83 **Remedial Investigation (RI):** CERCLA
84 investigation that involves sampling
85 environmental media, such as air, soil, and water,
86 to determine the nature and extent of
87 contamination and to calculate human health and
88 environmental risks that result from the
89 contamination.

90
91 **Responsiveness Summary:** a section of the
92 ROD where the U.S. Army documents and
93 responds to written and oral comments received
94 from the public about the PP.

95

1 **Risk Assessment:** an evaluation that
2 determines potential harmful effects, or lack
3 thereof, posed to human health and the
4 environment due to exposure to chemicals
5 found at a CERCLA site.

6
7 **Target Risk:** the Ohio Environmental
8 Protection Agency (2009) identifies 1E-05 as a
9 target for cancer risk for carcinogens and an
10 acceptable target hazard index of 1.0 for
11 non-carcinogens.

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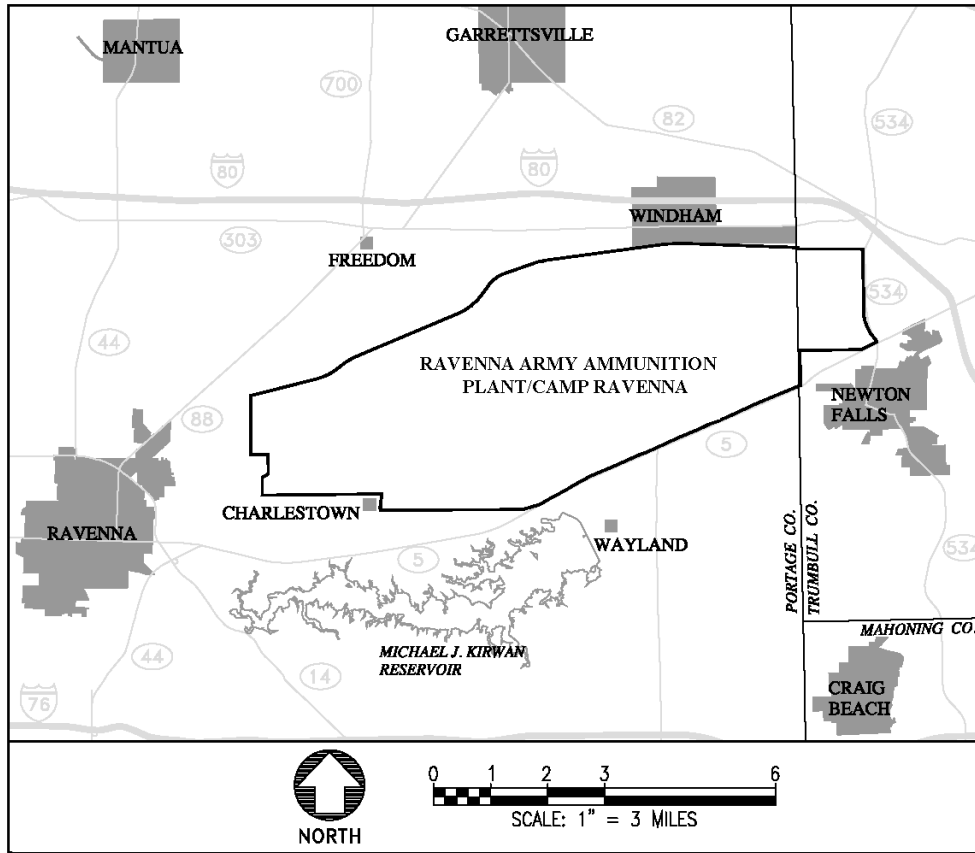
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FIGURES

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

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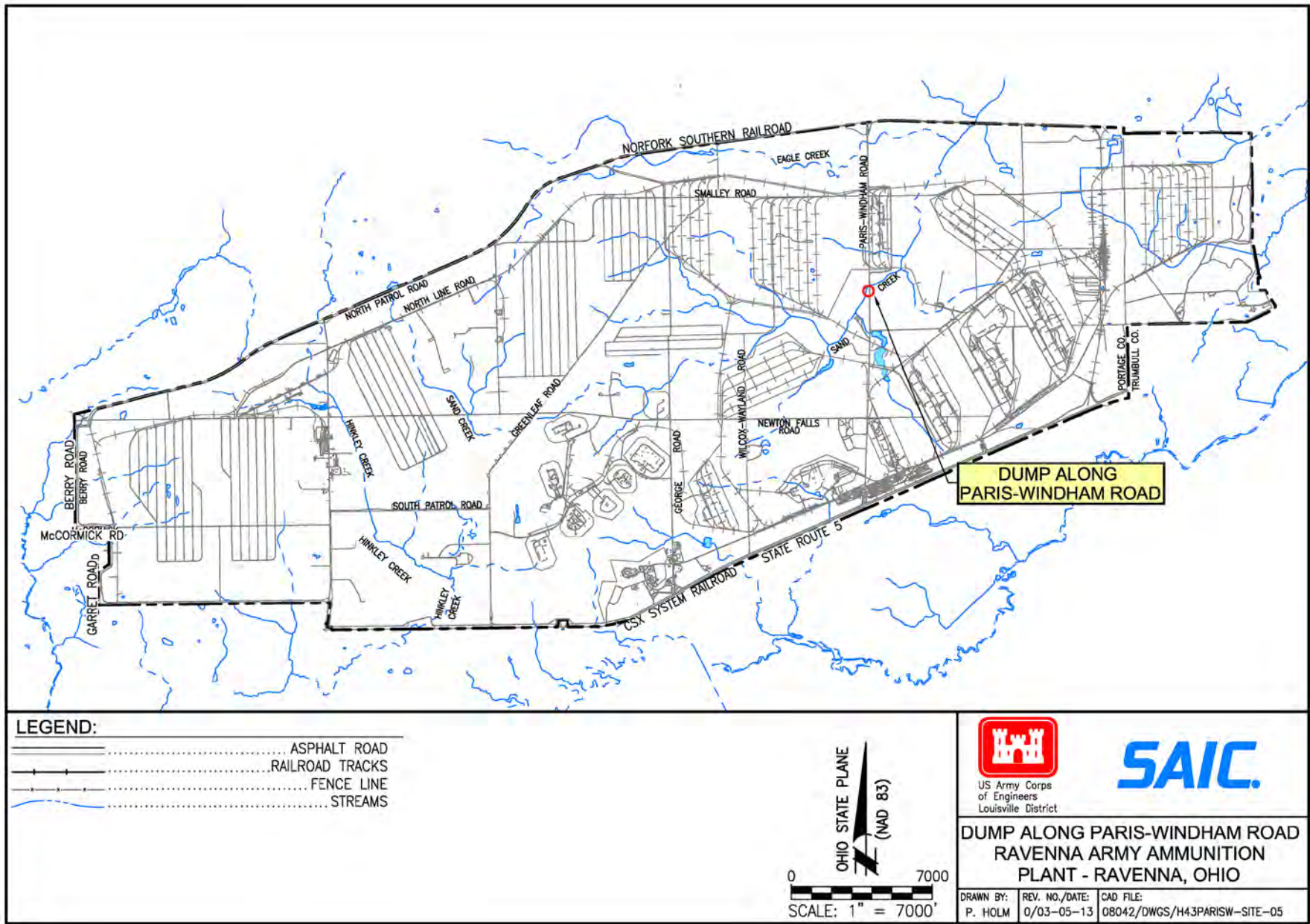
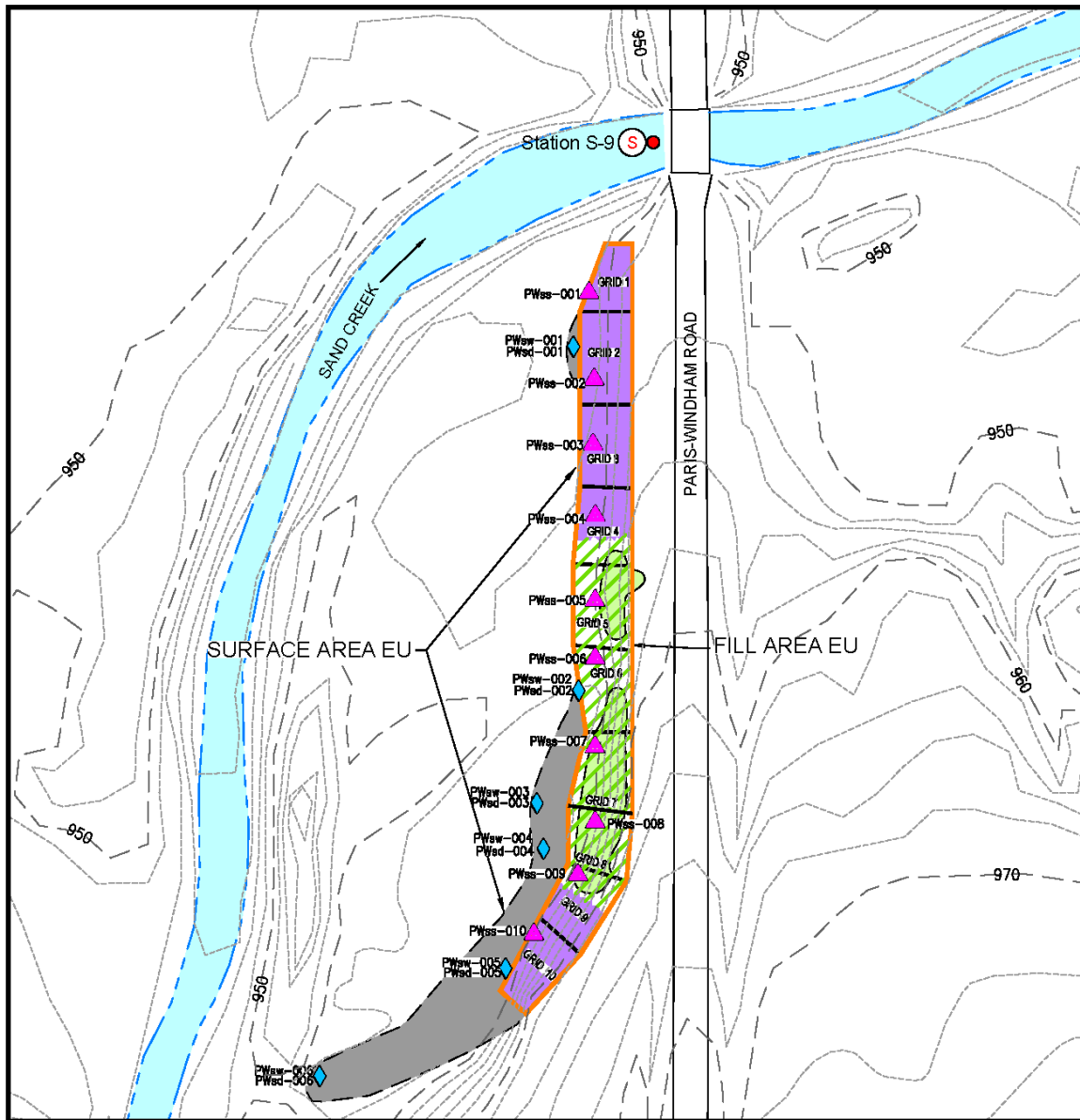


Figure 2. Former RVAAP/Camp Ravenna Installation Map

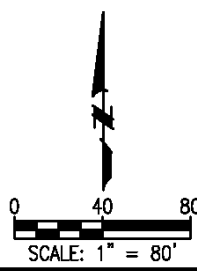
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LEGEND:

	SURFACE WATER
	GROUND CONTOUR 10-FT INTERVAL
	GROUND CONTOUR 2-FT INTERVAL
	STREAM FLOW DIRECTION
	STREAM SAMPLE
	APPROX. AREA OF FORMER DUMP LOCATION AND AOC-WIDE EU EXTENT
	FILL AREA EXPOSURE UNIT
	EXCAVATION AREA
	SURFACE AREA EXPOSURE UNIT (SOIL PORTION)
	SURFACE AREA EXPOSURE UNIT (DRY SEDIMENT PORTION)
	SURFACE SOIL SAMPLE
	SEDIMENT/SURFACE WATER SAMPLE
	SAMPLE GRID



**DUMP ALONG PARIS-WINDHAM ROAD
RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO**

DRAWN BY: P. HOLM	REV. NO./DATE: 2/06-19-13	CAD FILE: /08042/DWGS/H43PARISW_EU
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Figure 3. Dump Along Paris-Windham Road Site Features

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