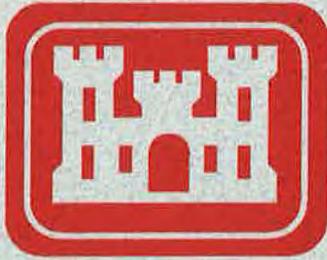


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**U.S. Army Corps of Engineers
New England Division**

**FINAL
NO FURTHER ACTION DECISION UNDER CERCLA
STUDY AREA 39
SYLVANIA BUILDING SITE**

FORT DEVENS, MASSACHUSETTS

**CONTRACT NO DACA33-91-D-0006
DELIVERY ORDER NO. 21**

OCTOBER 1996

48911 96101 ABBN

ABB ABB Environmental
Services, Inc.

**FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA**

**STUDY AREA 39
SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

Prepared for:

**U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts**

Prepared by:

**ABB Environmental Services, Inc.
Wakefield, Massachusetts
Project No. 07147.00**

**CONTRACT NUMBER:
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TABLE OF CONTENTS

Section	Title	Page No.
EXECUTIVE SUMMARY		ES-1
1.0 INTRODUCTION		1-1
2.0 BACKGROUND AND PHYSICAL SETTING		2-1
2.1 DESCRIPTION AND LAND USE		2-1
2.2 REGIONAL GEOLOGY		2-2
2.3 REGIONAL HYDROGEOLOGY		2-2
2.4 STUDY AREA DESCRIPTION AND HISTORY		2-3
3.0 RELATED INVESTIGATIONS		3-1
3.1 MASTER ENVIRONMENTAL PLAN		3-1
3.2 ENHANCED PRELIMINARY ASSESSMENT		3-1
3.3 SITE INVESTIGATION REPORT		3-1
3.4 SUPPLEMENTAL SITE INVESTIGATION		3-3
3.5 PRELIMINARY RISK EVALUATION		3-4
3.5.1 Human Health Preliminary Risk Evaluation Methodology		3-4
3.5.2 Ecological Risk Evaluation Methodology		3-6
4.0 CONTAMINATION ASSESSMENT		4-1
4.1 SITE INVESTIGATION		4-1
4.2 SUPPLEMENTAL SITE INVESTIGATION		4-3
4.3 SOIL REMOVAL ACTION		4-4
4.3.1 Removal Action Objectives		4-5
4.3.2 Field Observations and Screening Results		4-5
4.3.3 Waste Characterization and Disposal		4-6
5.0 PRELIMINARY RISK EVALUATION		5-1
5.1 PRELIMINARY HUMAN HEALTH RISK EVALUATION		5-1
5.1.1 Soils		5-1
5.1.2 Groundwater		5-2
5.2 PRELIMINARY ECOLOGICAL RISK EVALUATION		5-2
5.2.1 Soils		5-2

**FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
STUDY AREA 39
SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page No.</u>
	5.2.2 Surface Water	5-3
	5.2.3 Sediment	5-3
5.3	QUALITATIVE EVALUATION OF RESIDUAL RISK	5-4
6.0	CONCLUSIONS	6-1
7.0	DECISION	7-1

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

REFERENCES

FIGURES

TABLES

APPENDICES

APPENDIX A - FINAL CLOSURE REPORT, SA 39

**FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
STUDY AREA 39
SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
2-1	Site Location
2-2	Location of Buildings 4249 and 4250
2-3	PCB Spill Quadrants
3-1	Locations of Site Investigation Geophysical Grids
3-2	Site Investigation Soil Boring Locations: Building 4249
3-3	Site Investigation Soil Boring, Surface Water, and Sediment Sample Locations: Building 4250
3-4	Site Investigation Soil and Concrete Chip Sample Locations: Building 4250
3-5	Supplemental Site Investigation: Excavation Limit and Confirmation Sample Locations
3-6	Supplemental Site Investigation Geoprobe Locations
4-1	Analytes in Site Investigation Soil Samples, 1993: Building 4249
4-2	Analytes in Site Investigation Soil and Sediment Samples, 1993: Building 4250
4-3	PCBs in Site Investigation Surface Soil and Concrete Samples, 1993
4-4	Analytes in Site Investigation Surface Water Samples, 1993
4-5	Supplemental Site Investigation: Analytes in Confirmation Samples, 1994
4-6	Supplemental Site Investigation: Field Screening Results, 1994
4-7	TPH in Supplemental Site Investigation Soil Samples, 1994
4-8	TPH Excavation Limit and Confirmation Sample Locations, 1995
4-9	PCB Excavation Limit and Confirmation Sample Locations, 1995

**FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
STUDY AREA 39
SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

LIST OF TABLES

Table	Title
2-1	1984 PCB Spill Sample Results
2-2	1984 Post-Excavation Confirmation Sample Results
4-1	Analytes in Soil: Site Investigation
4-2	Polychlorinated Biphenyls in Surface Soil: Site Investigation
4-3	Polychlorinated Biphenyls in Concrete: Site Investigation
4-4	Analytes in Surface Water: Site Investigation
4-5	Analytes in Sediment: Site Investigation
4-6	Field Screening Results: Supplemental Site Investigation Soil Removal Action
4-7	Confirmation Sample Results: Supplemental Site Investigation Soil Removal Action
4-8	Soil Field Screening Results: Supplemental Site Investigation Geoprobe Borings
4-9	Analytes in Soil: Supplemental Site Investigation Geoprobe Borings
4-10	Analytes in Groundwater: Supplemental Site Investigation Geoprobe Borings
4-11	Field Screening Results: 1995 TPH Soil Removal Action
4-12	Confirmation Sample Results: 1995 TPH Soil Removal Action
4-13	Confirmation Sample Results: 1995 PCB Soil Removal Action

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EXECUTIVE SUMMARY

Investigations of Study Area 39 (Sylvania Building Site) at Fort Devens, Massachusetts, have resulted in the decision that no further hazardous waste studies or remediation are required at this site. Study Area 39 was identified in the Federal Facilities Agreement between the U.S. Environmental Protection Agency and the U.S. Department of Defense as a potential site of contamination.

On December 21, 1989, Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendments and Reauthorization Act. In addition, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. In accordance with these acts numerous studies, including a Master Environmental Plan, an Enhanced Preliminary Assessment, a Site Investigation, a Supplemental Site Investigation, and a soil removal action have been conducted at Study Area 39.

Study Area 39 (Sylvania Building Site) is located south of Route 2 in Lancaster, Massachusetts. This area was located within the South Post of Fort Devens until 1973, when it was excised from the installation. Sylvania Corporation reportedly leased one of two buildings (Buildings 4249 and 4250) formerly located at the site between the mid 1950s and the early 1960s to test laser sighting systems on Army tanks. Since 1973 the site has formed part of the Oxbow National Wildlife Refuge. In September 1984 a polychlorinated biphenyl oil spill was discovered adjacent to an empty transformer near Building 4250. Soil containing polychlorinated biphenyls above 50 micrograms per gram was excavated at that time and transported to an offsite hazardous waste storage area. Buildings 4249 and 4250 were demolished in December 1985, although their foundations are still present.

In 1993 Arthur D. Little, Inc. conducted the Site Investigation for Study Area 39. The Site Investigation field program included surface and subsurface soil sampling, concrete sampling at the transformer pad, and surface water and sediment sampling in the wetlands adjacent to the site. Total petroleum hydrocarbons were detected by laboratory analysis in several surface and subsurface soil samples, at concentrations ranging from 10 to 5,500 micrograms per gram. Polychlorinated biphenyls were detected in surface and subsurface soil samples at concentrations ranging from 0.052 to 5.8 micrograms per gram, and in all three concrete samples at

ABB Environmental Services, Inc.

EXECUTIVE SUMMARY

1 concentrations ranging from 2.8 to 8.1 micrograms per gram. The Final Site
2 Investigation Report, issued December 1993, recommended that a phased
3 Supplemental Site Investigation be conducted at Study Area 39 to address
4 polychlorinated biphenyl and petroleum contamination in soil and concrete.
5

6 During the 1994 Supplemental Site Investigation, Arthur D. Little, Inc. removed the
7 concrete transformer pad and approximately 20 cubic yards of contaminated soil
8 from the spill area. Polychlorinated biphenyls were present in soil samples collected
9 following the excavation at concentrations of up to 5.3 micrograms per gram;
10 however, physical barriers prevented the completion of the removal action. Soil and
11 groundwater samples were collected from eight Geoprobe borings installed at
12 several locations around the study area. Total petroleum hydrocarbons (up to 4,800
13 micrograms per gram) were present in soil in Geoprobe boring 39G-02. One
14 volatile organic compound was detected at a low concentration in one Geoprobe
15 groundwater sample, and several metals were detected at concentrations which are
16 most likely representative of local background conditions. No semivolatile organic
17 compounds, polychlorinated biphenyls, or total petroleum hydrocarbons were
18 detected in groundwater samples. Groundwater contamination was not identified at
19 Study Area 39.
20

21 In August 1995, OHM Remediation Services Corporation removed approximately
22 101 tons of petroleum-contaminated soil and 24.9 tons of polychlorinated biphenyl-
23 contaminated soil at Study Area 39. Field screening and laboratory analytical
24 results confirm that all soil containing total petroleum hydrocarbons and
25 polychlorinated biphenyls in excess of the target cleanup levels has been excavated.
26 Removal of the soil effectively eliminated the risk to human health and the
27 environment from potential exposure to contaminants. Following the removal of
28 soil and collection of confirmation samples, OHM Remediation Services
29 Corporation personnel backfilled the excavations with clean fill.
30

31 With the removal of contaminated soil from the Sylvania Building Site and a
32 determination of no residual risk, there is no evidence or reason to conclude that
33 residual hazardous waste contamination due to the petroleum release or the historic
34 transformer spill has caused significant environmental contamination or poses a
35 threat to human health or the environment. The decision has been made to remove
36 Study Area 39 from further consideration in the Installation Restoration Program
37 process.

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1.0 INTRODUCTION

1
2
3
4
5 This decision document has been prepared to support a no further action decision
6 at Study Area (SA) 39 - Sylvania Building Site at Fort Devens, Massachusetts. The
7 report was prepared as part of the U.S. Department of Defense (DOD) Base
8 Realignment and Closure (BRAC) program to assess the nature and extent of
9 contamination associated with site operations at Fort Devens.

10
11 In conjunction with the Army's Installation Restoration Program (IRP), Fort Devens
12 and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic
13 and Hazardous Materials Agency) initiated a Master Environmental Plan (MEP) in
14 1988. The MEP assesses the environmental status of SAs, specifies necessary
15 investigations, and provides recommendations for response actions with the
16 objective of identifying priorities for environmental restoration at Fort Devens.
17 SA 39 was identified in the MEP as a potential source of contamination. On
18 December 21, 1989, Fort Devens was placed on the National Priorities List under
19 the Comprehensive Environmental Response, Compensation and Liability Act
20 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act.

21
22 An Enhanced Preliminary Assessment (PA) was also performed at Fort Devens to
23 address areas not normally included in the CERCLA process, but requiring review
24 prior to closure. A final version of the PA report was completed in April 1992. In
25 1992, DOD (through USAEC) initiated a Site Investigation (SI) for SA 39 along
26 with 12 other SAs in Groups 4, 8, and 9 at Fort Devens. The SI was conducted by
27 Arthur D. Little, Inc.

28
29 Under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990,
30 Fort Devens was selected for cessation of operations and closure. An important
31 aspect of BRAC actions is to determine environmental restoration requirements
32 before property transfer can be considered. Studies at SA 39 were conducted to
33 support this overall mission.
34

2.0 BACKGROUND AND PHYSICAL SETTING

2.1 DESCRIPTION AND LAND USE

Fort Devens is located approximately 35 miles northwest of Boston, Massachusetts, adjacent to the town of Ayer and within Middlesex and Worcester counties. The installation consists of approximately 9,280 acres and includes portions of the towns of Ayer, Harvard, Lancaster and Shirley. Cities in the vicinity include Fitchburg, Leominster, and Lowell. Land surfaces range from about 200 feet (ft) above mean sea level (MSL) along the Nashua River in the northern portion of the installation to 450 ft above MSL in the southern portion of the installation.

Fort Devens was established in 1917 as Camp Devens, a temporary training camp for soldiers from the New England area. In 1931, the camp became a permanent installation and was redesignated as Fort Devens. Throughout its history, Fort Devens served as a training and induction center for military personnel and a unit mobilization and demobilization site. All or portions of this function occurred during World Wars I and II, the Korean and Vietnam conflicts, and operations Desert Shield and Desert Storm. The most recent mission of Fort Devens was to command and train its assigned units and support various tenant activities. Fort Devens closed in 1996, in accordance with the Defense Base Realignment and Closure Act.

Fort Devens consists of three major land use areas: Main Post, South Post, and North Post.

The majority of the facilities on Fort Devens were located in the Main Post area, north of Massachusetts Highway 2. The Nashua River intersects the Main Post along its western edge. The Main Post provided all of the on-post housing, including over 1,700 family units and 9,800 bachelor units (barracks and unaccompanied officer's quarters). Other facilities on the Main Post included community support activities (such as a cafeteria, post exchange, commissary, bowling alley, and golf course), administrative buildings, classrooms and training facilities, maintenance facilities, and ammunition storage facilities.

SECTION 2

1 The South Post is located south of Massachusetts Highway 2 and contains individual
2 training areas that were designated for troop training and range activities, and a
3 parachute drop zone where air training exercises were performed. The Nashua
4 River bounds the South Post on the northeast side. SA 39 is located adjacent to the
5 South Post (Figure 2-1).
6

7 The North Post is directly north of the Main Post. The principal facilities on the
8 North Post include the Douglas E. Moore Army Airfield and the installation Waste
9 Water Treatment Plant.
10

11 The primary mission of Fort Devens was to command, train, and provide logistical
12 support for non-divisional troop units. The installation also supported that portion
13 of the U.S. Army Intelligence School located at Fort Devens, the Army Readiness
14 Region, Reserve Components, and Army Reserve and National Guard in the New
15 England area.
16

17 2.2 REGIONAL GEOLOGY

18
19 Fort Devens is located near the western boundary of the Seaboard Lowland Section
20 of the New England-Maritime Physiographic province (Jahns, 1953). It is adjacent
21 to the Worcester County Plateau of the Central Uplands province and part of the
22 installation lies within the province (Koteff, 1966). The land surface is almost
23 completely covered with unconsolidated glacial outwash deposits, resulting in few
24 bedrock outcrops. The surficial deposits are underlain by a highly complex
25 assemblage of intensely folded and faulted metasedimentary rocks with occasional
26 igneous intrusions. The geomorphology of the region is dominated by glacial
27 features such as outwash plains, kames, kame terraces, drumlins, and eskers.
28

29 2.3 REGIONAL HYDROGEOLOGY

30
31 Groundwater at Fort Devens occurs largely in the permeable glacial-deltaic outwash
32 deposits of sand, gravel, and boulders. Well yields within these sediments are
33 dependent upon the hydraulic characteristics of the aquifer and can range from 2 to
34 over 300 gallons per minute (gpm). Small amounts of groundwater can be obtained
35 from fractured bedrock with yields ranging from 2 to 10 gpm. Minor amounts of
36 groundwater may be found in thin, permeable glacial lenses elsewhere on the
37 installation. The primary hydrogeologic feature at Fort Devens is the Nashua River,
38 which flows through the installation in a south to north direction with an average

1 discharge rate of 55 cubic feet per second. In addition to the Nashua River,
2 numerous brooks that are associated with attendant wetlands dissect the terrain.
3 There are also several kettle ponds and one kettle lake located within the
4 installation.

6 2.4 STUDY AREA DESCRIPTION AND HISTORY

7
8 SA 39, Sylvania Building Site, is one of four original Group 8 SAs. The study area
9 is located south of Route 2 in Lancaster, Massachusetts. Sylvania Corporation
10 reportedly leased one of two buildings that were at the site (Buildings 4249 and
11 4250), from before 1956 until the early 1960s, to test laser sighting systems on Army
12 tanks and possibly to test tank communications systems. The location of the two
13 buildings is shown on Figure 2-2. The Army Reserves later used the site for
14 administration and tank maintenance. SA 39 was located within the South Post of
15 Fort Devens until 1973, when it was excecuted from the installation. Since that time
16 the site and surrounding wetlands have formed part of the Oxbow National Wildlife
17 Refuge, which was deeded to the U.S. Department of the Interior by Fort Devens
18 (Arthur D. Little, Inc., 1993).

19
20) In September 1984 a polychlorinated biphenyl (PCB) oil spill was discovered near
21 Building 4250, adjacent to an empty transformer (Biang, et al., 1992). The oil stain,
22 which was approximately 288 square feet (ft²) in size (Fort Devens EMO, 1985), was
23 divided into four quadrants:

- 24 • Quadrant I - visibly stained area
- 25 • Quadrant II - transformer and concrete slab
- 26 • Quadrants III and IV - areas believed to be contaminated with oil
- 27 leaked from the transformer
- 28
- 29

30 The location of each quadrant is shown on Figure 2-3. Samples collected from the
31 spill area in September, November, and December 1984 contained PCBs at
32 concentrations ranging from 5.2 micrograms per gram ($\mu\text{g/g}$) to 60 $\mu\text{g/g}$, with the
33 highest concentrations detected at Quadrant I (Table 2-1). Soil containing PCBs at
34 concentrations greater than the target cleanup level of 50 $\mu\text{g/g}$ was excavated
35 (Arthur D. Little, Inc., 1993). Eight 85-gallon drums of PCB-contaminated soil and
36 the transformer were removed and transported to the Hazardous Waste Storage
37 Area at Building 1650 (Biang, et al., 1992). Confirmation samples collected in
38 December 1984, following the removal action, indicated that residual PCB

SECTION 2

1 concentrations in soil were between 15 and 20 $\mu\text{g/g}$ (Table 2-2). The Directorate of
2 Engineering and Housing (DEH) filed a PCB Spill Report in January 1985 (Fort
3 Devens EMO, 1985).

4
5 Real property records indicate that Buildings 4249 and 4250 were demolished in
6 December 1985, although the building foundations are still present. Building 4249
7 was a 4,365 ft^2 structure which contained a 75-gallon water storage tank, two 1,000-
8 gallon fuel underground storage tanks (USTs), and a bathroom. Building 4250 was
9 6,780 ft^2 in size, and contained a water pump, a 75-gallon water storage tank, and
10 one 1,000-gallon fuel oil UST. Two septic system leach fields and three
11 underground storage tanks may also have been present at the site (Arthur D. Little,
12 Inc., 1993).

13
14 SA 39 is not currently used by the Army, and will remain part of the wildlife refuge
15 (Vanasse Hangen Brustlin, Inc., 1994).

16
17 The study area is at an elevation of 225 ft above MSL and is surrounded by
18 wetlands. Soil encountered at SA 39 was generally poorly sorted yellowish-brown
19 sands with varying amounts of silt and gravel. Groundwater, which was intercepted
20 in soil borings at depths of 4.5 to 12.5 ft, is assumed to discharge to the nearby
21 wetlands (Arthur D. Little, Inc., 1993).

3.0 RELATED INVESTIGATIONS

3.1 MASTER ENVIRONMENTAL PLAN

The MEP identified SA 39 as a potential area of contamination because of the 1984 PCB oil spill resulting from an overturned transformer near Building 4250. The MEP recommended that the December 1984 confirmation sample results be presented to the Massachusetts Department of Environmental Protection (MADEP) for approval, and that the site be recommended for no further action (Biang, et al., 1992).

3.2 ENHANCED PRELIMINARY ASSESSMENT

The Enhanced PA included a review of the study and recommendations presented in the MEP and considered other areas that might require evaluation due to the closure of Fort Devens. The Enhanced PA indicated that a UST was removed from the vicinity of SA 39, but provided no information about the size and type of tank or about its removal. The report recommended that details of the UST removal action be located (Roy F. Weston, Inc., 1992).

3.3 SITE INVESTIGATION REPORT

An SI was initiated in February 1993 which included the twelve Group 4, 8 and 9 SAs (including SA 39) listed in the MEP, as well as SA 59 which was identified in the Enhanced PA:

- SA 33 Building 262 DEH Entomology Shop
- SA 34 Buildings 245 and 246 Former DEH Entomology Shop
- SA 35 Building 254 Former DEH Entomology Shop
- SA 36 Building 2728 Former DEH Entomology Shop
- SA 37 Buildings 3622, 3627, 3601, and 3606 Golf Course Entomology Shops
- SA 16 Shoppette Debris Disposal Area
- SA 17 Little Mirror Lake
- SA 29 Transformer Storage Area
- SA 39 Transformer near Building 4250 (Sylvania Building)

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SECTION 3

- SA 10 Construction Debris Area
- SA 11 Construction Debris Area
- SA 51 O'Neill Building Spill Site
- SA 59 Bridge 526

The purpose of the SI, which was conducted by Arthur D. Little, Inc. under contract with the USAEC, was to verify the presence or absence of environmental contamination and to determine whether further investigation or remediation was warranted. The Final Main Post SI Report was issued December 1993 (Arthur D. Little, Inc., 1993). The SI consisted of a records review, interviews, and a review of historical aerial photographs, as well as a field investigation. The specific objective of sampling at SA 39 was to investigate the presence of environmental contamination associated with the historical PCB spill, USTs reportedly used at the site, and leach fields reportedly associated with the former buildings.

The 1993 SI field sampling program at SA 39 included a magnetometer and ground penetrating radar survey, sampling concrete and surface soils near the former PCB spill, sampling surface and subsurface soil from eight exploratory borings, and sampling surface water and sediment in the adjacent wetlands area (Arthur D. Little, Inc., 1993).

Ground-penetrating radar and a metal detector were used to attempt to locate any abandoned USTs or leach fields at the site. One 3.5-acre grid was established at each of the two buildings, and a 1-acre grid was established at a gravel area between the two buildings (Figure 3-1) (Arthur D. Little, Inc., 1993).

In April 1993, Arthur D. Little, Inc. personnel completed eight exploratory soil borings at anomalous locations identified in the geophysical survey. These locations were considered the most likely to represent either leach fields or USTs. Four soil borings were installed near the Building 4249 foundation (borings 39B-93-01X through 39B-93-04X), and four soil borings were installed near the Building 4250 foundation (39B-93-05X through 39B-93-08X). Arthur D. Little, Inc. personnel collected three soil samples from each of the eight borings, at depths of 0.0 to 0.5 ft, 2.0 to 4.0 ft, and the depth at which the boring intercepted groundwater (between 4.5 and 12.5 ft). Soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, PCBs, total petroleum hydrocarbons (TPH), explosives, and metals (Arthur D. Little, Inc., 1993). Figures 3-2 and 3-3 show soil boring locations.

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1 Arthur D. Little, Inc. collected eight surface soil samples (39S-93-01X through
2 39S-93-08X) near the Building 4250 foundation (Figure 3-4). The samples were
3 collected using a hand auger and were analyzed for PCBs (Arthur D. Little, Inc.,
4 1993).

5
6 Three concrete chip samples were collected at the former concrete transformer pad
7 adjacent to Building 4250 (Figure 3-4) and submitted for PCB analysis (Arthur D.
8 Little, Inc., 1993).

9
10 Three surface water and sediment sample pairs were collected near the wetland
11 boundary west of Building 4250 (Figure 3-3) and were analyzed for VOCs, SVOCs,
12 pesticides, PCBs, TPH, explosives, and metals. Water quality parameters were also
13 evaluated for surface water samples, and sediment samples were also submitted for
14 total organic carbon (TOC) analyses. The samples were collected to determine
15 whether site contaminants had adversely affected the surrounding wetlands (Arthur
16 D. Little, Inc., 1993).

17
18 Results of the SI are presented in Section 4.1.

19
20)
21 **3.4 SUPPLEMENTAL SITE INVESTIGATION**

22 Additional soil and groundwater sampling was necessary in order to further evaluate
23 site conditions at SA 39. The SI report therefore recommended a phased
24 supplemental SI to determine the extent of residual soil contamination and the
25 presence or absence of groundwater contamination. The Phase I Supplemental SI,
26 conducted by Arthur D. Little, Inc. in 1994, included excavating soil and removing
27 the concrete transformer pad in the area of the historical PCB spill, completing
28 eight Geoprobe borings around Building 4250, and sampling soil and groundwater
29 from these borings. If significant groundwater contamination were identified in the
30 Phase I Supplemental SI, a Phase II investigation would be conducted and would
31 include the installation of groundwater monitoring wells, groundwater sampling, and
32 additional surface water and sediment sampling (Arthur D. Little, Inc., 1995).

33
34 Approximately 20 cubic yards of soil from the historical PCB spill area and the
35 entire concrete transformer pad were excavated during the Supplemental SI. The
36 excavation was approximately 780 ft² in area, and varied in depth from 0.5 to 1.5 ft.
37 During the removal action, thirteen soil samples were collected for field screening
38 for PCBs and to direct the excavation. Split samples from five locations were

SECTION 3

1 submitted to an offsite laboratory for PCB analysis. Figure 3-5 shows the excavation
2 limit and sample locations.

3
4 A Geoprobe boring (39G-02) was installed near the SI soil boring found to have the
5 highest TPH concentrations (39B-93-08X) and at seven additional locations near
6 Building 4250 and the surrounding wetlands (Figure 3-6). Soil samples were
7 collected from five of the borings and were field screened for TPH. At each
8 location, samples were collected from the 0 to 2 ft below ground surface (bgs), 4 to
9 6 ft bgs, and 10 to 12 ft bgs depth intervals. Based on field screening results, the
10 two soil samples with the highest detected TPH concentrations and the sample with
11 the lowest detected TPH concentration were submitted to an offsite laboratory for
12 TPH analysis (Arthur D. Little, Inc., 1995).

13
14 Groundwater samples were collected at all eight Geoprobe locations and were
15 submitted to a laboratory for VOCs, SVOCs, Target Analyte List (TAL) metals
16 (filtered and unfiltered), PCBs, and TPH analyses. The Supplemental SI report
17 does not indicate which metals samples were filtered and which were unfiltered.

18
19 Results of the Supplemental SI are presented in Section 4.2.

20 21 **3.5 PRELIMINARY RISK EVALUATION**

22
23 Preliminary risk evaluations (PREs) were performed as part of the SI and revised in
24 the Supplemental SI to help establish whether environmental contamination at
25 SA 39 required further investigation or remediation. Arthur D. Little, Inc.
26 completed human health PREs to evaluate contamination in groundwater, surface
27 soil, and subsurface soil, and completed ecological PREs to evaluate contamination
28 in surface water, sediment, surface soil, and subsurface soil. This section presents
29 the general approach used in conducting the PREs; the findings of the human
30 health PRE and the ecological PRE are presented in Sections 5.1 and 5.2,
31 respectively.

32 33 **3.5.1 Human Health Preliminary Risk Evaluation Methodology**

34
35 The human health PRE at SA 39 included the following elements:

36
37 **Current and Future Land Use:** Current and future land uses are particularly
38 relevant with respect to the applicability of soil and groundwater screening values

1 used in the PRE. SA 39 is currently, and will remain, within the Oxbow National
2 Wildlife Refuge. This area has been designated for Open Space and Recreation in
3 the *Devens Reuse Plan* (Vanasse Hangen Brustlin, Inc., 1994). Because the site is
4 located within a recreational area, detected compounds were compared to U.S.
5 Environmental Protection Agency (USEPA) Region III risk-based concentrations
6 (RBCs) for residential soil and groundwater as well as MADEP Massachusetts
7 Contingency Plan (MCP) Method 1 S-1/GW-1 soil and groundwater standards.
8 Comparison to residential criteria in the PREs is conservative, given the future use
9 proposed for the site.

10
11 **Comparison to Public Health Standards and Guidelines:** For soil and groundwater,
12 human health standards and/or guidelines were used as screening criteria to
13 evaluate the significance of the sampling data. The lowest of federal and
14 Massachusetts drinking water standards and guidelines were used to evaluate the
15 results of the Supplemental SI groundwater sampling program. Similarly, the lowest
16 of either USEPA's Region III residential RBCs or the MADEP MCP Method 1
17 standards were used to evaluate the results of the SI and Supplemental SI soil
18 sampling programs (Arthur D. Little, Inc., 1993). The basis for and applicability of
19 these guidelines are discussed below.

20
21 USEPA Region III Risk-Based Concentration Table. This table is a risk-
22 based screening tool for Superfund sites, used by USEPA Region III
23 toxicologists as a benchmark for evaluating preliminary site investigation data
24 and preliminary remediation goals (USEPA, 1993b and 1994b). Although it
25 has no official status either as regulation or guidance, it is a useful screening
26 tool. The table is updated quarterly and therefore regularly incorporates new
27 USEPA toxicity constants as they are developed. The SI PRE used the
28 Second Quarter 1993 update, and the revised PRE conducted during the
29 Supplemental SI used the Fourth Quarter 1994 update.

30
31 For the SA 39 human health PREs, Region III RBCs for residential soil and
32 groundwater exposures were used. RBCs for residential soil assume that a
33 person ingests soil 350 days per year for 30 years, at a daily ingestion rate of
34 100 milligrams (mg) for adults and 200 mg for children. RBCs for residential
35 groundwater assume that a person ingests tap water 350 days per year for 30
36 years, at a daily ingestion rate of 2 liters (L) for adults and 1 L for children.
37

SECTION 3

1 Massachusetts Contingency Plan Method 1 Soil and Groundwater Standards.
2 Health-protective soil and groundwater standards categories were established
3 by the MADEP for use in risk characterization (MADEP, 1993b). For
4 assumed future residential use, soil and groundwater concentrations are
5 compared to the S-1/GW-1 category. The S-1 category indicates that the soil
6 is accessible and that the frequency and intensity of use by both children and
7 adults may be high. The GW-1 category additionally assumes the potential
8 use of groundwater as a drinking water source. For chemicals with no
9 Method 1 standards, reportable concentrations published in the MCP were
10 used. Although Method 1 standards were used for screening purposes in the
11 PRE, Method 1 is strictly applicable to a disposal site if there is a standard
12 for each oil and hazardous material of concern, and if the oil or hazardous
13 material is present in and will foreseeably migrate only within groundwater
14 and soil.

15
16 USEPA Drinking Water Regulations. The USEPA Office of Drinking Water
17 has promulgated maximum contaminant levels (MCLs), enforceable
18 standards for contaminants determined by the USEPA to have an adverse
19 effect on human health (USEPA, 1993a and 1994a). MCLs apply to
20 groundwater or surface water that is a current or potential source of drinking
21 water.

22
23 Massachusetts Drinking Water Standards and Guidelines. MADEP has
24 promulgated Massachusetts MCLs (MMCLs) which for some compounds are
25 more stringent than USEPA MCLs (MADEP, 1993a). MADEP has also
26 developed drinking water guidelines for compounds for which no federal
27 standards exist. MMCLs apply to water that is delivered to any public water
28 system user.

30 **3.5.2 Ecological Risk Evaluation Methodology**

31
32 The ecological PRE at SA 39 included the following elements:

33
34 **Ecological Characterization:** The purpose of the ecological characterization was to
35 identify ecological receptors potentially exposed to contamination at the study area.
36 To support research being conducted for the U.S. Army Corps of Engineers, ABB
37 Environmental Services, Inc. (ABB-ES) has developed a database of all flora and
38 fauna known to seasonally or permanently occur at, or migrate through, Fort

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1 Devens (ABB-ES, 1993b). Particular emphasis has been paid to rare and
2 endangered biota; the term "rare and endangered" is used to refer to those species
3 with protected status under the Federal Endangered Species Act of 1973, as
4 amended in 1988, and the Massachusetts Endangered Species Act of 1990. The
5 most current versions of both state and federal rare and endangered species lists
6 have been included in this Fort Devens Biological Database. Information regarding
7 all rare and endangered species known to occur at Fort Devens was obtained from
8 the Massachusetts Natural Heritage Program (MNHP) and the U.S. Fish and
9 Wildlife Service. In addition, the ABB-ES database contains records that have not
10 yet been incorporated into the MNHP database. The ABB-ES database was used
11 to ascertain whether or not SA 39 is providing rare and endangered species habitat.
12 The Blandings Turtle (*Emydoidea blandingii*) was identified as a threatened species
13 which inhabits the area and lays its eggs in sandy areas.

14
15 **Comparison to Ecological Standards and Criteria:** This element of the ecological
16 PRE identifies possible ecological exposure pathways and characterizes the risk to
17 terrestrial and aquatic receptors potentially exposed to environmental contamination
18 at the study area. Exposure pathways describe the mechanism(s) by which
19 ecological receptors are exposed to contaminated media, and consist of: (1) a
20 contaminant source; (2) an environmental transport medium; (3) a point of receptor
21 contact; and (4) the exposure route (e.g., ingestion of prey items that have
22 bioaccumulated contaminants in their tissues, drinking of contaminated surface
23 water, incidental soil ingestion, dermal absorption, inhalation, etc.). Potential
24 receptors at SA 39 include terrestrial and aquatic biota.

25
26 No state or federal standards or guidelines exist for surface soil exposure, so that
27 exposure route has been evaluated through comparison of maximum analyte
28 concentrations in surface soils to protective contaminant levels (PCLs) obtained
29 through a computer-generated chronic exposure food web model. In order to
30 establish conservative PCLs for the screening level PRE, an acceptable level of risk
31 (Hazard Index equals 1) associated with chronic exposure to each surface soil
32 contaminant isolated at SA 39 was established. The food web model is further
33 described in the Final Site Investigation Report for Groups 3, 5, & 6
34 (ABB-ES, 1993a).

35
36 Risks associated with detected analytes in soil were evaluated by comparing
37 maximum concentrations of each analyte in soil with their respective benchmark
38 values (PCLs).

SECTION 3

1 Risks associated with detected analytes in surface water were evaluated by
2 comparing analyte concentrations to the following guidelines:
3

4 USEPA Ambient Water Quality Criteria. The USEPA has developed
5 Ambient Water Quality Criteria (AWQC) to protect most aquatic species in
6 all life stages (USEPA, 1992). The chronic aquatic AWQC are applicable to
7 conditions at Fort Devens, and were used in the PRE. Chronic AWQC are
8 derived from chronic toxicological data for animals and plants and from
9 residue levels in aquatic organisms. The chronic AWQC for a particular
10 chemical is defined as the contaminant concentration that should not be
11 exceeded more than once every three years by the four-day average chemical
12 concentration.
13

14 Risks associated with detected analytes in sediments were evaluated by comparing
15 analyte concentrations to the following guidelines:
16

17 National Oceanographic and Atmospheric Administration (NOAA) Effects
18 Range-Low. NOAA has collected data on sediment toxic effects levels for
19 various biota from sites throughout the U.S., and has compiled it in order of
20 concentration associated with biological effects (NOAA, 1990). The lower 10
21 percentile of the concentrations is identified as an Effects Range-Low
22 (ER-L), while the median concentration is labeled an Effects Range-Median
23 (ER-M). SA 39 sediment data were conservatively compared to ER-L
24 sediment toxicity values. Although useful as a screening tool, ER-L values
25 have no official status as standards or criteria.
26

27 New York State Department of Environmental Conservation (NYSDEC)
28 Sediment Quality Criteria. The approach used by the NYSDEC Sediment
29 Quality Criteria assumes that toxics in sediments will exert their effect to the
30 extent that the chemical becomes freely bioavailable in the sediment
31 interstitial water. The bioavailability of nonpolar organic compounds in
32 sediments is calculated using the fraction of organic carbon in the sediment.
33 To derive a sediment criterion for a specific compound, the NYSDEC
34 Sediment Quality Criterion is multiplied by the average of the organic carbon
35 content values for each study area (NYSDEC, 1989).
36

4.0 CONTAMINATION ASSESSMENT

SA 39 laboratory analytical results are discussed in the following subsections. A detailed discussion of the analytical results are included in the SI Report (Arthur D. Little, Inc., 1993), the Supplemental SI Data Package (Arthur D. Little, Inc., 1995), and the Final Closure Report (OHM, 1996).

4.1 SITE INVESTIGATION

The SA 39 SI field investigation conducted by Arthur D. Little, Inc. included a geophysical survey, surface and subsurface soil sampling, concrete sampling at the PCB spill site, and surface water and sediment sampling in the wetlands adjacent to the site (Arthur D. Little, Inc., 1993).

The magnetic surveys conducted during the SI identified several anomalies near the Buildings 4249 and 4250 foundations, including some that were interpreted to potentially indicate buried metal objects. Ground penetrating radar surveys were conducted to further examine the magnetic anomalies. Three large buried metal objects were identified near the Building 4249 foundation, and six were identified near the Building 4250 foundation (Arthur D. Little, Inc., 1993). The geophysical survey report (Appendix G of the SI Report) concluded that none of the buried metal objects appeared to be a UST or reinforced concrete septic tank (Arthur D. Little, Inc., 1993).

Arthur D. Little, Inc. installed four soil borings (39B-93-01X through 39B-93-04X) near the Building 4249 foundation, and four soil borings (39B-93-05X through 39B-93-08X) near the Building 4250 foundation. Three soil samples were collected from each of eight soil borings and were analyzed for VOCs, SVOCs, pesticides, PCBs, TPH, explosives, and metals. Eight surface soil samples (39S-93-01X through 39S-93-08X) were also collected near the Building 4250 foundation, and were analyzed for PCBs. Soil analytical results are summarized in Tables 4-1 and 4-2, and on Figures 4-1 through 4-3.

No VOCs were detected in soil. The only SVOC detected was bis(2-ethylhexyl) phthalate in one sample, a compound which is considered a common laboratory and field contaminant. TPH was detected in all three samples from boring 39B-93-08X,

ABB Environmental Services, Inc.

SECTION 4

1 at concentrations ranging from 140 $\mu\text{g/g}$ (10 to 12 ft bgs) to 5,500 $\mu\text{g/g}$ (2 to 4 ft
2 bgs). TPH was also detected in the 0.0 to 0.5 ft bgs samples from borings
3 39B-93-01X, 39B-93-02X, and 39B-93-03X, and in the 8 to 10 ft bgs sample from
4 39B-93-03X; however, the concentrations detected in these samples (between
5 20 $\mu\text{g/g}$ and 60 $\mu\text{g/g}$) were well below the 500 $\mu\text{g/g}$ MCP S-1 soil standard for
6 TPH. TPH was present in below the S-1 standard in all three samples from
7 39B-93-06X: 0 to 0.5 ft bgs (190 $\mu\text{g/g}$), 2 to 4 ft bgs (420 $\mu\text{g/g}$), and 8 to 10 ft bgs
8 (96 $\mu\text{g/g}$). Pesticides, including DDT, DDD, and DDE, were detected at low
9 concentrations in several surface and subsurface soil samples. The PCB Aroclor
10 1260 was present in the 0.0 to 0.5 ft bgs and 2 to 4 ft bgs samples from boring
11 39B-93-06X, at concentrations of 0.112 $\mu\text{g/g}$ and 0.414 $\mu\text{g/g}$, respectively. Aroclor
12 1260 was also detected in all eight surface soil samples, at concentrations ranging
13 from 0.052 $\mu\text{g/g}$ (39S-93-03X) to 5.8 $\mu\text{g/g}$ (39S-93-06X). Metals detected above
14 Fort Devens soil background concentrations included arsenic, barium, calcium,
15 chromium, cobalt, copper, iron, magnesium, nickel, potassium, and zinc (Arthur D.
16 Little, Inc., 1993).

17
18 Three concrete chip samples were collected at the Building 4250 transformer pad
19 and were analyzed for PCBs. Analytical results are presented in Table 4-3 and on
20 Figure 4-3. Aroclor 1260 was detected in all three samples, at concentrations
21 ranging from 2.8 $\mu\text{g/g}$ (sample 39C-93-01X) to 8.1 $\mu\text{g/g}$ (sample 39C-93-03X)
22 (Arthur D. Little, Inc., 1993).

23
24 Three surface water and sediment sample pairs were collected in the wetland area
25 west of Building 4250 and were analyzed for VOCs, SVOCs, pesticides, PCBs, TPH,
26 explosives, and metals, as well as water quality parameters (surface water samples
27 only) and TOC (sediment samples only). Surface water analytical results are shown
28 on Figure 4-4 and Table 4-4, and sediment analytical results are shown on
29 Figure 4-2 and Table 4-5.

30
31 No organic compounds were detected in surface water samples. Of the inorganic
32 analytes detected in surface water (arsenic, barium, calcium, iron, magnesium,
33 manganese, nickel, sodium, and zinc), only zinc was detected above the range of
34 concentrations typically found in the Nashua River (Arthur D. Little, Inc., 1993).

35
36 VOCs and SVOCs were not detected in sediment samples. TPH was present in all
37 three samples, at concentrations of 230 $\mu\text{g/g}$ (samples 39D-93-01X and 39D-93-02X)
38 and 510 $\mu\text{g/g}$ (sample 39D-93-03X). The pesticides DDT and DDE were detected

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1 in one sediment sample (39D-93-02X), but at concentrations below the Fort Devens
2 background concentrations for these analytes. Of the inorganic analytes present in
3 sediment samples, only arsenic in one sample (39D-93-03X) was detected above the
4 concentration range typically detected in the Nashua River (Arthur D. Little, Inc.,
5 1993). However, because background concentrations of metals in wetland
6 environments are likely to be higher than in moving water environments (such as
7 those upon which Fort Devens background data are based), metals detected in
8 surface water and sediment at the SA 39 wetland may be representative of natural
9 conditions rather than a contaminant source at the site (Arthur D. Little, Inc.,
10 1995).

11 12 **4.2 SUPPLEMENTAL SITE INVESTIGATION**

13
14 The SI report recommended a phased supplemental SI at SA 39 to address residual
15 PCB contamination in surface soil and concrete at the spill area and TPH
16 contamination in surface soil near the southwest edge of the Building 4250
17 foundation. Because no contamination was detected in the Building 4249 area
18 during the SI, no additional investigation of that area was necessary.

19
20)
21 At Building 4250, PCBs were detected by field screening in six of the thirteen
22 samples collected from the soil excavation. Concentrations ranged from 0.5 to 1.0
23 parts per million (ppm) (Table 4-6). Laboratory analytical results, shown on Figure
24 4-5 and Table 4-7, indicated residual Aroclor 1260 concentrations ranging from 0.22
25 to 5.3 $\mu\text{g/g}$ (Arthur D. Little, Inc., 1995). These results were used to direct the 1994
26 excavation, until physical barriers prevented its completion. PCB concentrations in
27 soil on the northern and eastern edges of the excavation were below 0.5 ppm;
28 however, additional soil on the western and southern sides was not excavated at the
29 time due to the presence of a large tree and the Building 4250 foundation.

30
31 Three soil samples were collected from each of five Geoprobe borings and were
32 field screened for TPH. At each location, samples were collected at the 0 to 2 ft
33 bgs, 4 to 6 ft bgs, and 10 to 12 ft bgs depth intervals. Field screening results (shown
34 on Figure 4-6 and Table 4-8) indicated TPH at concentrations above 500 $\mu\text{g/g}$ in
35 soil samples from 0 to 2 ft bgs (1,900 $\mu\text{g/g}$) and 4 to 6 ft bgs (3,900 $\mu\text{g/g}$) from
36 Geoprobe boring 39G-02. Splits of these two samples that were submitted to an
37 offsite laboratory contained TPH at concentrations of 3,400 $\mu\text{g/g}$ (0 to 2 ft bgs
38 sample) and 4,800 $\mu\text{g/g}$ (4 to 6 ft bgs sample). Analytical results are summarized
on Figure 4-7 and Table 4-9. The Geoprobe boring from which these samples were

SECTION 4

1 collected was installed adjacent to the SI soil boring found to contain elevated TPH
2 concentrations (39B-93-08X). TPH was detected below the 500 $\mu\text{g/g}$ MCP S-1 soil
3 standard in 13 other samples, including samples collected less than 20 ft away from
4 39G-02. Although the source of TPH in this area was not determined, the limited
5 areal and vertical extent of TPH indicated that it was related to a small release
6 (Arthur D. Little, Inc., 1995).
7

8 Groundwater samples were collected at all eight Geoprobe locations and were
9 submitted to an off-site laboratory for VOCs, SVOCs, TAL metals (filtered and
10 unfiltered), PCBs, and TPH analyses. Analytical results are shown on Table 4-10.
11 No SVOCs, PCBs, or TPH were detected in groundwater. One VOC, 1,2,4-
12 trimethylbenzene, was detected in one sample (39G-06) at a concentration of
13 4.9 micrograms per liter ($\mu\text{g/L}$), slightly above its regulatory criterion of 3 $\mu\text{g/L}$.
14 No other VOCs were detected in SA 39 groundwater samples. Several metals were
15 detected in both filtered and unfiltered groundwater samples; however, metals
16 concentrations were fairly consistent across the site and may be representative of
17 local background conditions (Arthur D. Little, Inc., 1995).
18

19 Because groundwater contamination was not identified at SA 39 in the Phase I
20 Supplemental SI, the Phase II Supplemental SI was not undertaken. This
21 component would have included monitoring well installation and additional surface
22 water and sediment sampling.
23

24 4.3 SOIL REMOVAL ACTION

25
26 Because of the elevated TPH and PCB concentrations detected in surface and
27 subsurface soil near the Building 4250 foundation, it was determined that
28 contaminated soil should be removed to minimize human health and ecological risks
29 associated with petroleum and/or PCBs. The Army's decision to conduct a removal
30 action was documented in the Final Action Memorandum for Study Area 39
31 (ABB-ES, 1995).
32

33 Fort Devens tasked the New England Division of the U.S. Army Corps of Engineers
34 to initiate a response action at the Sylvania Building Site. The Corps of Engineers
35 contracted OHM Remediation Services Corporation (OHM) of Hopkinton,
36 Massachusetts, to perform removal actions at SA 39 and at several other sites.
37

1 The following provides a summary of the soil removal action. Further details and
2 documentation are provided in the Final Closure Report (OHM, 1996), which is
3 included as Appendix A.
4

5 **4.3.1 Removal Action Objectives**

6
7 MCP Method 1 S-1/GW-1 soil standards were used as risk-based guidelines to
8 establish target cleanup levels for the SA 39 removal action. The MADEP revised
9 the MCP in 1993 and promulgated Method 1 soil standards (MADEP, 1993b). For
10 a Method 1 Risk Characterization under the MCP, compliance with these soil
11 standards constitutes a demonstration of no significant health risk from exposure to
12 oil or hazardous material in soil. Category S-1 soil has the greatest potential for
13 exposure. The S-1 soil standard for TPH is 500 $\mu\text{g/g}$, and the S-1 soil standard for
14 PCBs is 2 $\mu\text{g/g}$. These values, which have not changed since the 1993 MCP, were
15 selected as the target cleanup goals for the SA 39 removal action (MADEP, 1995).
16

17 **4.3.2 Field Observations and Screening Results**

18
19 OHM conducted two separate excavations at the Building 4250 foundation: one
20 which addressed residual petroleum contamination in soil, and one which addressed
21 residual PCB contamination in soil. The TPH excavation was located at the
22 southeast corner of the building foundation, near SI boring 39B-93-08X and
23 Supplemental SI boring 39G-01. The PCB excavation was located near the
24 northeast corner of the foundation, where excavation began during the
25 Supplemental SI.
26

27 The TPH removal action began on August 1, 1995. OHM personnel removed
28 approximately 101 tons of petroleum-contaminated soil from a 20 ft by 20 ft area
29 which extended to a depth of approximately 6 ft bgs (OHM, 1996). The excavation
30 limit is shown on Figure 4-8. OHM collected four soil samples from the excavation
31 base and eight samples from the excavation walls, to determine whether the area of
32 petroleum contamination in soil had been removed. These screening samples were
33 analyzed on site for TPH. Field screening results, shown on Table 4-11, indicated
34 that TPH was either not detected or was present at concentrations well below
35 500 $\mu\text{g/g}$ (OHM, 1996). On August 2, 1995, OHM collected five confirmation
36 composite samples from the base and walls of the excavation and submitted the
37 samples to an offsite laboratory for TPH analysis. Confirmation sample locations
38 are shown on Figure 4-8, and analytical results are presented in Table 4-12. TPH

SECTION 4

1 was not detected above the method detection limit in any of the five confirmation
2 samples, nor in a duplicate sample (OHM, 1996).
3

4 OHM began the PCB removal action on August 25, 1995, by excavating to a depth
5 of 2 ft. The first foot of excavated soil was stockpiled separately from the second
6 foot excavated. OHM removed approximately 24.9 tons of PCB-contaminated soil,
7 and then collected three confirmation composite samples and a duplicate sample
8 from the base and walls of the excavation to determine if residual PCBs had been
9 removed. OHM also collected one composite sample from the 0 to 1 ft bgs soil
10 stockpile, and one sample from the 1 to 2 ft bgs stockpile. Confirmation samples
11 were submitted to an offsite laboratory for PCB analysis. Figure 4-9 shows the
12 excavation limit and confirmation sample locations, and Table 4-13 shows analytical
13 results. PCB concentrations in all confirmatory residual soil samples were below the
14 target cleanup level of 2 $\mu\text{g/g}$ (OHM, 1996), and the highest PCB concentration in
15 samples from the stockpiled soil was 2 $\mu\text{g/g}$.
16

17 Analytical results confirm that any residual TPH or PCBs in soil is below the target
18 cleanup levels established for the removal action. Petroleum and PCB
19 contamination at SA 39 has been characterized and removed (OHM, 1996).
20

21 4.3.3 Waste Characterization and Disposal

22
23 Excavated soil was temporarily stockpiled in discrete staging cells which were
24 double-lined with polyethylene sheeting and bounded by sand berms. Soil from the
25 TPH excavation was stored separately from the two stockpiles of soil removed in
26 the PCB excavation. Waste characterization samples were collected from each of
27 the stockpiles and were analyzed for TPH, TCLP metals, TCLP organics, VOCs,
28 SVOCs, PCBs, metals, and RCRA characteristics (ignitibility, corrosivity, and
29 reactivity). The PCB stockpile was also analyzed for RCRA metals and polynuclear
30 aromatic hydrocarbons (PAHs), in addition to the analytes listed above.
31

32 Based on the waste characterization results, all contaminated soil from both
33 excavations was transferred to the temporary soil storage facility at Building 202,
34 and the excavations were backfilled with clean fill (OHM, 1996). Complete waste
35 characterization results, as well as transportation and disposal documentation, are
36 provided in Appendix A.

5.0 PRELIMINARY RISK EVALUATION

Preliminary human health and ecological risk evaluations were conducted at SA 39 during the SI and subsequently revised during the Supplemental SI. The PREs provided a screening-level evaluation of the actual and potential risks that environmental contaminants pose to persons and environmental receptors at the site. Findings of the PREs are presented in the SI report (Arthur D. Little, Inc., 1993) and the Supplemental SI Data Package (Arthur D. Little, Inc., 1995), and are summarized below.

5.1 PRELIMINARY HUMAN HEALTH RISK EVALUATION

The human health PRE evaluated contaminants in surface soil, subsurface soil, and groundwater.

5.1.1 Soils

The PRE compared all surface and subsurface soil analytical results to screening values which were the lowest of either Region III RBCs for residential exposure or the Revised MCP Method 1 S-1/GW-1 soil standards. The use of residential soil criteria conservatively estimates the risk to human health at SA 39, given the future use proposed for the site.

Tables 4-1 and 4-2 present SI soil analytical results, and Tables 4-7 and 4-9 present Supplemental SI soil analytical results. No VOCs or explosives were detected, and no detected SVOCs exceeded their respective residential screening criteria. TPH exceeded its residential criterion of 500 $\mu\text{g/g}$ in two soil samples from boring 39B-93-08X: the 0.0 to 0.5 ft bgs sample (2,100 $\mu\text{g/g}$), and the 2.0 to 4.0 ft bgs sample (5,500 $\mu\text{g/g}$). TPH also exceeded its residential criterion in Supplemental SI Geoprobe boring 39G-02 (installed near SI boring 39G-93-08X) (Arthur D. Little, Inc., 1995).

Three of the six Supplemental SI post-excavation surface soil samples from the historical spill area contained the PCB Aroclor 1260 at concentrations exceeding the residential soil criterion of 2.0 $\mu\text{g/g}$: sample 39E-94-01X (2.5 $\mu\text{g/g}$), sample 39E-94-04X (4.6 $\mu\text{g/g}$), and sample 39E-94-05X (5.3 $\mu\text{g/g}$). The average

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SECTION 5

1 concentration of residual PCBs in eight surface soil samples remaining in and
2 adjacent to the excavation (collected during both the SI and the Supplemental SI) is
3 1.89 $\mu\text{g/g}$, which is below the risk-based screening level.
4

5 Arsenic in the 6 to 10 ft bgs sample from boring 39B-93-01X was detected at
6 34 $\mu\text{g/g}$, above its residential human health criterion of 23 $\mu\text{g/g}$. Although calcium,
7 chromium, cobalt, iron, magnesium, nickel, potassium, and zinc were detected above
8 Fort Devens background soil concentrations, none of the analytes exceeded their
9 respective risk-based criteria. These metals are therefore not considered to pose a
10 human health risk (Arthur D. Little, Inc., 1993).
11

12 5.1.2 Groundwater

13
14 Groundwater analytical results are shown on Table 4-10. No SVOCs, TPH, or
15 PCBs were detected in groundwater samples. Only one VOC, 1,2,4-
16 trimethylbenzene, was detected in one sample at a concentration of 4.9 $\mu\text{g/L}$
17 (slightly above its human health residential criterion of 3 $\mu\text{g/L}$). No other
18 groundwater samples contained 1,2,4-trimethylbenzene. Several metals were
19 detected in filtered and unfiltered groundwater samples; however, the
20 concentrations were fairly consistent across the site and may be representative of
21 local background conditions (Arthur D. Little, Inc., 1995).
22

23 5.2 PRELIMINARY ECOLOGICAL RISK EVALUATION

24
25 The ecological PRE evaluated contaminants in surface soil, subsurface soil, surface
26 water, and sediment.
27

28 5.2.1 Soils

29
30 Potential contaminant exposure pathways exist at SA 39 for terrestrial ecological
31 receptors by incidental ingestion of surface soils and food web exposure. A
32 screening-level evaluation of potential effects through surface soil exposures was
33 conducted by comparing detected concentrations of these analytes with their
34 respective ecological benchmark values (PCLs).
35

36 Arsenic in the 6 to 10 ft bgs sample from boring 39B-93-01X was detected at a
37 concentration of 34 $\mu\text{g/g}$, which slightly exceeds its ecological criterion of 33 $\mu\text{g/g}$.
38 The inorganic analytes calcium, chromium, cobalt, copper, iron, magnesium, and

1 nickel were detected above Fort Devens background concentrations in surface soil
2 (0 to 2 ft bgs); however, detected concentrations were below their corresponding
3 ecological soil PCLs.
4

5 Although aluminum, barium, lead, and vanadium exceeded their respective PCLs in
6 one or more samples, the concentrations detected are lower than Fort Devens soil
7 background concentrations. This suggests that these analytes are naturally occurring
8 and that the concentrations detected do not add significantly to the pre-existing,
9 baseline risk for soil receptors at Fort Devens (Arthur D. Little, Inc., 1993).

10
11 Three surface soil samples collected from Quadrant I during the SI contained PCBs
12 at concentrations ranging from 3.3 $\mu\text{g/g}$ to 5.8 $\mu\text{g/g}$, exceeding the PCB ecological
13 soil criterion of 3.1 $\mu\text{g/g}$. However, PCB-containing soil at these sample locations
14 was excavated during the Supplemental SI. PCB concentrations in two of the six
15 surface soil samples collected following the SSI excavation exceeded the PCL, but
16 the average PCB concentration (1.89 $\mu\text{g/g}$) did not exceed the PCL (Arthur D.
17 Little, Inc., 1995). This average has been further reduced by the removal of
18 additional PCB-contaminated soil in 1995.
19

20 5.2.2 Surface Water

21
22 Zinc in two surface water samples exceeded its AWQC of 27.1 $\mu\text{g/L}$: sample
23 39W-93-01X (94.5 $\mu\text{g/L}$), and sample 39W-93-02X (143 $\mu\text{g/L}$). Nickel in sample
24 39W-93-02X exceeded its Fort Devens background concentration, but was below its
25 AWQC. These detected analytes are not related to identified site contaminants,
26 and may represent local background conditions which are higher than the calculated
27 Fort Devens background concentrations. Background ranges are likely to be higher
28 in this low-energy wetland environment than in the moving water environments
29 upon which Fort Devens background data are based (Arthur D. Little, Inc., 1995).
30

31 5.2.3 Sediment

32
33 Several analytes detected in wetland sediments during the SI exceeded their
34 respective ecological PCLs. Of these analytes, however, lead, mercury, manganese,
35 and TPH concentrations were within the range of concentrations detected in Nashua
36 River sediment and therefore may not be related to site contaminants. Arsenic was
37 detected in sediment at a concentration slightly higher than the Fort Devens
38 background concentration, as were aluminum, barium, and vanadium. Pesticides

SECTION 5

1 detected in sediment (DDT and DDE) were at concentrations below Fort Devens
2 background concentrations (Arthur D. Little, Inc., 1993).

3 4 **5.3 QUALITATIVE EVALUATION OF RESIDUAL RISK**

5
6 The average PCB concentration in residual soil following the Supplemental SI soil
7 removal action was 1.89 $\mu\text{g/g}$, which is lower than both the human health and
8 ecological protective soil criteria. This average was further reduced by the 1995 soil
9 removal action. TPH exceeded human health protective criteria in one localized
10 area (near 39G-02 and 39B-93-08X), and this area was excavated in the 1995
11 removal action. Soil contamination at this study area is unlikely to pose significant
12 ecological risk to most species of fauna, since the area has dry, sandy soils that
13 probably do not support significant soil invertebrates fed on by birds and mammals.
14 Although the threatened Blandings Turtle reportedly inhabits the area, the findings
15 of the ecological PRE indicate that residual PCB concentrations in soil do not pose
16 a significant risk to the local population (Arthur D. Little, Inc., 1995).

17
18 Several inorganic analytes were detected in groundwater; however, concentrations
19 were fairly consistent across the site and are likely indicative of local background
20 conditions. PCBs and TPH were not detected in groundwater samples collected
21 from the Geoprobe borings, which indicates that significant vertical contaminant
22 migration to the water table has not occurred. Groundwater at the site most likely
23 discharges to the surrounding wetland. Because groundwater at SA 39 is not used
24 as a drinking water supply and will not be used as such in the foreseeable future,
25 analyte concentrations in groundwater do not pose a significant human health risk.

26
27 Calculated surface water and sediment background ranges may be artificially high
28 for this site, as they are based on data from running water environments such as
29 streams and rivers and not a lower energy environment such as the wetlands
30 adjacent to SA 39. Fine-grained, organic-rich sediment in wetlands may contain
31 higher analyte concentrations because metals and organics adsorb to the organic
32 particles. Elevated levels of inorganic analytes detected in wetland surface water
33 and sediment samples therefore may not be site-derived, but rather are likely to be
34 representative of natural conditions (Arthur D. Little, Inc., 1995).

35
36 Cleanup standards for the soil removal action at SA 39 were established using the
37 MCP Method 1 S-1/GW-1 soil standards. Soil with PCBs or TPH concentrations
38 exceeding the Method 1 standards was removed during the soil removal action in

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1 August 1995. TPH was not detected in confirmation soil samples; therefore, the
2 MCP S-1/GW-1 TPH soil standard of 500 $\mu\text{g/g}$ has been achieved. The maximum
3 detected PCBs concentration in residual soil samples (0.96 $\mu\text{g/g}$) is also below its
4 respective standard (2 $\mu\text{g/g}$) (OHM, 1996). The low residual contaminant
5 concentrations in soil suggest that no significant risks to human health or the
6 environment exist at the Sylvania Building Site.

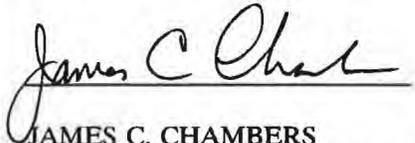
6.0 CONCLUSIONS

1
2
3
4
5 No further action is recommended for SA 39. This recommendation is based on
6 historical site use as confirmed by physical observations, sampling, and chemical
7 analysis. It is also based on the results of human health and ecological PREs, and
8 on the results of confirmatory samples collected following the soil removal actions.
9

10 Spill documentation and analytical results indicated that a release of PCB-
11 containing oil from an electrical transformer occurred at Building 4250 of the
12 Sylvania Building Site, resulting in soil contamination near the northeast corner of
13 the building foundation. Analytical results also indicated that a small petroleum
14 release from an unidentified source may have occurred at the site, resulting in TPH
15 contamination in soil near the building's southeast corner. TPH and PCBs were not
16 detected in groundwater samples collected during the Supplemental SI. The
17 concentrations of TPH and PCBs in soil were above their respective action levels of
18 500 $\mu\text{g/g}$ and 2 $\mu\text{g/g}$, prompting a removal action. Soil contaminated at SA 39 has
19 been mitigated by the removal action, which was completed in August 1995.
20 Concentrations of TPH and PCBs in soil remaining at the site are below human
21 health and ecological protective criteria, and therefore pose no significant risk to
22 persons or ecological receptors at the site.

7.0 DECISION

With the removal of contaminated soil from the Sylvania Building Site and a determination of no residual risk, there is no evidence or reason to conclude that residual hazardous waste contamination due to the historic PCB oil spill or the petroleum release at SA 39 has caused significant environmental contamination or poses a threat to human health or the environment. The decision has been made to remove SA 39 from further consideration in the IRP process. In accordance with CERCLA 120 (h) (3), all remedial actions necessary have taken place, and the USEPA and MADEP signatures constitute concurrence in accordance with the same.

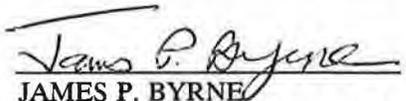


JAMES C. CHAMBERS
BRAC Environmental Coordinator

2 OCT 96

Date

U.S. ENVIRONMENTAL PROTECTION AGENCY



JAMES P. BYRNE
Fort Devens Remedial Project Manager

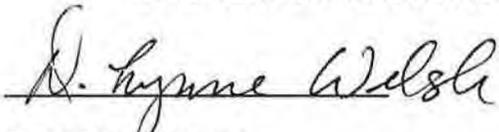
10/2/96

Date

Concur

Non-concur (Please provide reasons for non-concurrence in writing)

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION



D. LYNNE WELSH
Section Chief, Federal Facilities - CERO

10/2/96

Date

Concur

Non-concur (Please provide reasons for non-concurrence in writing)

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
AWQC	Ambient Water Quality Criterion/Criteria
bgs	below ground surface
BRAC	Defense Base Realignment and Closure Act of 1990
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDD	2,2-bis(p-chlorophenyl)-1,1-dichloroethane
DDE	2,2-bis(p-chlorophenyl)-1,1-dichloroethene
DDT	2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane
DEH	Directorate of Engineering and Housing
DOD	Department of Defense
EMO	Environmental Management Office
ER-L	Effects Range-Low
ER-M	Effects Range-Median
ft	foot or feet
ft ²	square feet
gpm	gallons per minute
IRP	Installation Restoration Program
L	liters
MADEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
MEP	Master Environmental Plan
mg	milligrams
MMCL	Massachusetts Maximum Contaminant Level
MNHP	Massachusetts Natural Heritage Program
MSL	mean sea level
μg/g	micrograms per gram
μg/L	micrograms per liter

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

NOAA	National Oceanographic and Atmospheric Administration
NYSDEC	New York State Department of Environmental Conservation
OHM	OHM Remediation Services Corporation
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCL	protective contaminant level
ppm	parts per million
PRE	Preliminary Risk Evaluation
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
SA	Study Area
SI	Site Investigation
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USAEC	U.S. Army Environmental Center
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

REFERENCES

- ABB Environmental Services, Inc. (ABB-ES), 1993a. Final Site Investigation Report - Groups 3, 5, & 6, Fort Devens, Massachusetts; Data Item A009; prepared for the U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland; Portland, Maine; April.
- ABB Environmental Services, Inc. (ABB-ES), 1993b. Biological and Endangered Species Baseline Study, Fort Devens, Massachusetts; prepared for the U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts; Wakefield, Massachusetts; August.
- ABB Environmental Services, Inc. (ABB-ES), 1995. Final Action Memorandum, Study Area 39, Sylvania Building Site, Fort Devens, Massachusetts; prepared for the U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts; Wakefield, MA; September.
- Arthur D. Little, Inc., 1993. Final Fort Devens Main Post Site Investigation, Fort Devens, Massachusetts; prepared for the U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland; Cambridge, Massachusetts; December 15.
- Arthur D. Little, Inc., 1995. Supplemental Site Investigation Data Package, Study Areas 17, 39, and 51, Fort Devens, Massachusetts; prepared for the U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland; Cambridge, Massachusetts; March.
- Biang, C.A., R.W. Peters, R.H. Pearl, and S.Y. Tsai, 1992. "Master Environmental Plan for Fort Devens, Massachusetts"; prepared for U.S. Army Toxic and Hazardous Materials Agency; prepared by Argonne National Laboratory, Environmental Assessment and Information Sciences Division; Argonne, IL; Final, April.
- Fort Devens EMO, Directorate of Engineering and Housing, January 1985. "Final PCB Spill Report, Sylvania Building 4250, Fort Devens, Massachusetts".
- Jahns, R.H., 1953. "Surficial Geology of the Ayer Quadrangle, Massachusetts"; Scale 1:31,680; U.S. Geological Survey.

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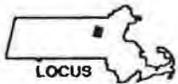
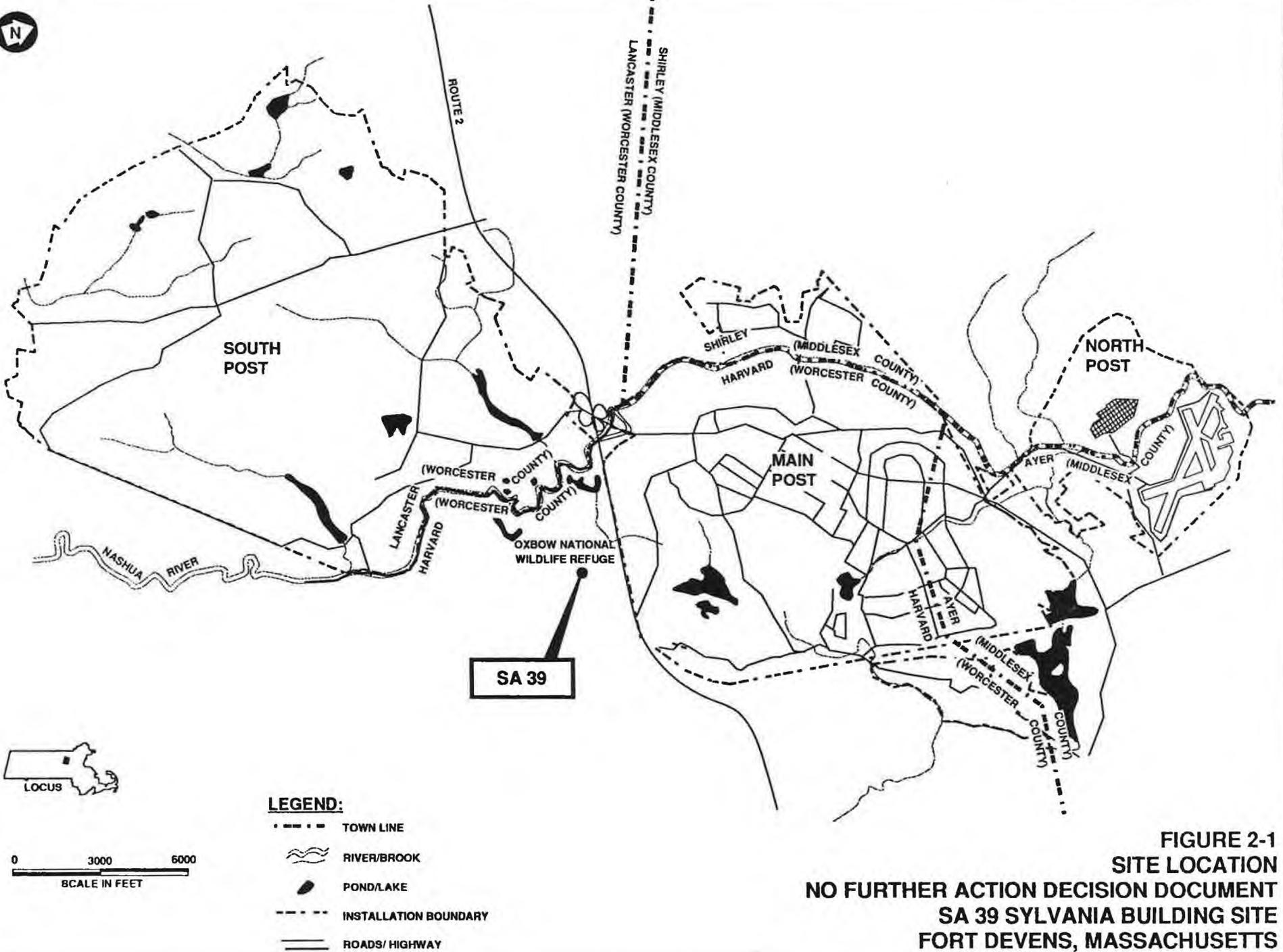
REFERENCES

- Koteff, C., 1966. "Surficial Geologic Map of the Clinton Quadrangle, Worcester County, Massachusetts;" U.S. Geological Survey Map GQ-567.
- Massachusetts Department of Environmental Protection (MADEP), 1993a. "Drinking Water Standards & Guidelines for Chemicals in Massachusetts Drinking Waters", Spring.
- Massachusetts Department of Environmental Protection (MADEP), 1993b. Revised Massachusetts Contingency Plan, 310 CMR 4.00 *et seq.*
- Massachusetts Department of Environmental Protection (MADEP), 1995. Revised Massachusetts Contingency Plan, 310 CMR 4.00 *et seq.*
- National Oceanographic and Atmospheric Administration (NOAA), 1990. "The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program", NOAA Technical Memorandum NOS OMA 52.
- New York State Department of Environmental Conservation (NYSDEC), 1989. "Sediment Criteria". Used as Guidance by the Bureau of Environmental Protection, Division of Fish and Wildlife.
- OHM Remediation Services Corporation, 1996. Final Closure Report, Study Area 39, Fort Devens, Massachusetts; prepared for the U.S. Army Corps of Engineers, Waltham, MA; Hopkinton, MA; May 3.
- Roy F. Weston, Inc., 1992. "Delivery Order 9 Enhanced Preliminary Assessment, Fort Devens, Massachusetts"; prepared for the U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Maryland; West Chester, Pennsylvania; February.
- U.S. Environmental Protection Agency (USEPA), 1992. "Ambient Water Quality Criteria", December.
- U.S. Environmental Protection Agency (USEPA), 1993a. "Drinking Water Regulations and Health Advisories"; Office of Water; Washington, D.C.; May.

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REFERENCES

- U.S. Environmental Protection Agency (USEPA) Region III, 1993b. "Risk-Based Concentration Table", Memo from Roy L. Smith, EPA Region III, to RBC mailing list; Fourth Quarter 1993.
- U.S. Environmental Protection Agency (USEPA), 1994a. "Drinking Water Regulations and Health Advisories"; Office of Water; Washington, D.C.; May.
- U.S. Environmental Protection Agency (USEPA) Region III, 1994b. "Risk-Based Concentration Table", Memo from Roy L. Smith, EPA Region III, to RBC mailing list; Fourth Quarter 1994.
- Vanasse Hangen Brustlin, Inc., 1994. *Devens Reuse Plan*; prepared for the Boards of Selectmen: Town of Harvard, Town of Lancaster, Town of Shirley; and the Massachusetts Government Land Bank; November 14.



LOCUS

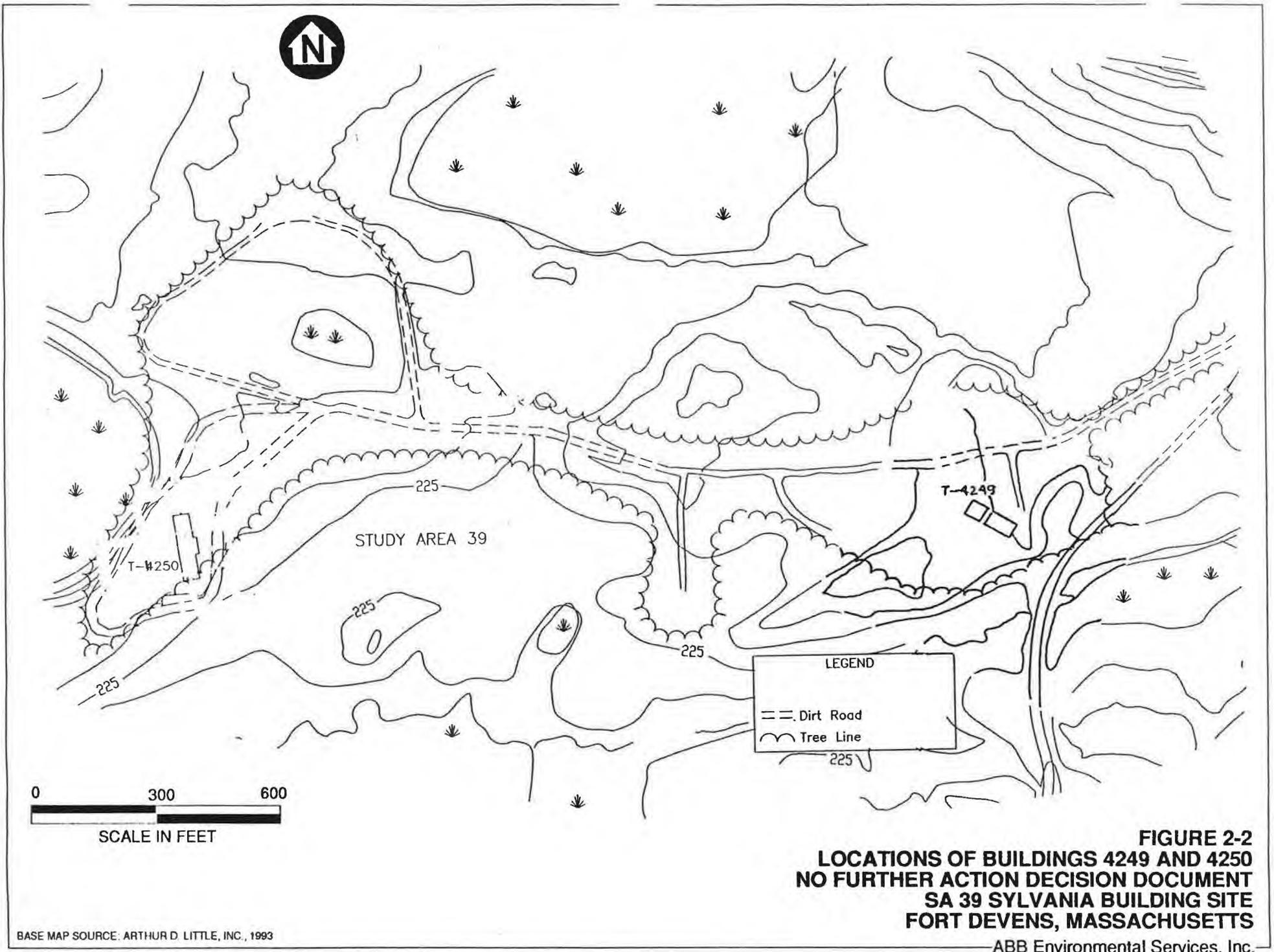


LEGEND:

- TOWN LINE
- RIVER/BROOK
- POND/LAKE
- INSTALLATION BOUNDARY
- ROADS/ HIGHWAY

**FIGURE 2-1
SITE LOCATION
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

ABB Environmental Services, Inc.



**FIGURE 2-2
 LOCATIONS OF BUILDINGS 4249 AND 4250
 NO FURTHER ACTION DECISION DOCUMENT
 SA 39 SYLVANIA BUILDING SITE
 FORT DEVENS, MASSACHUSETTS**

BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1993



T-4250

Area of Detail

ROAD

IV

IV - Quadrant Number

III

DETAIL OF SPILL AREA

I

II

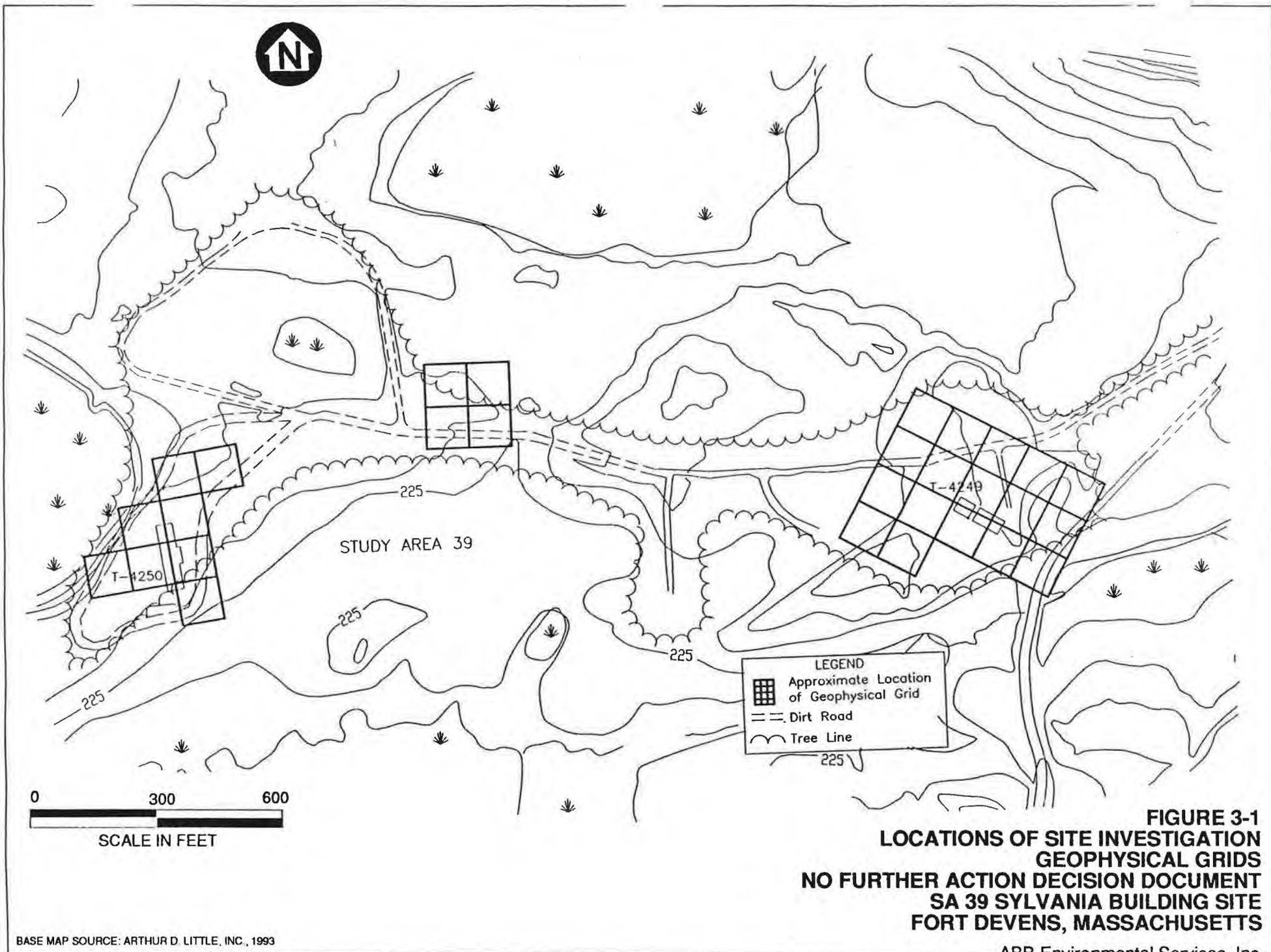
FEET

0 15

0 60 120

SCALE IN FEET

**FIGURE 2-3
PCB SPILL QUADRANTS
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**



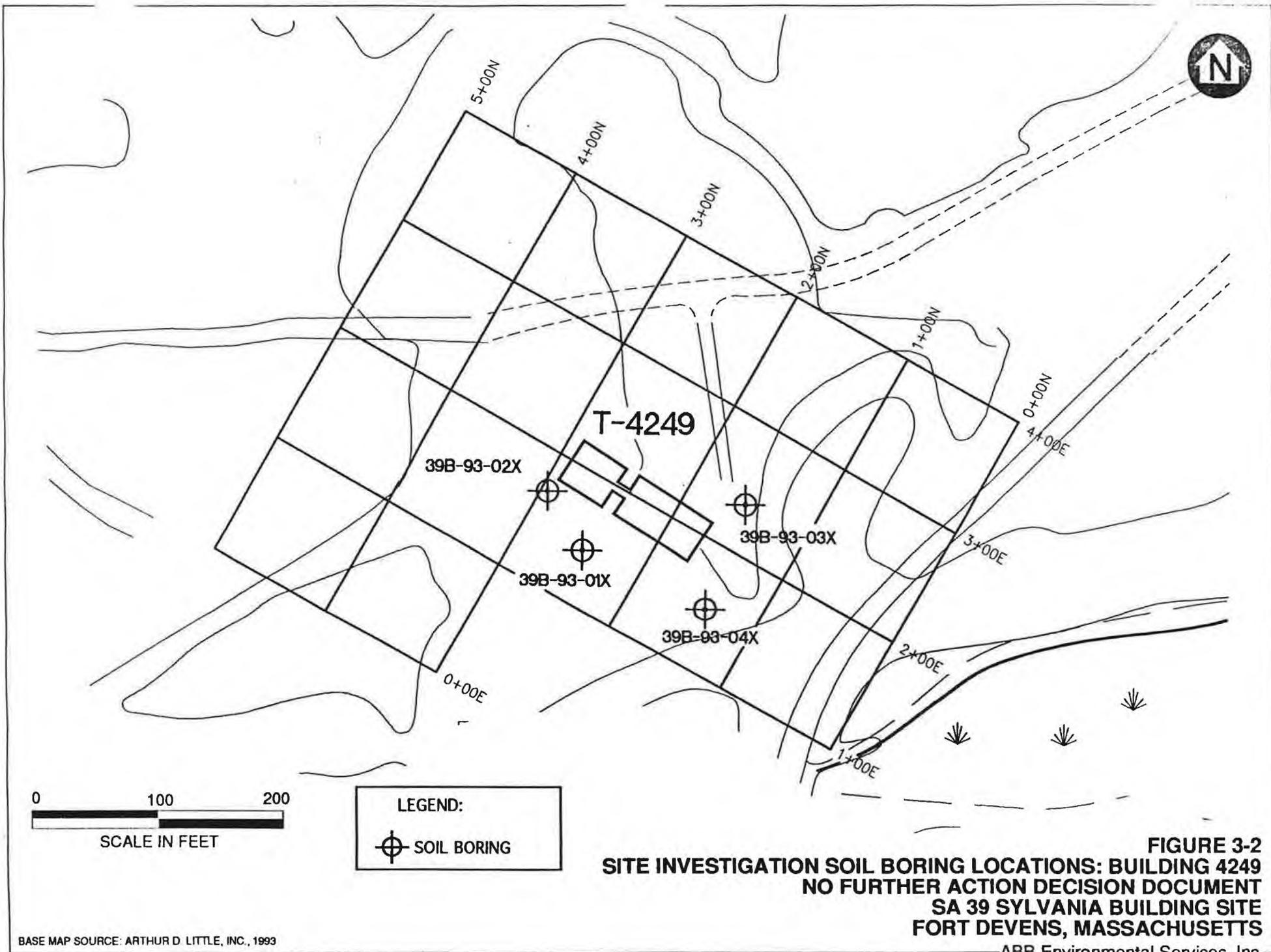
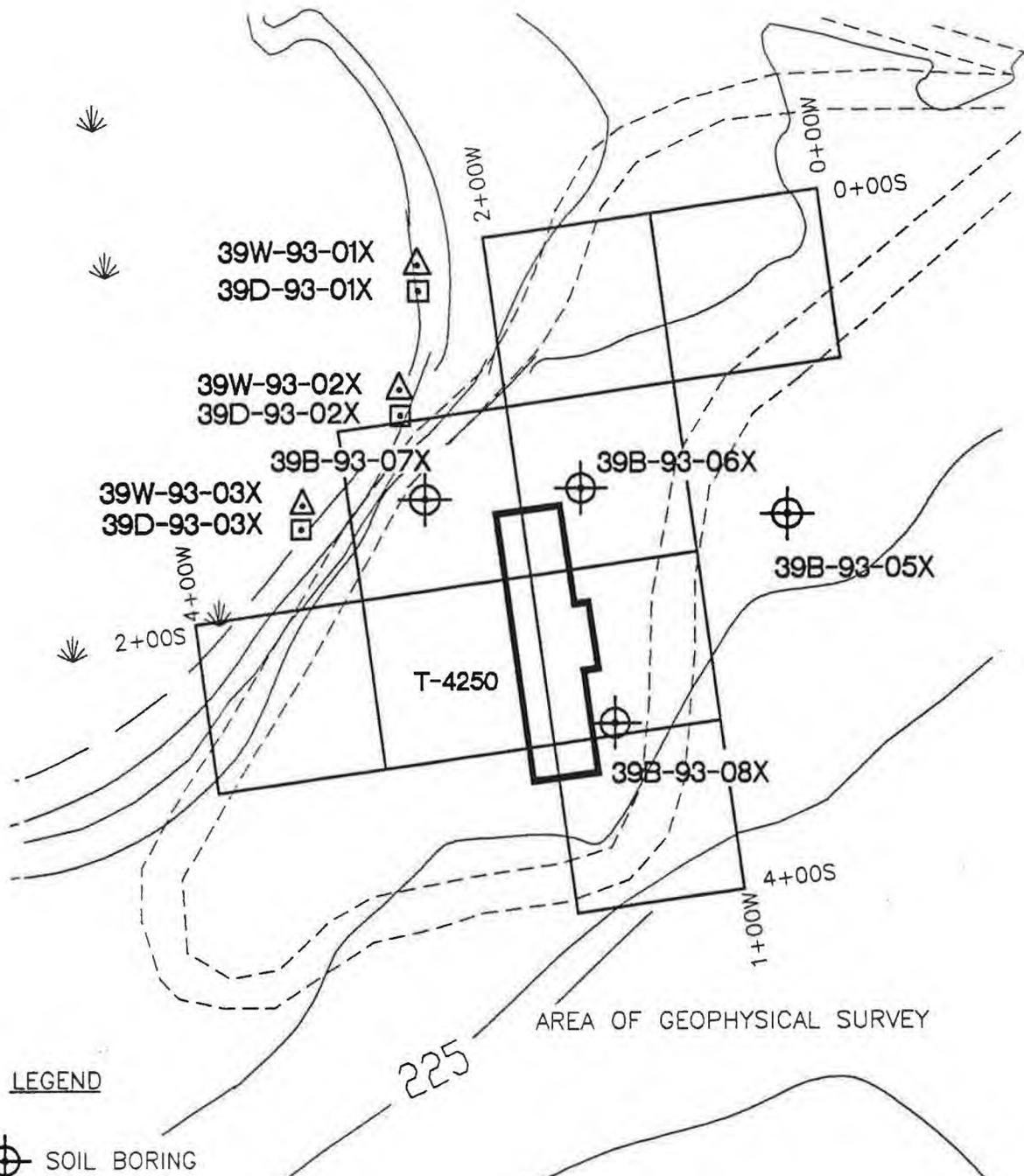


FIGURE 3-2
SITE INVESTIGATION SOIL BORING LOCATIONS: BUILDING 4249
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.



LEGEND

-  SOIL BORING
-  SURFACE WATER SAMPLE
-  SEDIMENT SAMPLE



FIGURE 3-3
SITE INVESTIGATION SOIL BORING, SURFACE WATER
AND SEDIMENT SAMPLE LOCATIONS: BUILDING 4250
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

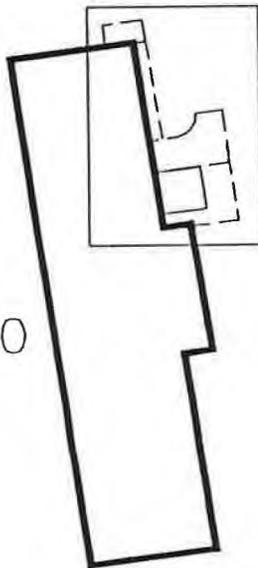
BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1993

LEGEND:

- SURFACE SOIL
- ⊙ CONCRETE CHIP
- IV QUADRANT NUMBER



Area of Detail



T-4250

ROAD

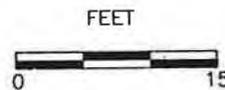
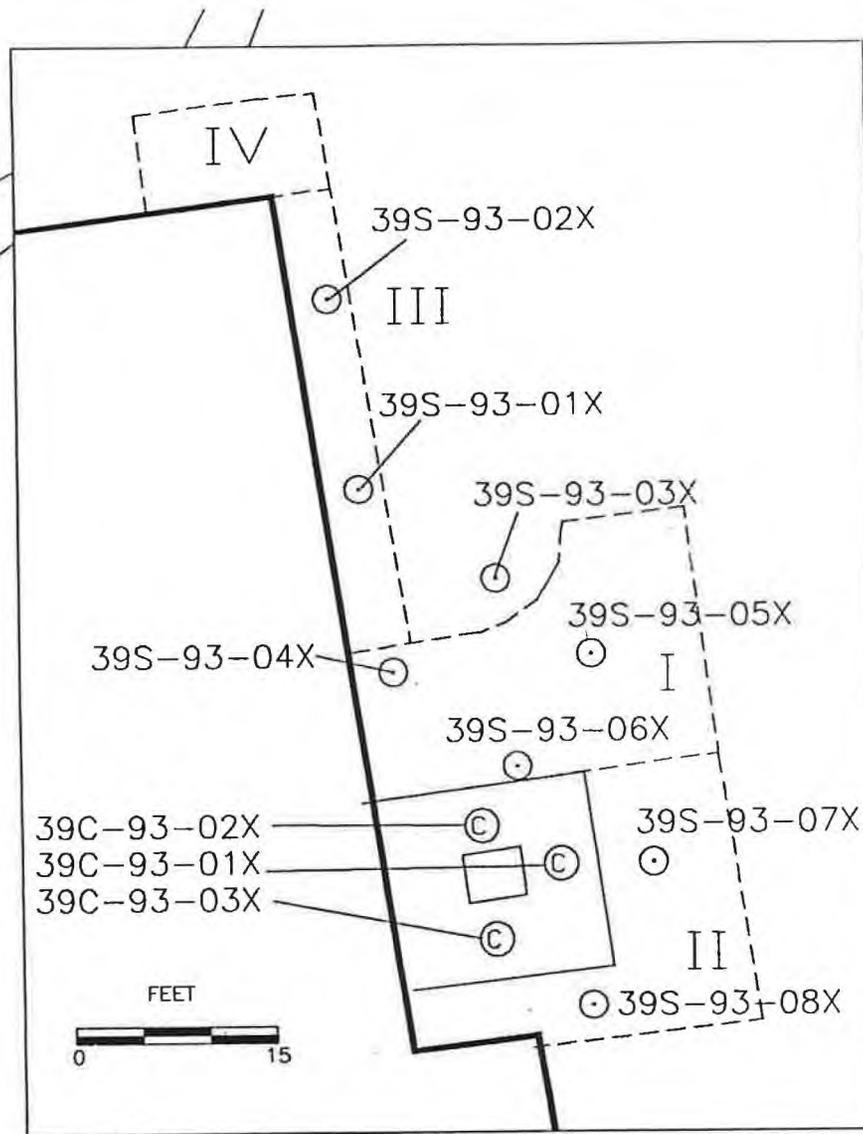
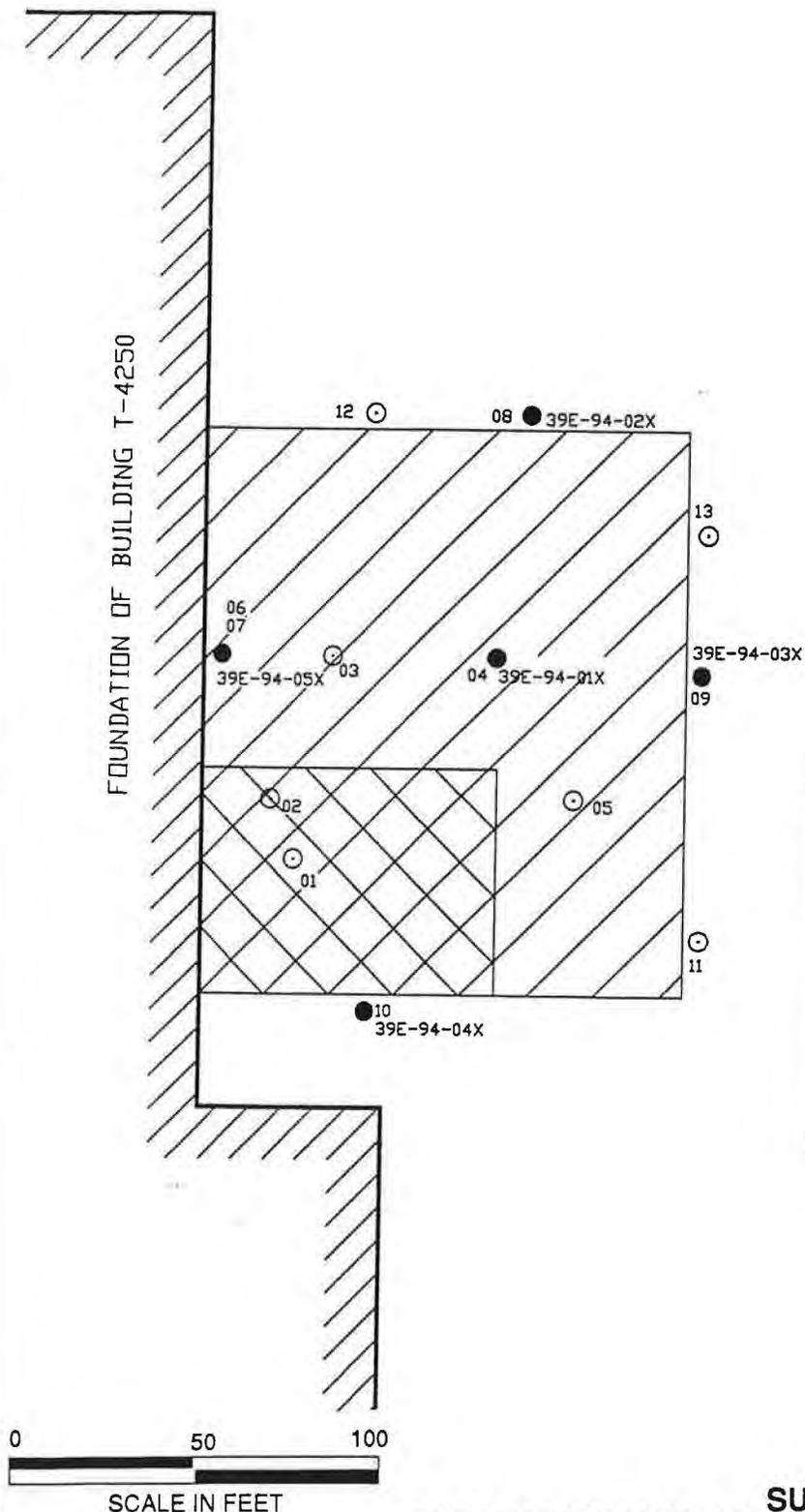


FIGURE 3-4
SITE INVESTIGATION SOIL AND CONCRETE
CHIP SAMPLE LOCATIONS: BUILDING 4250
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



LEGEND	
	AREA OF EXCAVATION (DEPTH OF EXCAVATION = 0.5-1.0')
	CONCRETE PAD (REMOVED) (DEPTH OF EXCAVATION = 1.0-1.5')

○	PCB FIELD SCREENING SAMPLE LOCATION
11 ○	
●	FIELD SCREENING AND LABORATORY SPLIT SAMPLE LOCATION

FIGURE 3-5
SUPPLEMENTAL SITE INVESTIGATION:
EXCAVATION LIMIT AND CONFIRMATION SAMPLE LOCATIONS
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

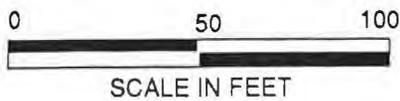
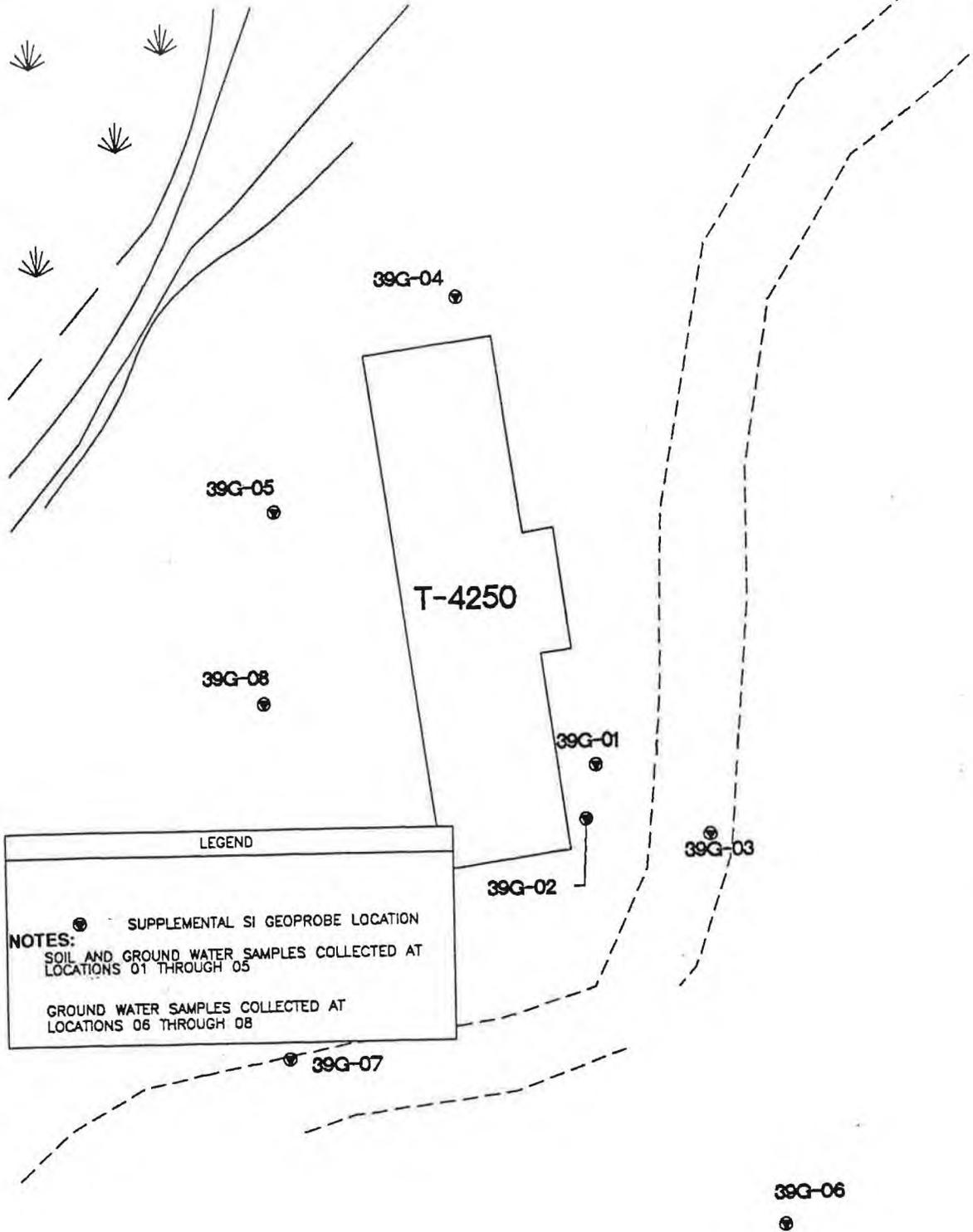


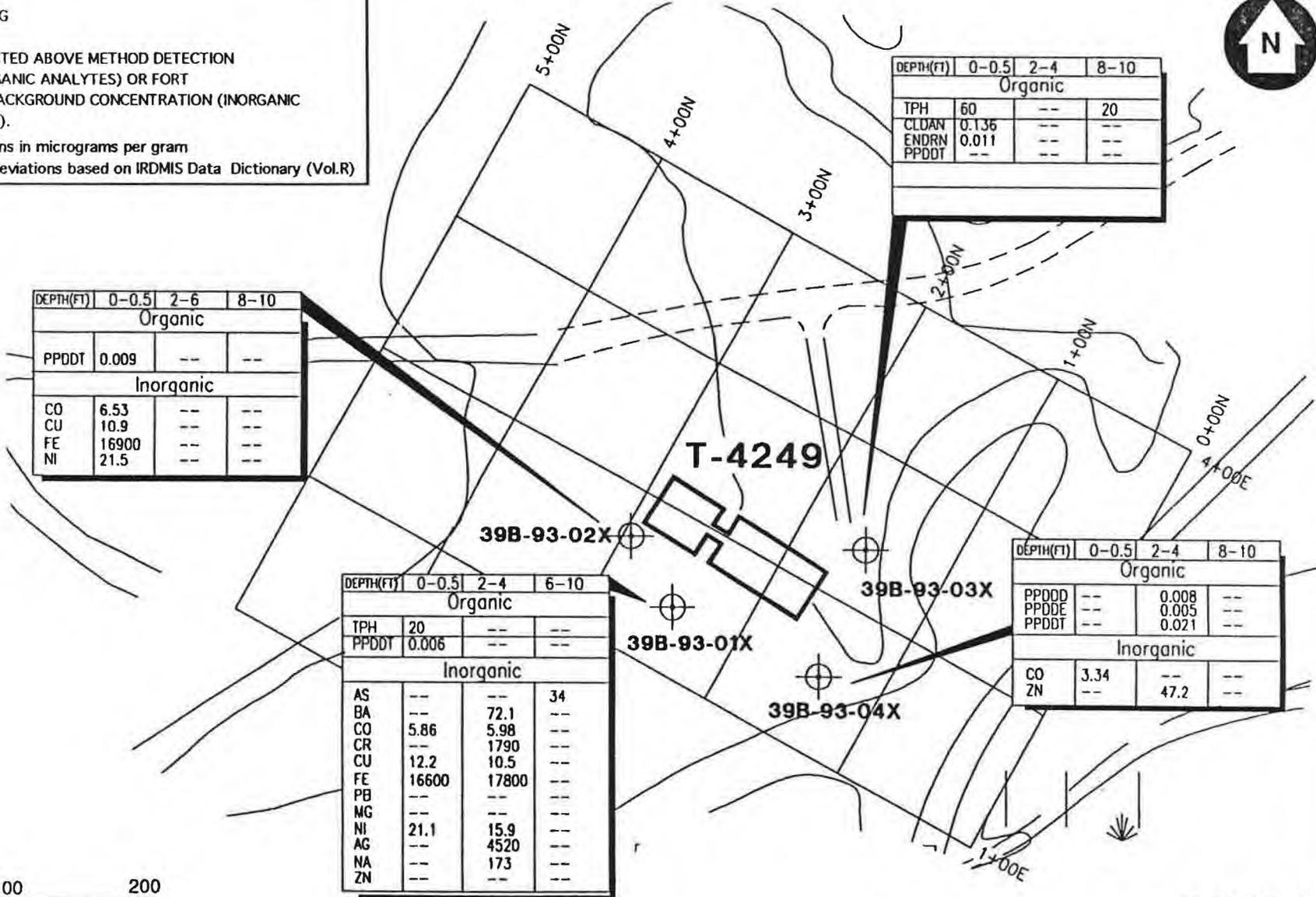
FIGURE 3-6
SUPPLEMENTAL SITE INVESTIGATION
GEOPROBE LOCATIONS
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

LEGEND

⊕ - SOIL BORING

--- - NOT DETECTED ABOVE METHOD DETECTION LIMIT (ORGANIC ANALYTES) OR FORT DEVENS BACKGROUND CONCENTRATION (INORGANIC ANALYTES).

NOTES: Concentrations in micrograms per gram
Analyte abbreviations based on IRDMIS Data Dictionary (Vol.R)



DEPTH(FT)	0-0.5	2-6	8-10
Organic			
PPDDT	0.009	--	--
Inorganic			
CO	6.53	--	--
CU	10.9	--	--
FE	16900	--	--
NI	21.5	--	--

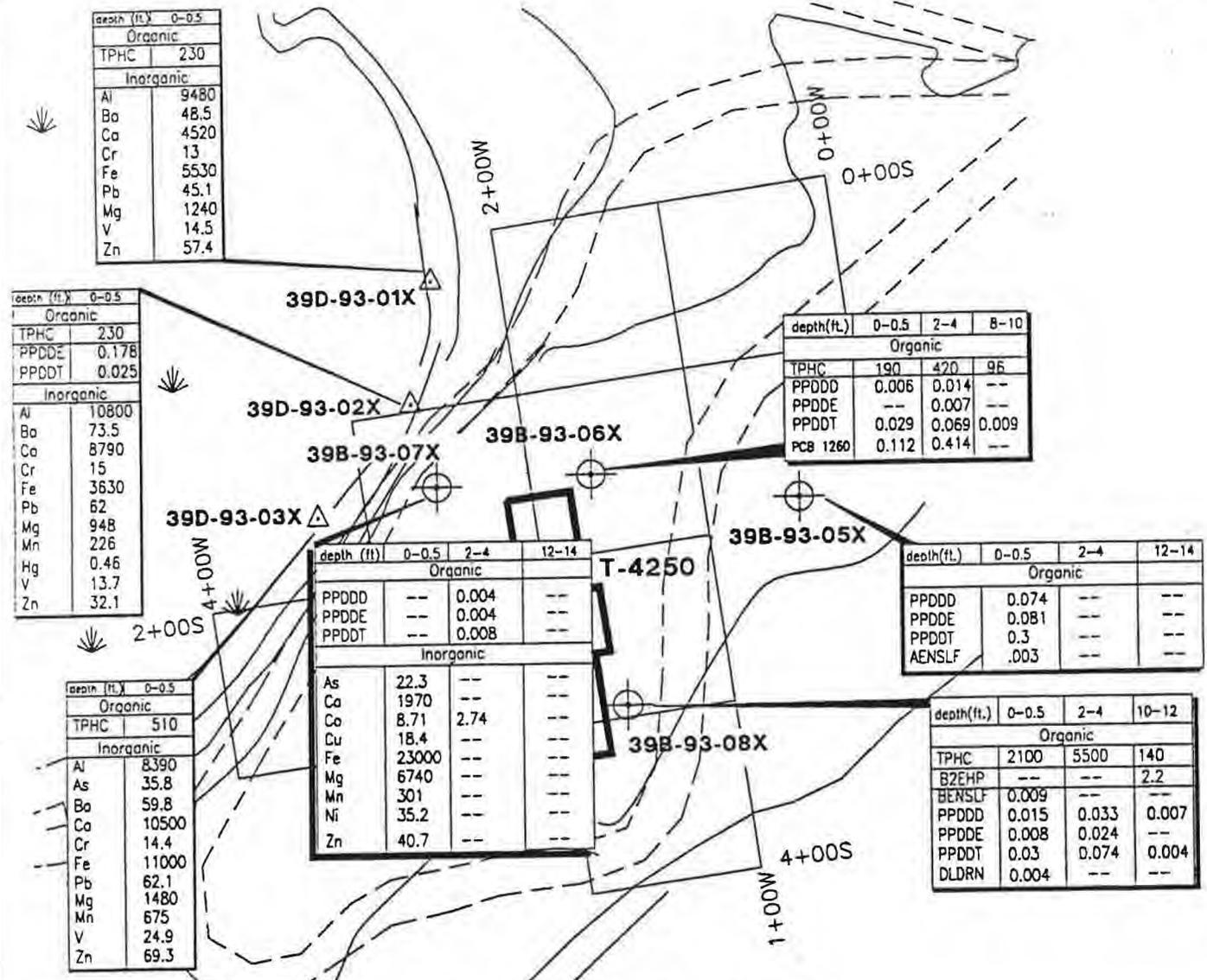
DEPTH(FT)	0-0.5	2-4	8-10
Organic			
TPH	60	--	20
CLDAN	0.136	--	--
ENDRN	0.011	--	--
PPDDT	--	--	--

DEPTH(FT)	0-0.5	2-4	6-10
Organic			
TPH	20	--	--
PPDDT	0.006	--	--
Inorganic			
AS	--	--	34
BA	--	72.1	--
CO	5.86	5.98	--
CR	--	1790	--
CU	12.2	10.5	--
FE	16600	17800	--
PB	--	--	--
MG	--	--	--
NI	21.1	15.9	--
AG	--	4520	--
NA	--	173	--
ZN	--	--	--

DEPTH(FT)	0-0.5	2-4	8-10
Organic			
PPDDD	--	0.008	--
PPDDE	--	0.005	--
PPDDT	--	0.021	--
Inorganic			
CO	3.34	--	--
ZN	--	47.2	--



FIGURE 4-1
ANALYTES IN SITE INVESTIGATION
SOIL SAMPLES, 1993: BUILDING 4249
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



depth (ft.)	0-0.5	2-4	12-14
Organic			
PPDDD	---	0.004	---
PPDDE	---	0.004	---
PPDDT	---	0.008	---
Inorganic			
As	22.3	---	---
Ca	1970	---	---
Co	8.71	2.74	---
Cu	18.4	---	---
Fe	23000	---	---
Mg	6740	---	---
Mn	301	---	---
Ni	35.2	---	---
Zn	40.7	---	---

depth(ft.)	0-0.5	2-4	8-10
Organic			
TPHC	190	420	96
PPDDD	0.006	0.014	---
PPDDE	---	0.007	---
PPDDT	0.029	0.069	0.009
PCB 1260	0.112	0.414	---

depth(ft.)	0-0.5	2-4	12-14
Organic			
PPDDD	0.074	---	---
PPDDE	0.081	---	---
PPDDT	0.3	---	---
AENSLF	.003	---	---

depth(ft.)	0-0.5	2-4	10-12
Organic			
TPHC	2100	5500	140
BZEHP	---	---	2.2
BENSLF	0.009	---	---
PPDDD	0.015	0.033	0.007
PPDDE	0.008	0.024	---
PPDDT	0.03	0.074	0.004
DLDRN	0.004	---	---

LEGEND:

- ⊙ - SURFACE SOIL SAMPLE
- ⊕ - SOIL BORING
- △ - SEDIMENT SAMPLE

Ca 15.8 - ANALYTE/CONCENTRATION (ug/g)

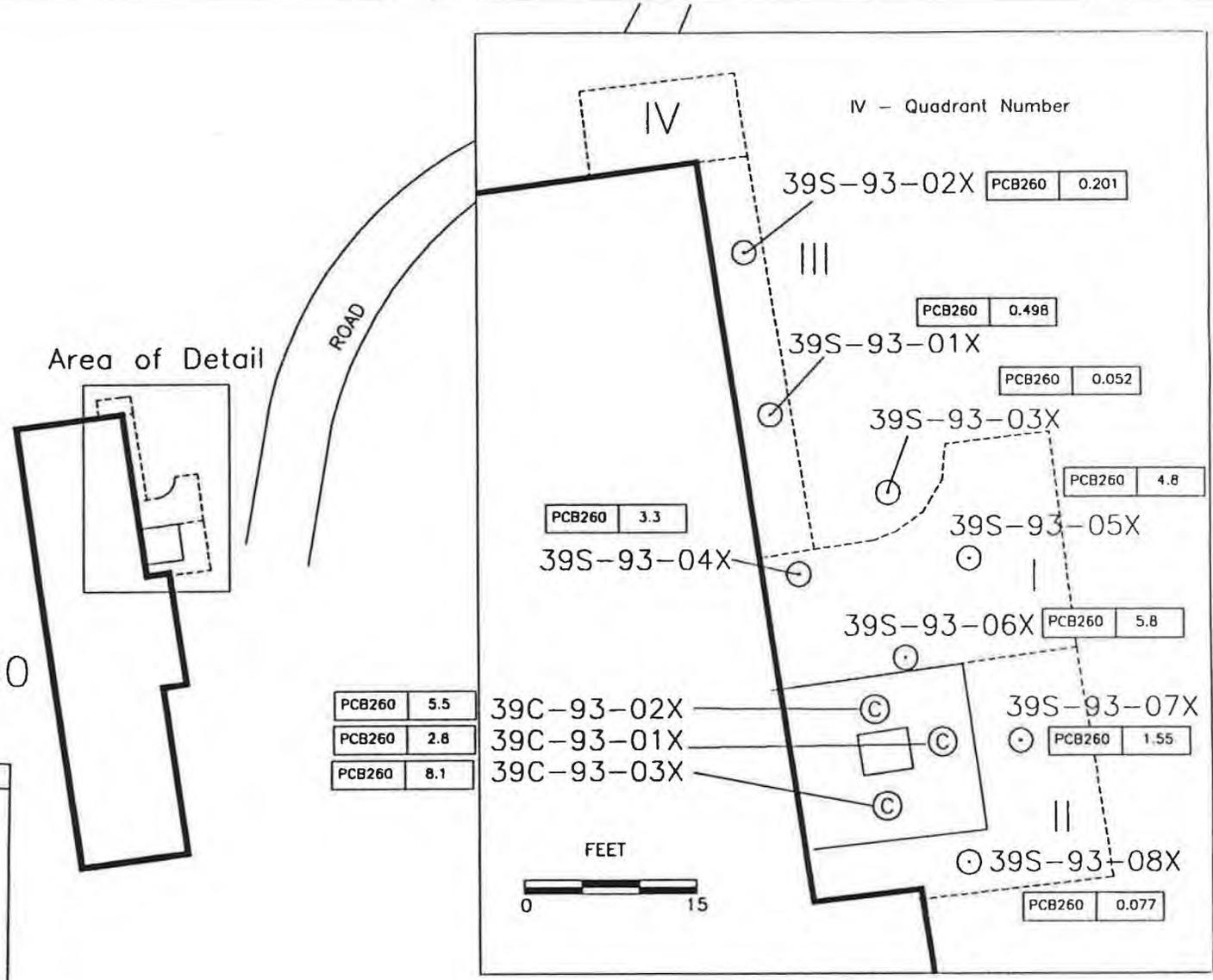
--- - NOT DETECTED ABOVE METHOD DETECTION LIMIT OR BACKGROUND.

Table lists organic analytes detected above method detection limit, and inorganic analytes detected above Fort Devens background. Analyte abbreviations based on IRDMIS Data Dictionary (Vol.2).



FIGURE 4-2
ANALYTES IN SITE INVESTIGATION SOIL AND
SEDIMENT SAMPLES, 1993: BUILDING 4250
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1993



T-4250

LEGEND	
▲	SEDIMENT SAMPLE
□	SURFACE WATER SAMPLE
○	SURFACE SOIL
⊙	CONCRETE CHIP

CU 15.8 Analyte/Concentration (ug/g)

Organic analytes detected above level of detection

Inorganic analytes detected above level of detection and background

-- Not detected above level of detection and background

Analyte abbreviations based on IRMS Date Dictionary (Vol. 2)

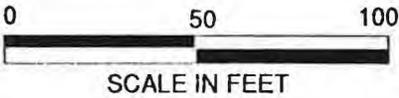
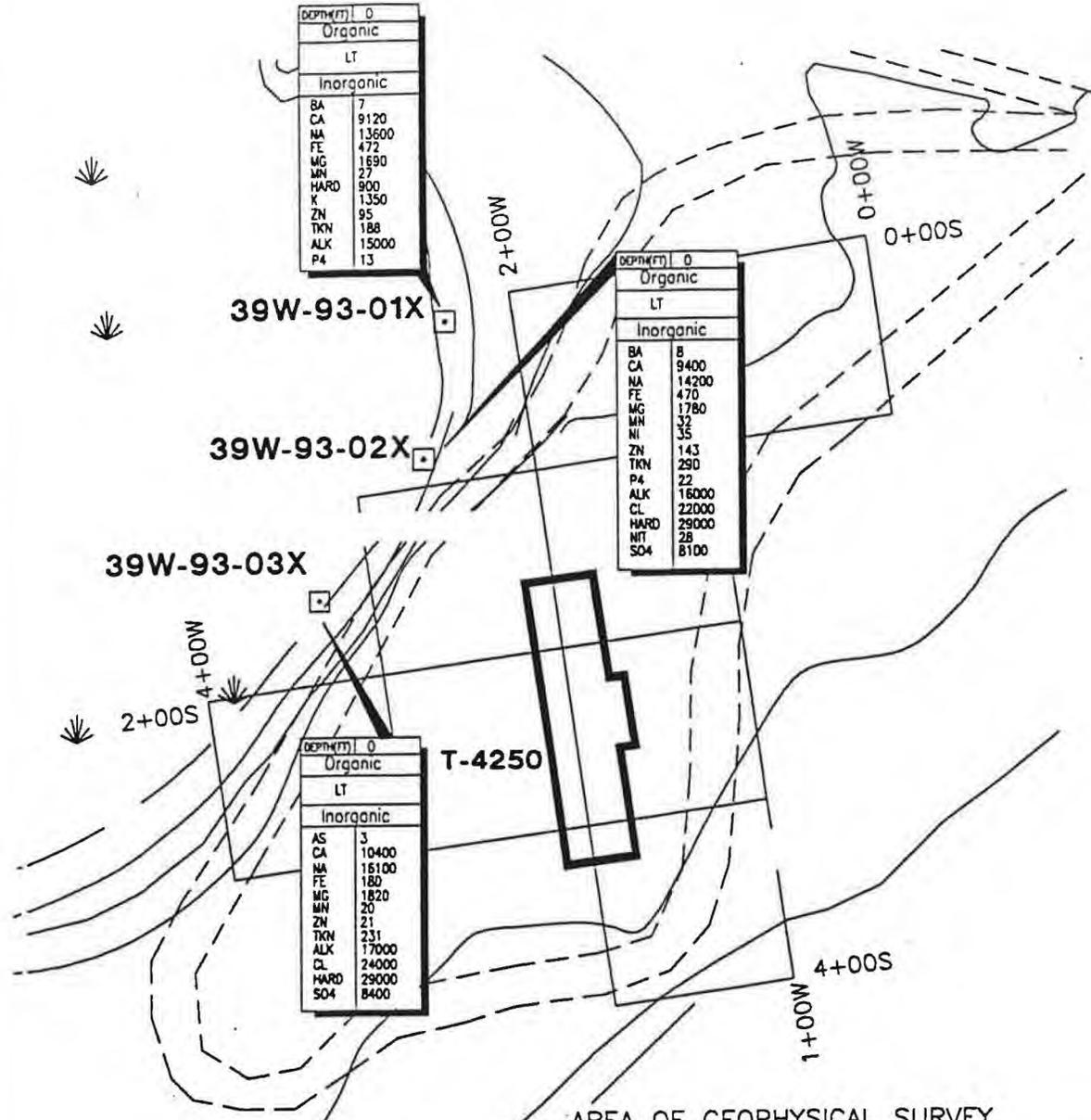


FIGURE 4-3
PCBs IN SITE INVESTIGATION SURFACE SOIL
AND CONCRETE SAMPLES, 1993
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



LEGEND	
	SURFACE WATER SAMPLE
	Analyte/Concentration (ug/g)
	Organic analytes detected above level of detection
	Inorganic analytes detected above level of detection and background
	Not detected above level of detection and background
	Analyte abbreviations based on IRDMIS Data Dictionary (Vol. 2)

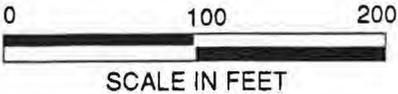
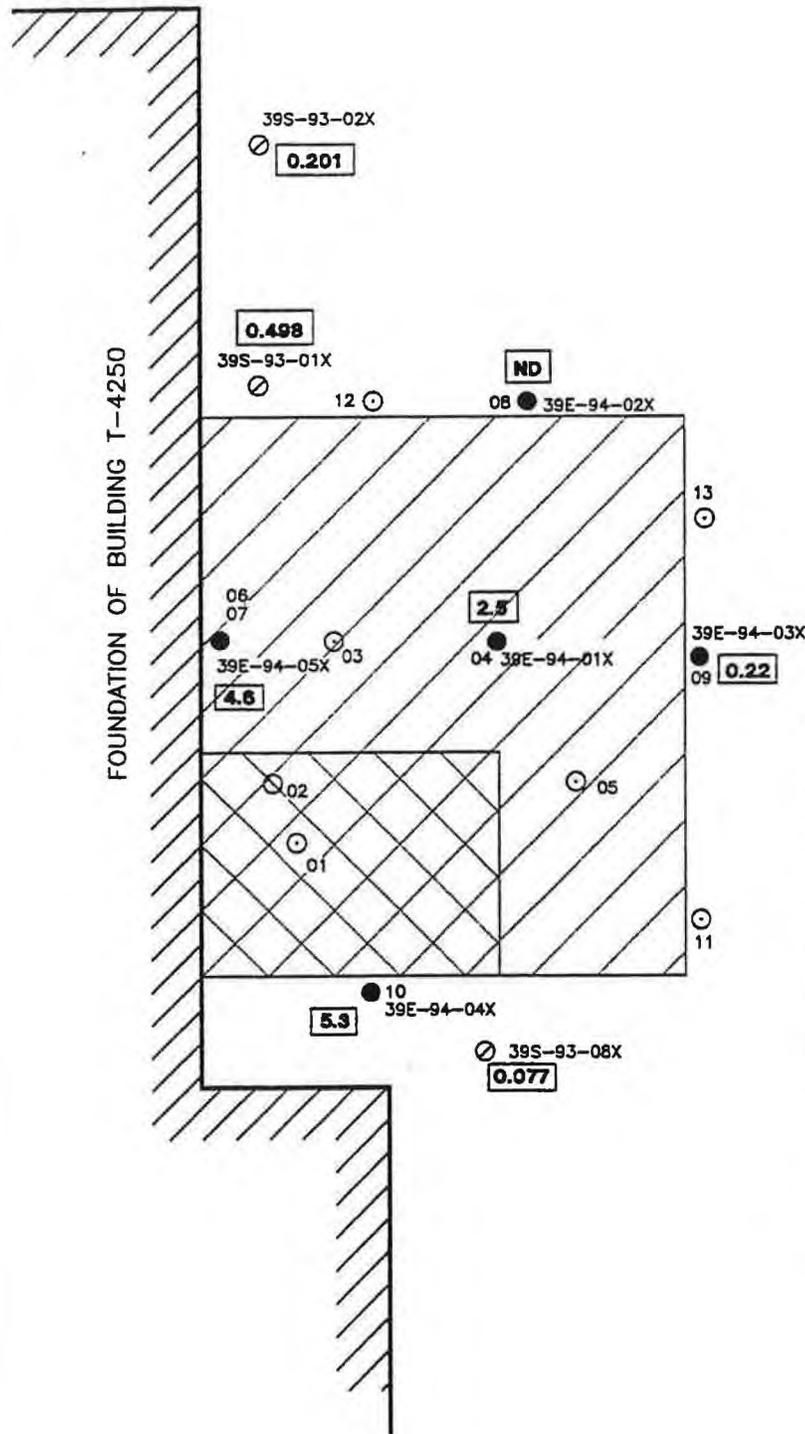


FIGURE 4-4
ANALYTES IN SITE INVESTIGATION
SURFACE WATER SAMPLES, 1993
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

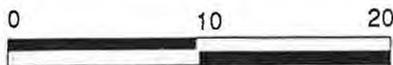
BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1993



FOUNDATION OF BUILDING T-4250

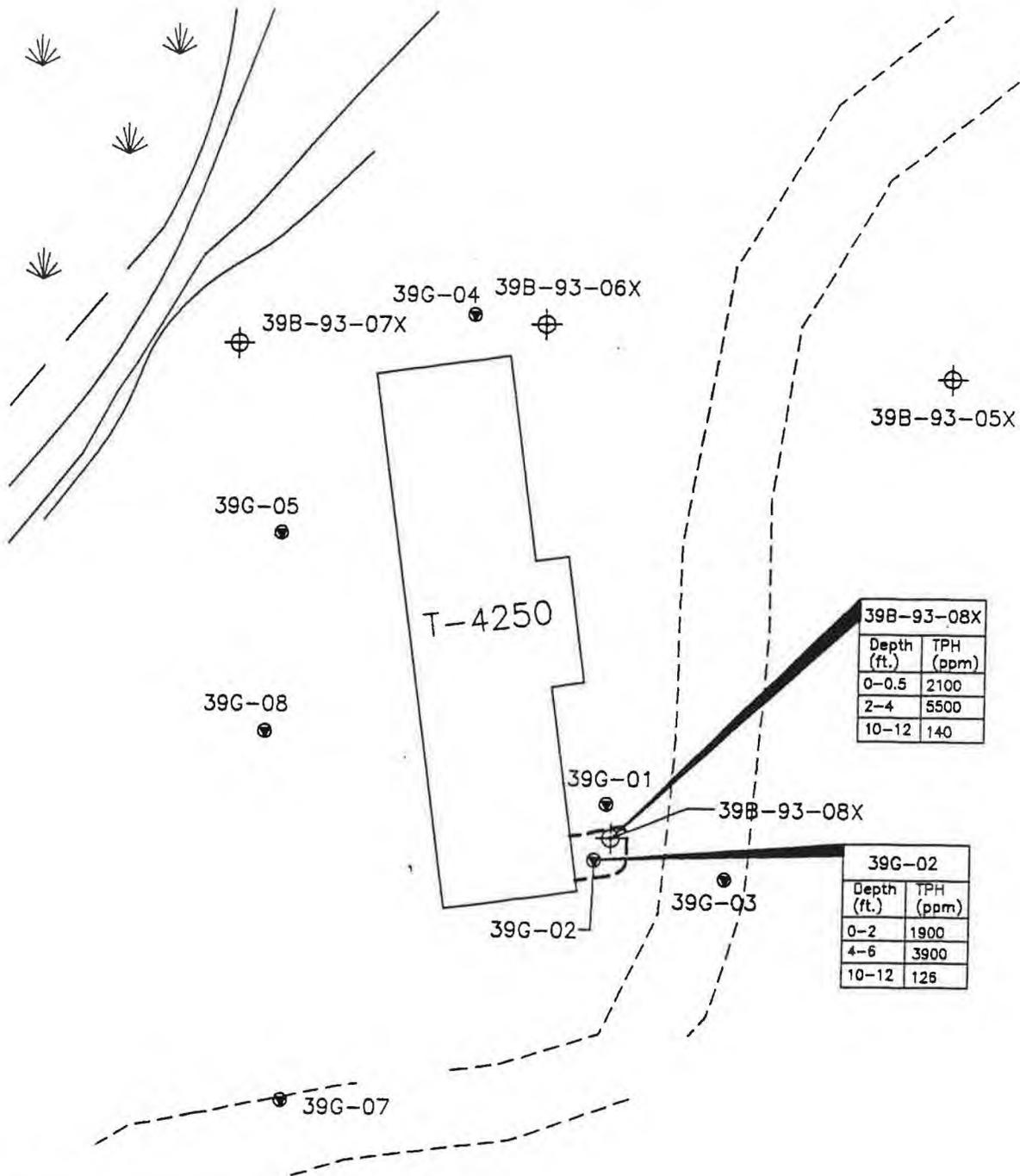


LEGEND	
	AREA OF EXCAVATION (DEPTH OF EXCAVATION = 0.5-1.0')
	CONCRETE PAD (REMOVED) (DEPTH OF EXCAVATION = 1.0-1.5')
	PCB FIELD SCREENING SAMPLE LOCATION 11
	FIELD SCREENING AND LABORATORY SPLIT SAMPLE LOCATION
	1993 SI SOIL SAMPLING LOCATION
	4.6 PCB-1260 (ppm) IN SOIL (LEVEL III DATA)
	ND PCBs NOT DETECTED



SCALE IN FEET

FIGURE 4-5
SUPPLEMENTAL SITE INVESTIGATION:
ANALYTES IN CONFIRMATION SAMPLES, 1994
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



LEGEND:



SI SOIL BORING LOCATION



SUPPLEMENTAL SI GEOPROBE LOCATION

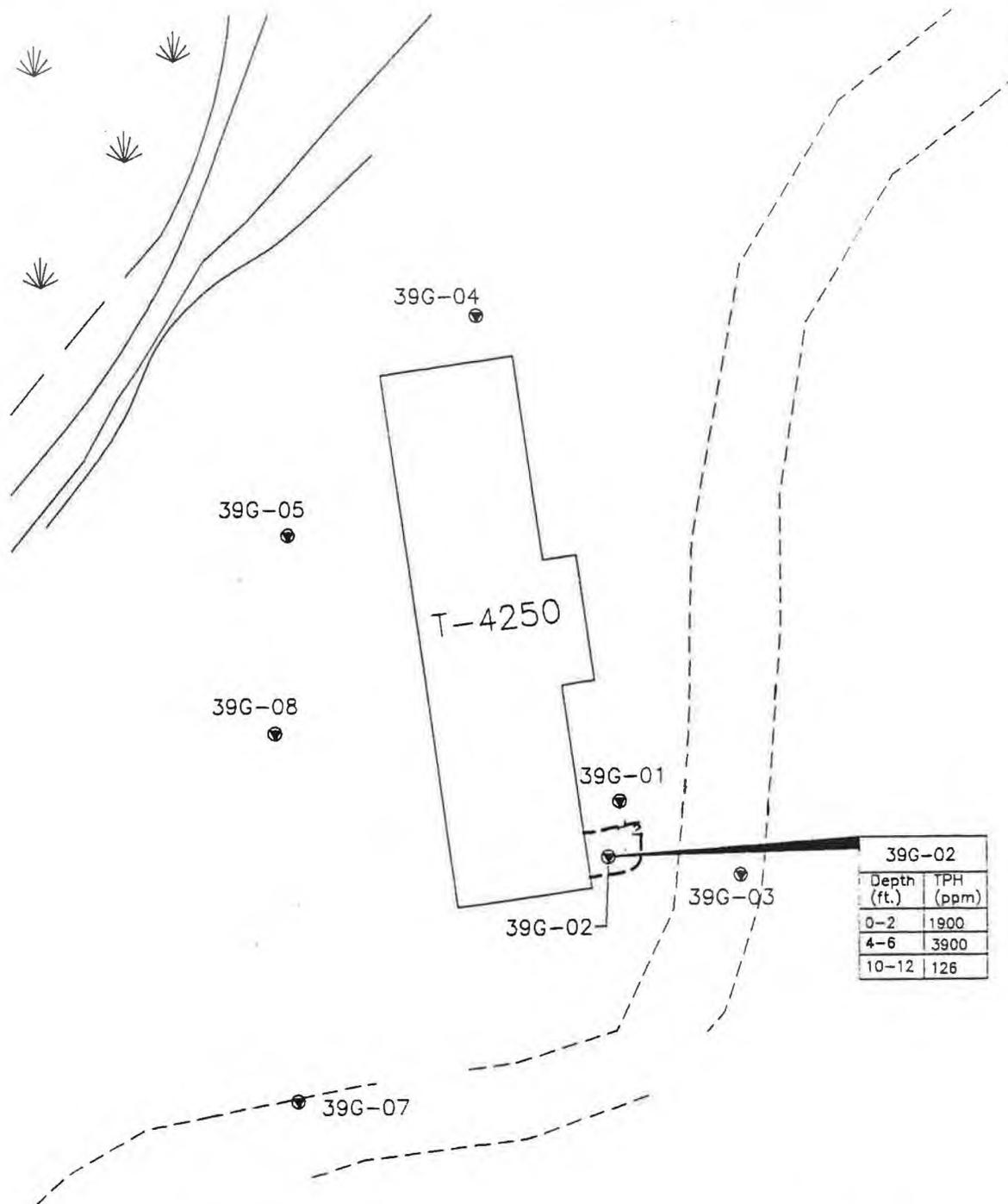
ONLY DATA FROM LOCATIONS WHERE TPH CONCENTRATIONS EXCEEDED 500 PPM ARE SHOWN



BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1995

**FIGURE 4-6
SUPPLEMENTAL SITE INVESTIGATION:
FIELD SCREENING RESULTS, 1994
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS**

ABB Environmental Services, Inc.



39G-02	
Depth (ft.)	TPH (ppm)
0-2	1900
4-6	3900
10-12	126

LEGEND:
● - SUPPLEMENTAL SI GEOPROBE LOCATION

Only data from locations where TPH concentrations exceeded 500 ppm are shown.



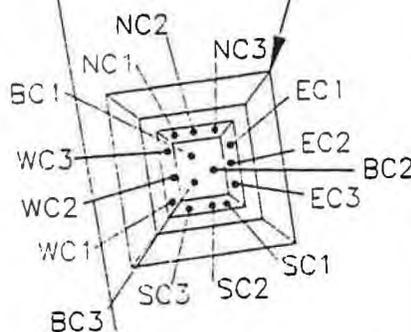
FIGURE 4-7
TPH IN SUPPLEMENTAL SITE INVESTIGATION
SOIL SAMPLES, 1994
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1995

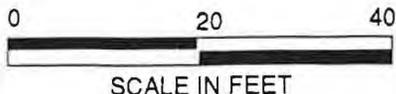


T-4250
(CONCRETE SLAB)

LIMIT OF EXCAVATION

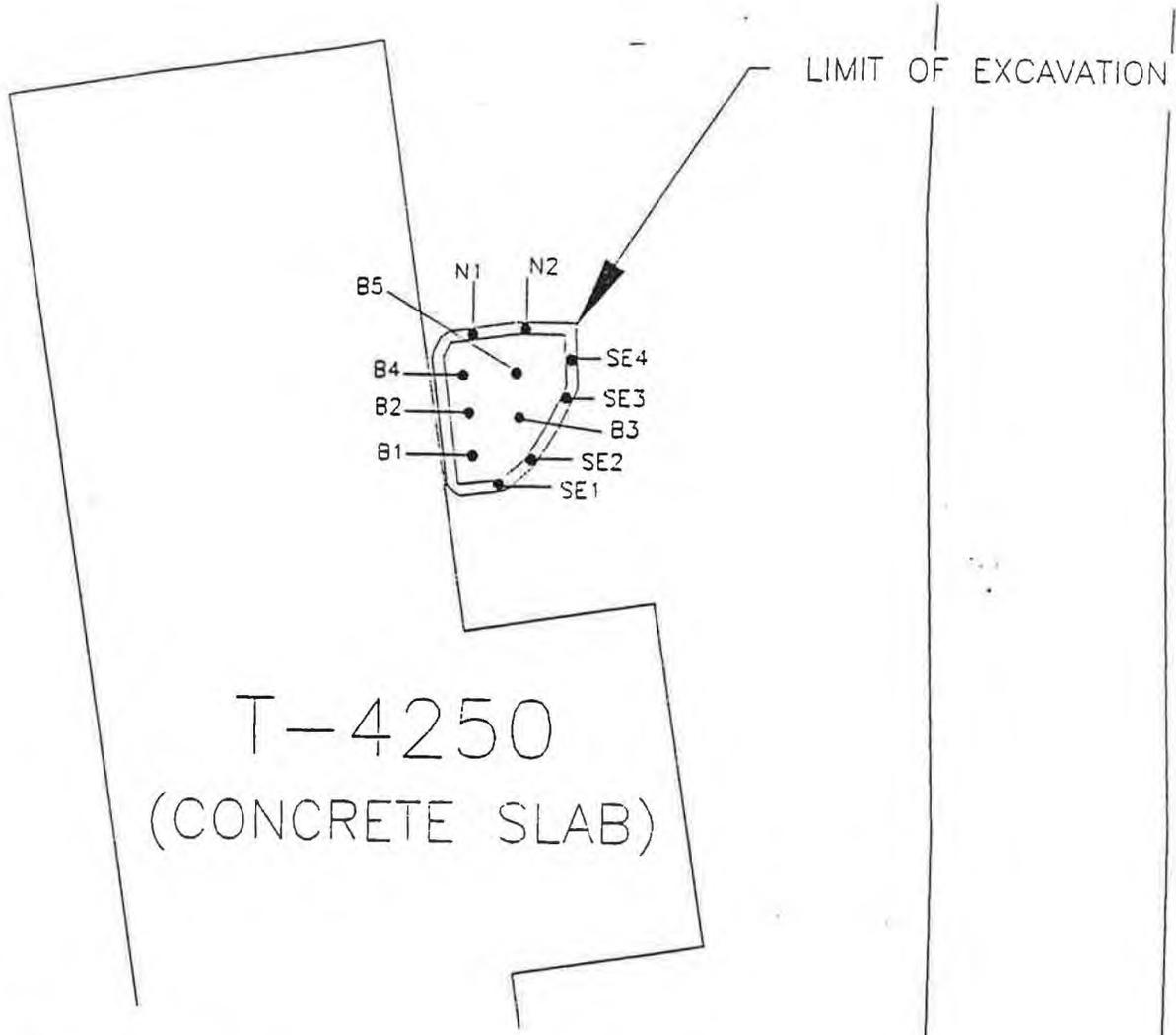


CONFIRMATORY COMPOSITE SAMPLE NUMBERS	DISCRETE SAMPLE NUMBERS
SBSA39NC	SBSA39NC1 SBSA39NC2 SBSA39NC3
SBSA39EC	SBSA39EC1 SBSA39EC2 SBSA39EC3
SBSA39WC	SBSA39WC1 SBSA39WC2 SBSA39WC3
SBSA39SC	SBSA39SC1 SBSA39SC2 SBSA39SC3
SBSA39BC	SBSA39BC1 SBSA39BC2 SBSA39BC3



SCALE IN FEET

FIGURE 4-8
TPH EXCAVATION LIMIT AND
CONFIRMATION SAMPLE LOCATIONS, 1995
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



T-4250
(CONCRETE SLAB)

CONFIRMATORY COMPOSITE SAMPLE NUMBERS	DISCRETE SAMPLE NUMBERS
SBSA39BC	SBSA39B1 SBSA39B2 SBSA39B3 SBSA39B4 SBSA39B5
SBSA39NC	SBSA39N1 SBSA39N2
SBSA39EC	SBSA39SE1 SBSA39SE2 SBSA39SE3 SBSA39SE4

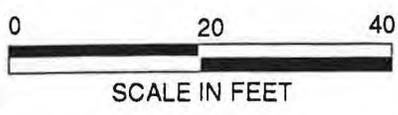


FIGURE 4-9
PCB EXCAVATION LIMIT AND
CONFIRMATION SAMPLE LOCATIONS, 1995
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

BASE MAP SOURCE: OHM REMEDIATION SERVICES CORP., 1996

TABLE 2-1
 1984 PCB SPILL SAMPLE RESULTS
 SA 39 SYLVANIA BUILDING SITE
 NO FURTHER ACTION DECISION DOCUMENT
 FORT DEVENS, MA

QUADRANT SAMPLED	SAMPLE DATE	SAMPLE LOCATION	DEPTH (INCHES)	PCBs (ppm)
I	9/26/84	10 ft from building, 4 ft from concrete pad	1	60
I	11/09/84	10 ft from building, 4 ft from concrete pad	4	11
I	11/09/84	10 ft from building, 4 ft from concrete pad	12	5.2
II	12/13/84	Concrete pad	1	5.3
III	12/13/84	8 ft from right front of building	1-2	7.5
IV	12/13/84	Next to fill pipes	1-2	14.3

Notes:

PCB = polychlorinated biphenyl

ppm = parts per million, which is equivalent to micrograms per gram

ft = foot or feet

Source: Master Environmental Plan (Biang, et al., 1992).

TABLE 2-2
1984 POST-EXCAVATION CONFIRMATION SAMPLE RESULTS
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

SAMPLE LOCATION	DEPTH (INCHES)	PCBs (ppm)
10 ft from building, 4 ft from concrete pad	2	20
16 ft from building, 4 ft from concrete pad	2	15
20 ft from building, 4 ft from concrete pad	2	20
10 ft from building, 4 ft from concrete pad	6	20

Notes:

PCB = polychlorinated biphenyl

ppm = parts per million, which is equivalent to micrograms per gram

ft = foot or feet

Source: Master Environmental Plan (Biang, et al., 1992).

**TABLE 4-1
ANALYTES IN SOIL: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA**

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	BORING	39B-93-01X	39B-93-01X	39B-93-01X	39B-93-01X	39B-93-02X
				DEPTH	0-0.5 FT	0-0.5 FT (DUP)	2-4 FT	6-10 FT	0-0.5 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC		500			20	10	< 10	< 10	20
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/g)									
BIS(2-ETHYLHEXYL)PHTHALATE		46	84		< 0.48	< 0.48	< 0.48	< 0.48	< 0.48
ORGANOCHLORINE PESTICIDES AND PCBs (ug/g)									
ENDOSULFAN II		0.2	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
CHLORDANE		0.49	0.29		< 0.068	< 0.068	< 0.068	< 0.068	< 0.068
DIELDRIN		0.03	-		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
ENDRIN		0.6	-		< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
P,P'-DDD		2	1.07		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
P,P'-DDE		1.9	1.07		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
P,P'-DDT		1.9	1.07		0.005	0.006	< 0.004	< 0.004	0.009
ENDOSULFAN I		0.2	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
PCB 1260		2	3.1		< 0.048	< 0.048	< 0.048	< 0.048	< 0.048
INORGANICS (ug/g)									
ALUMINUM	18000	78000	1700		7700	7900	10700	3390	7910
ARSENIC	19	23	33		18.3	14.7	12.5	34	19.3
BARIUM	54	5500	41		17.2	17.5	72.1	12.2	21.4
CALCIUM	810	-	-		884	809	1790	793	933
CHROMIUM	33	390	180		20.2	37.1	30	4.96	20.7
COBALT	4.7	500	50		5.86	6.43	5.98	< 2.5	6.53
COPPER	13.5	2900	34		12.2	13.2	10.5	< 2.84	10.9
IRON	18000	-	-		16600	16600	17800	5790	16900
LEAD	48	300	4		15	15	5.36	1.86	14
MAGNESIUM	550	-	-		4400	4460	5330	1090	4040
MANGANESE	380	390	1500		247	243	214	56.3	245
NICKEL	14.6	300	100		21.1	20.5	15.9	3.97	21.5
POTASSIUM	2400	-	-		511	562	4520	773	713
SODIUM	234	-	-		52.7	55.7	173	< 38.7	54.5
VANADIUM	32.3	400	10		13	13.7	23.2	5.8	13.2
ZINC	43.9	2500	640		35.2	35.9	30.7	17.8	35

Notes:

Table lists detected analytes only.

Background values updated by Ecology & Environment, August, 1994.

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-1, continued
ANALYTES IN SOIL: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	BORING DEPTH	39B-93-02X	39B-93-02X	39B-93-03X	39B-93-03X	39B-93-03X
					2-6 FT	8-10 FT	0-0.5 FT	2-4 FT	8-10 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC	500				< 10	< 10	60	< 10	20
SEMIVOLATILE ORGANIC COMPOUNDS (ug/g)									
BIS(2-ETHYLHEXYL)PHTHALATE	46	84			< 0.48	< 0.48	< 0.48	< 0.48	< 0.48
ORGANOCHLORINE PESTICIDES AND PCBs (ug/g)									
ENDOSULFAN II	0.2	-			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
CHLORDANE	0.49	0.29			< 0.068	< 0.068	0.136	< 0.068	< 0.068
DIELDRIN	0.03	-			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
ENDRIN	0.6	-			< 0.007	< 0.007	0.011	< 0.007	< 0.007
P,P'-DDD	2	1.07			< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
P,P'-DDE	1.9	1.07			< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
P,P'-DDT	1.9	1.07			< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
ENDOSULFAN I	0.2	-			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
PCB 1260	2	3.1			< 0.048	< 0.048	< 0.048	< 0.048	< 0.048
INORGANICS (ug/g)									
ALUMINUM	18000	78000	1700		3750	2850	4030	3280	3180
ARSENIC	19	23	33		7.04	5.19	6.58	4.79	5
BARIUM	54	5500	41		11.1	8.77	10.9	10.4	11.2
CALCIUM	810	-	-		726	794	696	734	756
CHROMIUM	33	390	180		5.28	3.68	7.39	4.07	4.18
COBALT	4.7	500	50		< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
COPPER	13.5	2900	34		< 2.84	< 2.84	5.37	< 2.84	< 2.84
IRON	18000	-	-		7110	5110	7880	5550	5750
LEAD	48	300	4		2.09	1.63	7.34	2.04	1.75
MAGNESIUM	550	-	-		1100	787	1540	948	997
MANGANESE	380	390	1500		60.8	40.4	89.8	56.1	77.5
NICKEL	14.6	300	100		< 2.74	< 2.74	6.66	3.6	3.95
POTASSIUM	2400	-	-		657	466	476	544	620
SODIUM	234	-	-		< 38.7	< 38.7	< 38.7	< 38.7	< 38.7
VANADIUM	32.3	400	10		6.08	4.74	6.76	6.04	5.29
ZINC	43.9	2500	640		10.7	7.74	24.4	12.4	10.6

Notes:

Table lists detected analytes only.

Background values updated by Ecology & Environment, August, 1994.

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-1, continued
ANALYTES IN SOIL: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	BORING DEPTH	39B-93-04X	39B-93-04X	39B-93-04X	39B-93-05X	39B-93-05X
					0-0.5 FT	2-4 FT	8-10 FT	0-0.5 FT	2-4 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC	500				< 10	< 10	< 10	< 10	< 10
SEMIVOLATILE ORGANIC COMPOUNDS (ug/g)									
BIS(2-ETHYLHEXYL)PHTHALATE	46	84			< 0.48	< 0.48	< 0.48	< 0.48	< 0.48
ORGANOCHLORINE PESTICIDES AND PCBS (ug/g)									
ENDOSULFAN II	0.2	-			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
CHLORDANE	0.49	0.29			< 0.068	< 0.068	< 0.068	< 0.068	< 0.068
DIELDRIN	0.03	-			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
ENDRIN	0.6	-			< 0.007	0.007	< 0.007	< 0.007	< 0.007
P,P'-DDD	2	1.07			< 0.003	0.008	< 0.003	0.074	< 0.003
P,P'-DDE	1.9	1.07			< 0.003	0.005	< 0.003	0.081	< 0.003
P,P'-DDT	1.9	1.07			< 0.004	0.21	< 0.004	0.3	< 0.004
ENDOSULFAN I	0.2	-			< 0.001	< 0.001	< 0.001	0.003	< 0.001
PCB 1260	2	3.1			< 0.048	< 0.048	< 0.048	< 0.048	< 0.048
INORGANICS (ug/g)									
ALUMINUM	18000	78000	1700		5620	4450	4210	5360	3590
ARSENIC	19	23	33		11.9	4.39	< 2.5	5.02	6.37
BARIUM	54	5500	41		12.3	11	13	12	9.36
CALCIUM	810	-	-		798	811	1030	367	472
CHROMIUM	33	390	180		10.6	4.37	6.54	4.59	4.86
COBALT	4.7	500	50		3.34	< 2.5	< 2.5	< 2.5	< 2.5
COPPER	13.5	2900	34		6.78	< 2.84	< 2.84	< 2.84	3.73
IRON	18000	-	-		9850	5390	5750	6360	5770
LEAD	48	300	4		9.49	3.17	2.27	8.06	2.4
MAGNESIUM	550	-	-		2290	762	1270	682	953
MANGANESE	380	390	1500		123	90.2	59.2	105	51.4
NICKEL	14.6	300	100		10.4	< 2.74	< 2.74	3.23	3.61
POTASSIUM	2400	-	-		568	357	748	270	433
SODIUM	234	-	-		< 38.7	< 38.7	< 38.7	< 38.7	< 38.7
VANADIUM	32.3	400	10		9.59	5.35	6.72	5.95	5.68
ZINC	43.9	2500	640		24.5	47.2	10.8	12.4	9.31

Notes:

Table lists detected analytes only.

Background values updated by Ecology & Environment, August, 1994.

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-1, continued
ANALYTES IN SOIL: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	BORING DEPTH	39B-93-05X	39B-93-06X	39B-93-06X	39B-93-06X	39B-93-07X
					12-14 FT	0-0.5 FT	2-4 FT	8-10 FT	0-0.5 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC		500			< 10	190	420	96	< 90
SEMIVOLATILE ORGANIC COMPOUNDS (ug/g)									
BIS(2-ETHYLHEXYL)PHTHALATE		46	84		< 0.48	< 0.48	< 0.48	< 0.48	< 0.48
ORGANOCHLORINE PESTICIDES AND PCBS (ug/g)									
ENDOSULFAN II		0.2	-		< 0.001	< 0.001	0.002	< 0.001	< 0.001
CHLORDANE		0.49	0.29		< 0.068	< 0.068	< 0.068	< 0.068	< 0.068
DIELDRIN		0.03	-		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
ENDRIN		0.6	-		< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
P,P'-DDD		2	1.07		< 0.003	0.006	0.014	< 0.003	< 0.003
P,P'-DDE		1.9	1.07		< 0.003	< 0.003	0.007	< 0.003	< 0.003
P,P'-DDT		1.9	1.07		< 0.004	0.029	0.069	0.009	< 0.004
ENDOSULFAN I		0.2	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
PCB 1260		2	3.1		< 0.048	0.112	0.414	< 0.048	< 0.048
INORGANICS (ug/g)									
ALUMINUM	18000	78000	1700		5270	4220	3950	2600	11400
ARSENIC	19	23	33		4.73	5.43	5.62	4.99	22.3
BARIUM	54	5500	41		16.3	10.1	11.1	8.36	22.3
CALCIUM	810	-	-		539	616	668	579	1970
CHROMIUM	33	390	180		16.5	5.48	5.42	4.42	29.5
COBALT	4.7	500	50		< 2.5	< 2.5	< 2.5	< 2.5	8.71
COPPER	13.5	2900	34		4.47	4.71	4.3	< 2.84	18.4
IRON	18000	-	-		9080	6680	6160	5060	23000
LEAD	48	300	4		2.36	9.24	8.75	3.47	8.25
MAGNESIUM	550	-	-		2840	1040	955	827	6740
MANGANESE	380	390	1500		96.3	66.5	70.9	45.7	301
NICKEL	14.6	300	100		8.17	4.39	4.46	3.06	35.2
POTASSIUM	2400	-	-		1120	483	445	433	979
SODIUM	234	-	-		< 38.7	< 38.7	< 38.7	< 38.7	83.9
VANADIUM	32.3	400	10		9.67	7.01	5.72	4.77	17.9
ZINC	43.9	2500	640		17.8	23.9	22.8	11.8	40.7

Notes:

Table lists detected analytes only.

Background values updated by Ecology & Environment, August, 1994.

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-1, continued
ANALYTES IN SOIL: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	BORING DEPTH	39B-93-07X	39B-93-07X	39B-93-08X	39B-93-08X	39B-93-08X
					2-4 FT	12-14 FT	0-0.5 FT	2-4 FT	10-12 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC		500			< 90	< 90	2100	5500	140
SEMIVOLATILE ORGANIC COMPOUNDS (ug/g)									
BIS(2-ETHYLHEXYL)PHTHALATE		46	84		< 0.48	< 0.48	< 0.48	< 0.48	2.2
ORGANOCHLORINE PESTICIDES AND PCBs (ug/g)									
ENDOSULFAN II		0.2	-		< 0.001	< 0.001	0.009	< 0.001	< 0.001
CHLORDANE		0.49	0.29		< 0.068	< 0.068	< 0.068	< 0.068	< 0.068
DIELDRIN		0.03	-		< 0.002	< 0.002	0.004	< 0.002	< 0.002
ENDRIN		0.6	-		< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
P,P'-DDD		2	1.07		0.004	< 0.003	0.015	0.033	0.007
P,P'-DDE		1.9	1.07		0.004	< 0.003	0.008	0.024	< 0.003
P,P'-DDT		1.9	1.07		0.008	< 0.004	0.03	0.074	0.004
ENDOSULFAN I		0.2	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
PCB 1260		2	3.1		< 0.048	< 0.048	< 0.048	< 0.048	< 0.048
INORGANICS (ug/g)									
ALUMINUM	18000	78000	1700		4990	3130	6380	6930	3060
ARSENIC	19	23	33		5.39	5.32	4.95	3.51	4.17
BARIUM	54	5500	41		11.6	10.9	10.8	13.4	9.15
CALCIUM	810	-	-		841	802	376	256	564
CHROMIUM	33	390	180		8.3	6.37	5.47	5.66	4.97
COBALT	4.7	500	50		2.74	< 2.5	< 2.5	< 2.5	< 2.5
COPPER	13.5	2900	34		3.67	< 2.84	4.17	< 2.84	4.07
IRON	18000	-	-		7280	5770	7610	7400	5500
LEAD	48	300	4		2.72	2.44	8.51	3.64	2.51
MAGNESIUM	550	-	-		1660	1050	863	776	862
MANGANESE	380	390	1500		84.3	67.2	87.1	69.3	71
NICKEL	14.6	300	100		7.08	3.9	5.05	3.97	< 2.74
POTASSIUM	2400	-	-		555	569	269	348	410
SODIUM	234	-	-		< 38.7	< 38.7	< 38.7	< 38.7	< 38.7
VANADIUM	32.3	400	10		7.65	5.94	7.44	6.93	4.74
ZINC	43.9	2500	640		13	16.6	19.2	14.8	9.46

Notes:

Table lists detected analytes only.

Background values updated by Ecology & Environment, August, 1994.

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-2
POLYCHLORINATED BIPIHENYLS IN SURFACE SOIL:
SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTES	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE	39S-93-01X	39S-93-02X	39S-93-03X	39S-93-04X	39S-93-05X	39S-93-06X	39S-93-07X	39S-93-08X
			DEPTH	0-0.5 FT							
POLYCHLORINATED BIPIHENYLS (ug/g)											
AROCLOR 1260	2	3.1		0.498	0.201	0.052	3.3	4.8	5.8	1.55	0.077

Notes:

ug/g = micrograms per gram

Residential criterion listed is the Massachusetts Contingency Plan Method 1 S-1/GW-1 soil standard for polychlorinated biphenyls.

Ecological criterion listed is the surface soil Protective Contaminant Level for polychlorinated biphenyls (ABB-ES, 1993a).

Source: Arthur D. Little, 1995.

TABLE 4-3
POLYCHLORINATED BIPIHENYLS IN CONCRETE:
SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE	39C-93-01X	39C-93-02X	39C-93-02X	39C-93-03X
			DEPTH	0-0.1 FT	0-0.1 FT	0-0.1 FT (DUP)	0-0.1 FT
POLYCHLORINATED BIPIHENYLS (ug/g)							
PCB 1260	2	3.1		2.8	5.5	5.1	8.1

Notes:

ug/g = micrograms per gram

Residential criterion listed is the Massachusetts Contingency Plan Method 1 S-1/GW-1 soil standard for polychlorinated biphenyls.

Ecological criterion listed is the surface soil Protective Contaminant Level for polychlorinated biphenyls (ABB-ES, 1993a).

Source: Arthur D. Little, 1993.

**TABLE 4-4
ANALYTES IN SURFACE WATER:
SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA**

ANALYTE	AMBIENT WATER	SAMPLE	39W-93-01X	39W-93-02X	39W-93-03X
	QUALITY CRITERION	DEPTH	0-0.5 FT	0-0.5 FT	0-0.5 FT
METALS (ug/L)					
ALUMINUM	-		112	112	< 112
ARSENIC	48		< 2.35	< 2.35	3.04
BARIUM	-		7.23	7.77	< 2.82
CALCIUM	-		9120	9400	10400
IRON	1000		472	470	180
MAGNESIUM	-		1690	1780	1820
MANGANESE	-		27.2	32.4	20.2
NICKEL	40.4		< 32.1	35.1	< 32.1
POTASSIUM	-		1350	< 1240	< 1240
SODIUM	-		13600	14200	16100
ZINC	27.1		94.5	143	21.1
WATER QUALITY PARAMETERS (ug/L)					
ALKALINITY	20000		15000	16000	17000
NITRATE/NITRITE	-		< 10	27.9	< 10
TOTAL PHOSPHORUS	-		13	22.3	< 10
TOTAL NITROGEN	-		188	290	231
CHLORIDE	-		21000	22000	24000
SULFIDE	-		8400	8100	8400
HARDNESS	-		900	29000	29000

Notes:

Table lists detected analytes only.

< = less than detection limit shown

ug/L = micrograms per liter

Source: Arthur D. Little, 1995.

**TABLE 4-5
ANALYTES IN SEDIMENT: SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA**

ANALYTE	TOC-ADJUSTED NYSDEC SEDIMENT CRITERION	NOAA SEDIMENT CRITERION	ECOLOGICAL SURFACE SOIL CRITERION	FT. DEVENS SOIL BACKGROUND	SAMPLE	39D-93-01X	39D-93-02X	39D-93-03X
					DEPTH	0-0.5 FT	0-0.5 FT	0-0.5 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)								
TPHC	-	-	-			230	230	510
ORGANOCHLORINE PESTICIDES (ug/g)								
P,P'-DDE	37.5	0.002	1.07			< 0.003	0.178	< 0.003
P,P'-DDT	-	0.001	1.07			< 0.004	0.025	< 0.004
METALS (ug/g)								
ALUMINUM	-	-	1700	18000		9480	10800	8390
ARSENIC	5	33	33	19		< 2.5	< 2.5	35.8
BARIUM	-	-	41	54		48.5	73.5	59.8
CALCIUM	-	-	-	810		4520	8790	10500
CHROMIUM	26	80	180	33		13	15	14.4
IRON	-	-	-	18000		5530	3630	11000
LEAD	27	35	4	48		45.1	62	62.1
MAGNESIUM	-	-	-	5500		1240	948	1480
MANGANESE	428	-	1500	380		< 9.87	226	675
MERCURY	0.11	0.15	3.6	0.11		< 0.05	0.46	< 0.05
VANADIUM	-	-	10	32.3		14.5	13.7	24.9
ZINC	85	120	640	43.9		57.4	32.1	69.3

Notes:

Table lists detected analytes only.

Metals not adjusted for total organic carbon (TOC).

< = less than detection limit shown

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

TABLE 4-6
FIELD SCREENING RESULTS: SUPPLEMENTAL
SITE INVESTIGATION SOIL REMOVAL ACTION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

SAMPLE ID	DATE COLLECTED	PCBs (ppm)
39TP-01	09 Aug 94	< 0.5
39TP-02	09 Aug 94	< 0.5
39TP-03	09 Aug 94	0.5 - 1.0
39TP-04	09 Aug 94	0.5 - 1.0
39TP-05	09 Aug 94	< 0.5
39TP-06	09 Aug 94	< 0.5
39TP-07	09 Aug 94	< 0.5
39TP-08	09 Aug 94	< 0.5
39TP-09	09 Aug 94	< 0.5
39TP-10	09 Aug 94	0.5 - 1.0
39TP-11	09 Aug 94	0.5 - 1.0
39TP-12	09 Aug 94	0.5 - 1.0
39TP-13	09 Aug 94	0.5 - 1.0

NOTES:

PCB = polychlorinated biphenyl

ppm = parts per million, which is equivalent to micrograms per gram

Aroclor 1260 was the only PCB detected.

Source: Arthur D. Little, Inc., 1995

TABLE 4-7
CONFIRMATION SAMPLE RESULTS: SUPPLEMENTAL
SITE INVESTIGATION SOIL REMOVAL ACTION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE	39E-94-01X	39E-94-01X	39E-94-02X	39E-94-03X	39E-94-04X	39E-94-05X
			DEPTH	1-3 FT	1-3 FT (DUP)	0-0.5 FT	0-0.5 FT	0-0.5 FT	0-0.5 FT
POLYCHLORINATED BIPHENYLS (ug/g)									
AROCLOR 1260	2	3.1		2.5	1.83	< 0.0479	0.221	5.3	4.6

Notes:

ft = foot or feet

< = Less than detection limit shown.

ug/g = micrograms per gram

DUP = duplicate sample

Source: Arthur D. Little, 1995.

TABLE 4-8
SOIL FIELD SCREENING RESULTS: SUPPLEMENTAL
SITE INVESTIGATION GEOPROBE BORINGS
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE DEPTH	39G-01U	39G-01M	39G-01L	39G-02U	39G-02M
				0-2 FT	4-6 FT	10-12 FT	0-2 FT	4-6 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)	500	-		22.7	10.9	7.90	1900	3900

NOTES:

ppm = parts per million, which is equivalent to micrograms per gram

ft = foot or feet

Source: Arthur D. Little, Inc., 1995.

TABLE 4-8
SOIL FIELD SCREENING RESULTS: SUPPLEMENTAL
SITE INVESTIGATION GEOPROBE BORINGS
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE	39G-02L	39G-03U	39G-03M	39G-03L	39G-04U
			DEPTH	10-12 FT	0-2 FT	4-6 FT	10-12 FT	0-2 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)	500	-		125.8	17.8	10	11	93.3

NOTES:

ppm = parts per million, which is equivalent to micrograms per gram

ft = foot or feet

Source: Arthur D. Little, Inc., 1995.

TABLE 4-8
SOIL FIELD SCREENING RESULTS: SUPPLEMENTAL
SITE INVESTIGATION GEOPROBE BORINGS
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL	ECOLOGICAL	SAMPLE DEPTH	39G-04M	39G-04L	39G-05U	39G-05M	39G-05L
	CRITERION	CRITERION		4-6 FT	10-12 FT	0-2 FT	4-6 FT	10-12 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)	500	-		0.00	0.00	3.80	2.30	0.78

NOTES:

ppm = parts per million, which is equivalent to micrograms per gram

ft = foot or feet

Source: Arthur D. Little, Inc., 1995.

**TABLE 4-9
 ANALYTES IN SOIL: SUPPLEMENTAL
 SITE INVESTIGATION GEOPROBE BORINGS
 SA 39 SYLVANIA BUILDING SITE
 NO FURTHER ACTION DECISION DOCUMENT
 FORT DEVENS, MA**

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE	39G-94-01X	39G-94-01X	39G-94-02X
			DEPTH	0-2 FT	4-6 FT	4-6 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)	500	-		3400	4800	< 10

Notes:

ft = foot or feet

< = Less than detection limit shown.

ug/g = micrograms per gram

Source: Arthur D. Little, 1995.

**TABLE 4-10
 ANALYTES IN GROUNDWATER: SUPPLEMENTAL
 SITE INVESTIGATION GEOPROBE BORINGS
 SA 39 SYLVANIA BUILDING SITE
 NO FURTHER ACTION DECISION DOCUMENT
 FORT DEVENS, MA**

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	SITE ID	39G-01W	39G-02W	39G-02WD	39G-03W	39G-04W
VOLATILE ORGANIC COMPOUNDS (ug/L)								
1,2,4-TRIMETHYLBENZENE		3		< 1	< 1	< 1	< 1	< 1
INORGANICS (ug/L)								
ALUMINUM	6870	37000		8700	16000	32000	68000	< 100
ARSENIC	10.5	11		10	18	34	64	23
BARIUM	39.6	2000		40	70	130	190	40
CADMIUM	4.01	5		< 5	< 5	< 5	7	< 5
CALCIUM	14700	-		4100	5100	7300	18000	3900
CHROMIUM	14.7	100		20	20	50	80	20
COBALT	25	2200		< 20	< 20	30	30	< 20
COPPER	8.09	1300		10	< 12	30	60	10
IRON	9100	-		3600	12000	31000	61000	13000
MAGNESIUM	3480	-		1100	2300	5900	12000	2400
MANGANESE	291	180		100	270	510	720	170
NICKEL	34.3	100		< 25	< 25	< 25	81	< 25
POTASSIUM	2370	-		< 2300	< 2300	5600	9000	2500
SODIUM	10800	20000		2200	1900	3300	4400	1800
VANADIUM	11	50		< 10	20	40	70	10
ZINC	2	2000		30	50	110	130	30

Notes:

Table lists detected analytes only.
 < = less than detection limit shown
 ug/L = micrograms per liter

Source: Arthur D. Little, Inc., 1995.

TABLE 4-10, continued
ANALYTES IN GROUNDWATER: SUPPLEMENTAL
SITE INVESTIGATION GEOPROBE BORINGS
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	BACK- GROUND	RESIDENTIAL CRITERION	SITE ID	39G-05W	39G-06W	39G-07W	39G-08W
VOLATILE ORGANIC COMPOUNDS (ug/L)							
1,2,4-TRIMETHYLBENZENE		3		< 1	4.9	< 1	< 1
INORGANICS (ug/L)							
ALUMINUM	6870	37000		15000	27000	15000	13000
ARSENIC	10.5	11		23	42	< 5	13
BARIUM	39.6	2000		90	90	80	80
CADMIUM	4.01	5		< 5	< 5	< 5	< 5
CALCIUM	14700	-		6800	22000	5600	8100
CHROMIUM	14.7	100		30	40	30	30
COBALT	25	2200		20	< 20	< 20	< 20
COPPER	8.09	1300		20	30	10	10
IRON	9100	-		21000	31000	15000	16000
MAGNESIUM	3480	-		4300	8700	3800	3600
MANGANESE	291	180		310	720	420	450
NICKEL	34.3	100		31	40	< 25	27
POTASSIUM	2370	-		4400	5300	< 2300	3700
SODIUM	10800	20000		2500	3100	2400	< 500
VANADIUM	11	50		20	300	< 10	20
ZINC	2	2000		240	80	< 10	70

Notes:

Table lists detected analytes only.
 < = less than detection limit shown
 ug/L = micrograms per liter

Source: Arthur D. Little, Inc., 1995.

TABLE 4-11
FIELD SCREENING RESULTS: 1995 TPH SOIL REMOVAL ACTION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

SAMPLE ID	DATE COLLECTED	SAMPLE LOCATION	SAMPLE DEPTH (ft)	TPH (mg/kg)
SBSA39W1	01-Aug-95	East sidewall	5.5	<42
SBSA39W2	01-Aug-95	East sidewall	5.0	<42
SBSA39W3	01-Aug-95	South sidewall	3.9	<42
SBSA39W4	01-Aug-95	South sidewall	5.1	6 J
SBSA39W5	01-Aug-95	West sidewall	4.8	<42
SBSA39W6	01-Aug-95	West sidewall	4.7	7 J
SBSA39W7	01-Aug-95	North sidewall	4.8	<42
SBSA39W8	01-Aug-95	North sidewall	5.4	<42
SBSA39B1	01-Aug-95	Northwest bottom	6.9	<42
SBSA39B2	01-Aug-95	Northeast bottom	6.8	<42
SBSA39B3	01-Aug-95	Southeast bottom	7.0	<42
SBSA39B4	01-Aug-95	Southwest bottom	6.9	7 J

NOTES:

TPH = total petroleum hydrocarbons

mg/kg = milligrams per kilogram, which is equivalent to micrograms per gram.

< = TPH was not detected above the method detection limit shown.

J = detected concentration was below the practical quantitation limit.

ft = feet

SOURCE: OHM Remediation Services Corp., 1996

TABLE 4-12
CONFIRMATION SAMPLE RESULTS:
1995 TPH SOIL REMOVAL ACTION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

SAMPLE ID	DATE COLLECTED	SAMPLE LOCATION	SAMPLE DEPTH (ft)	TPH (mg/kg)
SBSA39NC	02-Aug-95	North sidewall	4.5-4.8	<15
SBSA39EC	02-Aug-95	East sidewall	4.5-5.2	<16
SBSA39WC	02-Aug-95	West sidewall	3.9-5.5	<16
SBSA39DUP	02-Aug-95	West sidewall	3.9-5.5	<16
SBSA39SC	02-Aug-95	South sidewall	4.0-4.9	<16
SBSA39BC	02-Aug-95	Bottom	6.4-6.7	<16

NOTES:

TPH = total petroleum hydrocarbons

mg/kg = milligrams per kilogram, which is equivalent to micrograms per gram.

< = TPH was not detected above the method detection limit shown.

ft = feet

SOURCE: OHM Remediation Services Corp., 1996

**TABLE 4-13
CONFIRMATION SAMPLE RESULTS:
1995 PCB SOIL REMOVAL ACTION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA**

SAMPLE ID	DATE COLLECTED	SAMPLE LOCATION	SAMPLE DEPTH (ft)	PCBs (mg/kg)
SBSA39BCA	25-Aug-95	Bottom	2.0	0.84
SBSA39DUPA	25-Aug-95	Bottom	2.0	0.92
SBSA39SEC	25-Aug-95	East sidewall	1.0 - 2.0	0.96
SBSA39NCA	25-Aug-95	North sidewall	1.0 - 2.0	<0.04
SBSA39L1C	25-Aug-95	Stockpiled soil - 1 foot layer	N/A	2.0
SBSA39L2C	25-Aug-95	Stockpiled soil - 2 foot layer	N/A	1.4

NOTES:

PCBs = polychlorinated biphenyls

mg/kg = milligrams per kilogram, which is equivalent to micrograms per gram

ft = foot or feet

N/A = not applicable

< = PCBs were not detected above the method detection limit

SOURCE: OHM Remediation Services Corp., 1996



CLOSURE REPORT
SA 39
FORT DEVENS, MASSACHUSETTS

Prepared for:

U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts
Contract Number DACW45-89-D-0506

Prepared by:

OHM Remediation Services Corp.
Hopkinton, Massachusetts


Kevin J. Mack
Project Manager

May 3, 1996
Project 16208

TABLE OF CONTENTS

Section	Title	Page No.
<hr/>		
EXECUTIVE SUMMARY	E-1
1.0 INTRODUCTION	1-1
1.1 Site History and Background	1-1
1.2 Site Conditions	1-1
1.3 Previous Investigation Activities	1-3
2.0 CONTAMINATED SOIL REMOVAL	2-1
2.1 Site Preparation Activities	2-1
2.2 Excavation and Soil Screening Activities	2-1
2.3 Confirmation Sample Results	2-2
2.4 Backfilling and Site Restoration	2-6
2.5 Waste Characterization & Disposal	2-6
2.6 Quality Assurance/Quality Control	2-7
2.6.1 Sample Collection Quality Control	2-7
2.6.2 Laboratory Quality Control	2-7
3.0 CONCLUSIONS	3-1

LIST OF TABLES

Table	Title	Page No.
<hr/>		
2-1	Soil Sample Screening Results	2-2
2-2	TPH Confirmation Soil Sample Results	2-4
2-3	PCB Confirmation Soil Sample Results	2-6

LIST OF FIGURES

Figures	Title	Page No.
<hr/>		
1-1	Site Location Map	1-2
1-2	Site Plan	1-4
2-1	TPH Confirmation Soil Sample Location Map	2-3
2-2	PCB Confirmation Soil Sample Location Map	2-5

TABLE OF CONTENTS

(continuation)

LIST OF APPENDICES

Appendices

Title

A	On-site Laboratory Soil Screening Data
B	AENI Analytical Reports - Confirmation Soil Samples
C	AENI Analytical Reports - Waste Characterization Soil Samples
D	Material Shipping Records
E	Chemical Quality Assurance Report
F	Site Photographs

LIST OF ACRONYMS AND ABBREVIATIONS

ADL	Arthur D. Little
AENI	American Environmental Network, Inc.
BTEX	Benzene, Toluene, Ethylbenzene, Xylene(s)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CQAR	Chemical Quality Assurance Report
CY	Cubic Yards
DEH	Directorate of Engineering and Housing
DEHP	Bis(2-ethylhexyl) phthalate
GPR	Ground-Penetrating Radar
IR	Infrared Spectroscopy
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MEP	Master Environmental Plan
MSR	Material Shipping Record
NED	US Army Corps of Engineers New England Division
NPL	National Priority List
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
SA	Study Area
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SSI	Supplemental Site Investigation



LIST OF ACRONYMS AND ABBREVIATIONS

TPH	Total Petroleum Hydrocarbons
USAEC	U.S. Army Environmental Center
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

Fort Devens was placed on the National Priority List (NPL) on December 21, 1989, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, Superfund Act) as amended by the Superfund Amendments and Reauthorization Act (SARA). Subsequently, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. In accordance with these acts, several studies have been conducted that address Study Area (SA) 39, which was identified in the Federal Facilities Agreement between the U.S. Environmental Protection Agency and the U.S. Department of Defense as a potential site of contamination. The information gathered through these studies indicated petroleum and PCB contamination in the subsurface soils. This closure report documents the historical information and investigation results leading to the recommendation to remove soil, and the remedial actions taken at SA 39.

SA 39 is located south of Route 2 within the current boundaries of Oxbow National Wildlife Refuge in Harvard, Massachusetts. This area was part of the Fort Devens South Post until 1973. Two buildings were formerly located on the property. In 1984, a PCB spill from an overturned transformer occurred near former Building 4250. Contaminated soil containing PCBs at concentrations above 50 mg/kg was excavated and removed in December 1984. Eight 85-gallon drums of contaminated soil and the transformer were reportedly removed and taken to the Hazardous Waste Storage Area (SA 22). Subsequent investigations of SA 39 indicated that residual PCB contamination was still present in the vicinity of the former spill area and that elevated concentrations of total petroleum hydrocarbons (TPH) were present on the southeast side of the former Building 4250 foundation. The TPH contamination is thought to be related to underground storage tanks that were believed to have been formerly located in this area.

The New England Division (NED) of the United States Army Corps of Engineers (USACE) contracted OHM Remediation Services Corporation (OHM) to remove the petroleum- and PCB-contaminated soils from SA 39. OHM removed 101 tons (approximately 67 cubic yards (cy)) of petroleum-contaminated soil and 24.9 tons (approximately 16.5 cy) of PCB-contaminated soil. Confirmation soil samples were collected from both excavation areas. Samples collected from the petroleum-contaminated area were analyzed for TPH to ensure that the cleanup goal of 500 mg/kg had been met. Likewise, samples collected from the PCB spill excavation area were analyzed for PCBs to document that the 2 mg/kg cleanup level had been attained. Stockpiled soils from both excavations were characterized for disposal and transported to a temporary storage facility on Post for eventual use as cover material in the Consolidation Landfill proposed for construction at Fort Devens. Based on the results of the confirmation samples and the activities described herein, no further action is recommended at this site.

SECTION 1.0

INTRODUCTION

Fort Devens was placed on the National Priority List (NPL) on December 21, 1989, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA; Superfund) as amended by the Superfund Amendments and Reauthorization Act (SARA). Subsequently, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. This closure report has been prepared as part of the U.S. Department of Defense Base Realignment and Closure program to assess the nature and extent of contamination associated with site operations at Fort Devens. This report contains a summary of activities conducted under CERCLA at Study Area (SA) 39.

In conjunction with the Army's Installation Restoration Program, Fort Devens and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic and Hazardous Materials Agency) developed a Master Environmental Plan (MEP) in 1988. The MEP consisted of assessments of the environmental status of SAs, specified necessary investigations, and provided recommendations for response actions with the objective of identifying priorities for environmental restoration at Fort Devens. The New England Division of the U.S. Army Corps of Engineers (NED) was tasked with removal efforts at the base. This closure report documents the historical findings leading to the response action recommendation and describes the measures taken at SA 39.

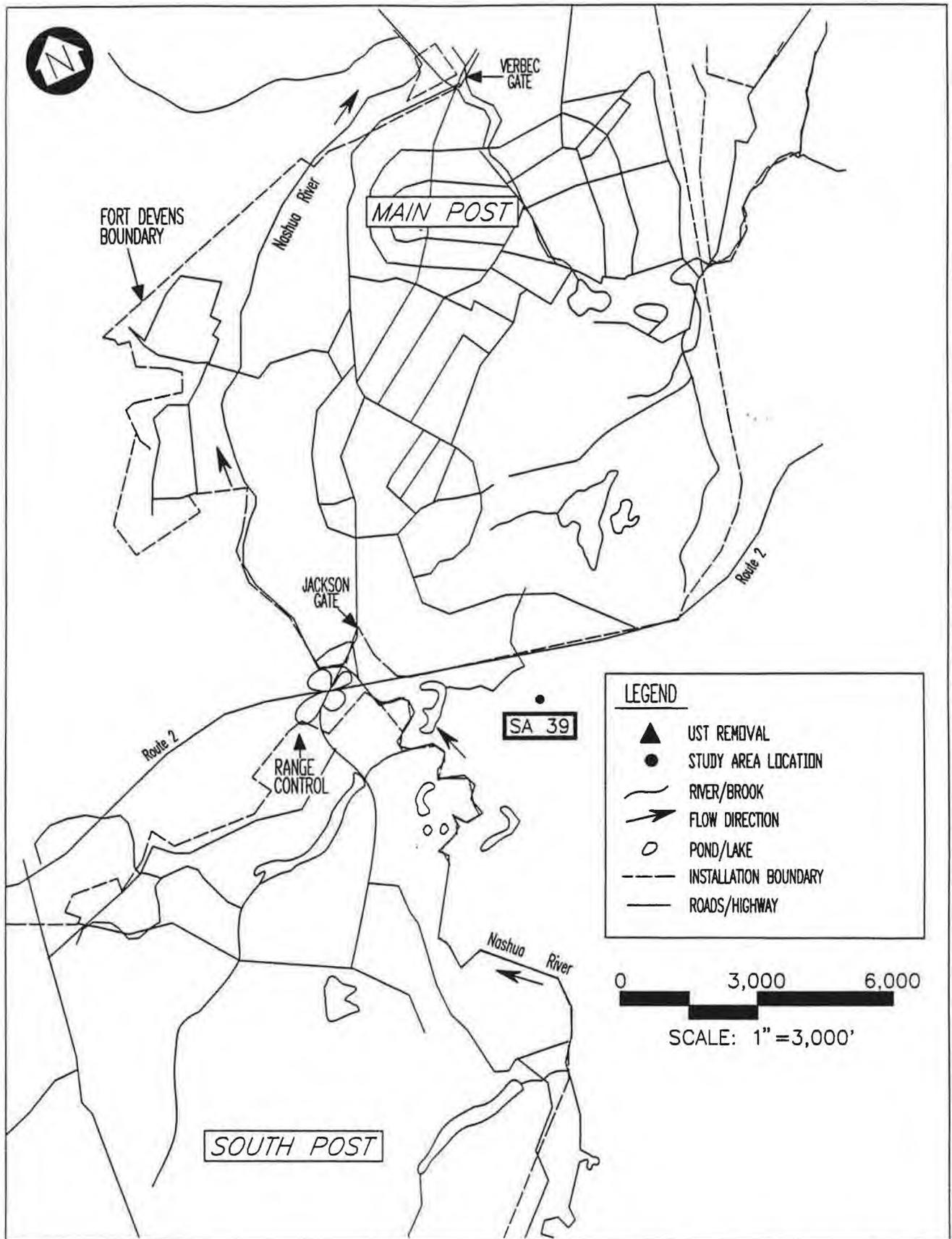
1.1 Site History and Background

SA 39, also known as the Sylvania Site, is located south of Route 2 within the current boundaries of Oxbow National Wildlife Refuge in Harvard, Massachusetts. This area was part of the Fort Devens South Post until 1973 (Figure 1-1). The site is surrounded by wetlands. At least one of the former buildings on the site (Building 4250) was leased by Sylvania from the mid 1950s until the early 1960s. During this time, Sylvania was reportedly under contract with the Army to test laser sighting systems on Army tanks, and possibly tank communication systems. Historical records indicate that there were at least two buildings located on the property (Buildings 4249 and 4250) which were demolished in December 1985. After Sylvania stopped leasing the property, the site was reportedly used by the Army Reserves. One building was used for administrative purposes and the other was used for tank maintenance however, it is unclear as to which building was used for which purpose. It is believed that there were two septic leach fields and at least three 1000-gallon underground storage tanks (USTs) for fuel oil located within SA 39.

In 1984, a PCB spill from an overturned transformer occurred near former Building 4250. The spill affected a 288 square foot area adjacent to the transformer. Contaminated soil containing PCBs at concentrations above 50 mg/kg was excavated and removed in December 1984. Reportedly, eight 85-gallon drums of contaminated soil and the transformer were removed and taken to the Hazardous Waste Storage Area (SA 22). Confirmation samples were collected and the PCB concentrations of these samples ranged from 15 to 20 mg/kg. A PCB Spill Report was filed by the Directorate of Engineering and Housing (DEH) in January 1985.

1.2 Site Conditions

Soil underlying the site consists of poorly sorted yellowish-brown sands with varying amounts of silt and gravel. The depths to groundwater at the eight locations within SA 39 in which soil borings were completed ranged from 4.5 to 12.5 feet. The site is surrounded by wetlands therefore, groundwater from SA 39 most likely discharges into these wetland areas.



DEPARTMENT OF THE ARMY
 NEW ENGLAND DIVISION
 CORPS OF ENGINEERS
 WALTHAM, MASS

FORT DEVENS, MASSACHUSETTS
 CONTAMINATED SOIL REMOVAL, VARIOUS SITES
 COMPREHENSIVE
 SITE LOCATION MAP

FIGURE
 1-1

E-1112-001-01A

1.3 Previous Investigation Activities

Arthur D. Little (ADL) conducted a Site Investigation (SI) and a Supplemental Site Investigation (SSI) of the area in 1993 and 1994, respectively to verify that all of the PCB contamination had been adequately removed and to evaluate potential contamination associated with leach fields and USTs. As part of the SI, a magnetic survey and a ground penetrating radar (GPR) survey were conducted over an 8-acre portion of SA 39 in an attempt to find the potential location and presence of suspected USTs and leach fields. Several anomalies were identified, primarily near the two building foundations. Exploratory borings were completed at the eight locations thought to most likely represent UST and leach field locations. The eight locations chosen were based on historical site information, geophysical anomalies, and observed site conditions. No physical evidence of leach fields or underground storage tanks were found during the boring installations, although a large mass of buried wire was encountered at a depth of approximately 2 feet at 39B-93-04X, and loosely compacted soil was observed from 0 to 9 feet at 39B-93-06X which ADL suspected may have been the location of a former UST.

As part of the SI of SA 39, ADL collected 24 soil boring samples from eight locations around the two foundations, eight surface soil samples near the Building 4250 foundation, three concrete chip samples from the surface of a former concrete transformer pad located adjacent to the Building 4250 foundation, and three surface water/sediment samples. The soil boring samples were collected at depths of 0 to 0.5 feet, 2 to 4 feet, and from the depth at which water was first encountered at each of the eight locations. The soil boring and surface water/sediment samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), PCB/pesticides, total petroleum hydrocarbons (TPH), explosives, and metals. The eight surface soil and concrete chip samples were analyzed for PCBs only.

TPH levels were elevated in samples collected from one boring location (39B-93-08X) on the southeast side of the Building 4250 foundation. The TPH concentration of the 0 to 0.5 foot sample at this location was 2100 mg/kg and the 2 to 4 foot sample concentration was 5500 mg/kg. The concentration of the deepest sample (10 to 12 feet) was considerably lower (140 mg/kg).

PCBs were detected in the eight surface soil samples at concentrations ranging from 0.05 to 5.8 mg/kg. The concrete chip PCB concentrations ranged from 2.8 to 8.1 mg/kg.

No organic compounds were detected in the surface water samples. TPH was detected in the sediment samples at concentrations ranging from 230 to 510 mg/kg. According to ADL, these concentrations were within the range of concentrations detected in Nashua River sediment samples.

Additional soil samples were collected from the former PCB spill area during the SSI. An area containing elevated PCB levels was identified on the north and south sides of the area in which a concrete pad was removed (Figure 1-2). PCB concentrations in this area ranged from 2.5 to 5.3 mg/kg. Based on these investigations, it was proposed that remedial actions be undertaken on the southeast side of the former Building 4250 foundation to remove the petroleum-contaminated soil and on the northeast side of this same foundation to remove the PCB-contaminated soil.

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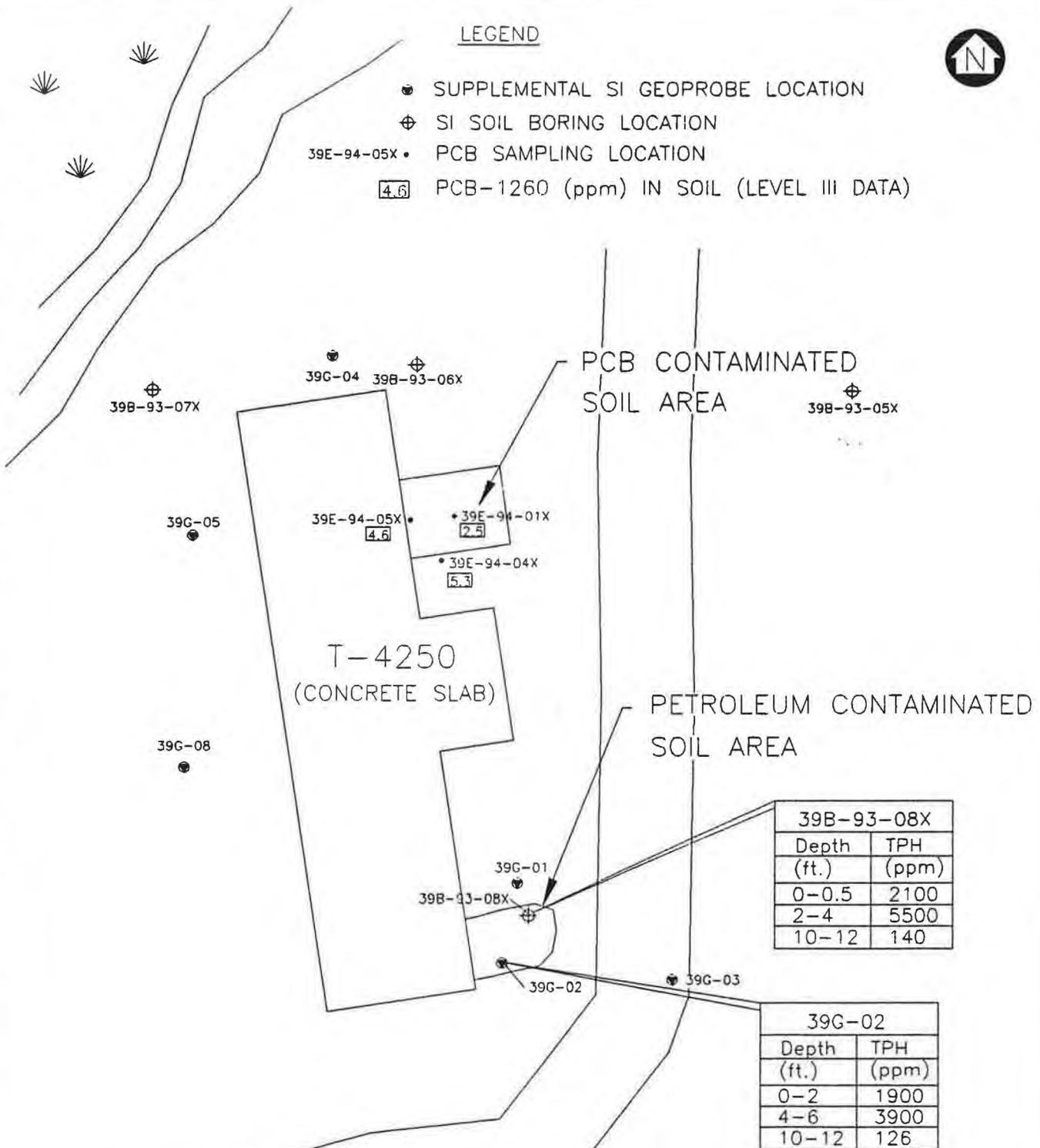
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OHM CORPORATION HOPKINTON, MA

PLOT SCALE: 1"

LEGEND

- SUPPLEMENTAL SI GEOPROBE LOCATION
- ⊕ SI SOIL BORING LOCATION
- 39E-94-05X • PCB SAMPLING LOCATION
- 4.6 PCB-1260 (ppm) IN SOIL (LEVEL III DATA)



39B-93-08X	
Depth (ft.)	TPH (ppm)
0-0.5	2100
2-4	5500
10-12	140

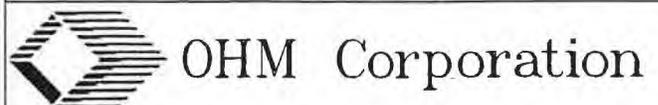
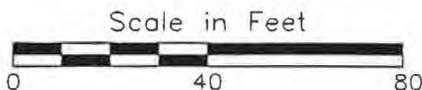
39G-02	
Depth (ft.)	TPH (ppm)
0-2	1900
4-6	3900
10-12	126

FIGURE 1-2

SA 39 - SYLVANIA SITE
FORT DEVENS
AYER, MASSACHUSETTS

PREPARED FOR

NEW ENGLAND DIVISION - USACE
WALTHAM, MA



SECTION 2.0

CONTAMINATED SOIL REMOVAL

OHM was contracted by the USACE NED to excavate the petroleum-contaminated soil located on the southeast side of the former Building 4250 floor slab, coordinate disposal of the excavated material and restore the site by backfilling. In addition, OHM was contracted to excavate PCB-contaminated soil from the northeast side of the former Building 4250 foundation.

2.1 Site Preparation Activities

Pre-excavation activities were conducted at SA 39 to ensure that contaminants would be contained at the site and to prevent the general population from coming into contact with contaminants exposed through excavation activities. An exclusion zone was demarcated using orange fencing, and staging cells were constructed for temporary storage of contaminated soils. Sand berms were constructed at the perimeter of the staging cells and the cells were double lined with polyethylene sheeting.

2.2 Excavation and Soil Screening Activities

Excavation of the petroleum-contaminated soil began on August 1, 1995. After the initial excavation of a 20 X 20 X 6 foot deep area, 12 (8 wall and 4 bottom) screening samples were collected to determine if the residual petroleum contamination had been removed. All samples were screened on site for TPH to assess attainment of the 500 mg/kg cleanup goal. The TPH concentrations of these samples ranged from non-detect to 7 mg/kg. A summary of soil sample screening results is presented in Table 2-1 and on-site laboratory data are provided in Appendix A. After screening sample data indicated that the cleanup goal had been attained, additional samples were collected for off site confirmation analysis. Confirmation sample collection procedures and analytical results are discussed in Section 2.3.

OHM removed 101 tons (an estimated 67 cubic yards (cy)) of soil from the area identified by ADL to be contaminated with petroleum. The excavated soil was staged at the temporary storage area until the waste characterization data were received (refer to Section 2.5).

Excavation of the PCB-contaminated soil began on August 25, 1995. Two feet of soil were removed from the designated excavation area. In accordance with NED's request, the first foot of excavated soil was segregated from the second foot of excavated soil within the stockpile staging area. Upon the removal of two feet of soil from the entire excavation area, OHM was instructed to collect confirmation soil samples for PCB analysis without any prior collection of screening samples (refer to Section 2.3).

A total of 24.9 tons (an estimated 16.5 cy) of PCB-contaminated soil was removed. The excavated soil was staged in two separate piles at the temporary storage area until the waste characterization data was obtained. Waste characterization and disposal information is discussed in Section 2.5.

Table 2-1
Soil Sample Screening Results
Closure Report - SA 39

Sample ID	Sample Location	Sample Date	Sample Depth (ft)	TPH Result (mg/kg)
SBSA39W1	east sidewall	01-Aug-95	5.5	ND (42)
SBSA39W2	east sidewall	01-Aug-95	5.0	ND (42)
SBSA39W3	south sidewall	01-Aug-95	3.9	ND (42)
SBSA39W4	south sidewall	01-Aug-95	5.1	6 J
SBSA39W5	west sidewall	01-Aug-95	4.8	ND (42)
SBSA39W6	west sidewall	01-Aug-95	4.7	7 J
SBSA39W7	north sidewall	01-Aug-95	4.8	ND (42)
SBSA39W8	north sidewall	01-Aug-95	5.4	ND (42)
SBSA39B1	northwest bottom	01-Aug-95	6.9	ND (42)
SBSA39B2	northeast bottom	01-Aug-95	6.8	ND (42)
SBSA39B3	southeast bottom	01-Aug-95	7.0	ND (42)
SBSA39B4	southwest bottom	01-Aug-95	6.9	7 J

NOTES: TPH = total petroleum hydrocarbons by Infrared spectrometry
 mg/kg = milligram per kilogram
 ND () = indicates TPH was not detected at specified practical quantitation limit (PQL)
 J = Qualifier indicating estimated concentration below the practical quantitation limit

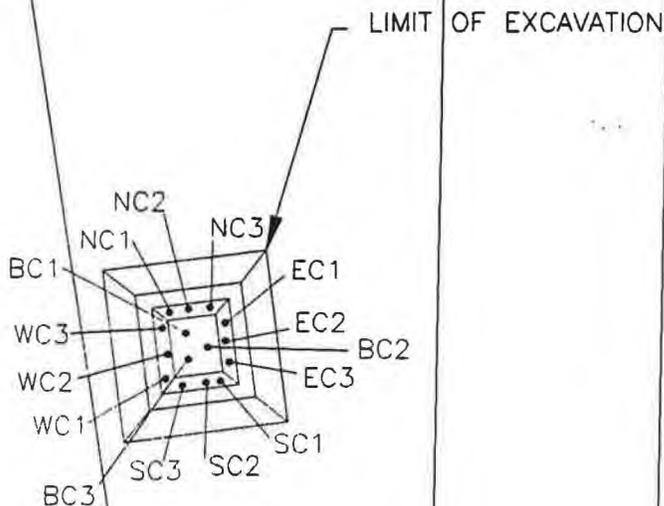
2.3 Confirmation Sample Results

Confirmation composite samples were collected from the bottom and sidewalls of the petroleum-contaminated soil excavation on August 2, 1995. The samples were shipped to American Environmental Network, Inc. (AENI) laboratory located in Columbia, Maryland for TPH analysis by EPA Method 418.1 and BNA analysis by Method 8270. Figure 2-1 provides the sample locations making up the confirmation composite samples. The composite sample from the west sidewall of the excavation was collected in triplicate. Two of the split samples (primary and duplicate) were sent to AENI laboratory and the third split was submitted to the USACE QA laboratory in Hubbardston, Massachusetts.

The results of the TPH confirmation sample analysis are summarized in Table 2-2 and the AENI laboratory analytical report is presented in Appendix B. TPH was not detected in any of the samples. Bis(2-ethylhexyl)phthalate (DEHP), which is a common laboratory and field contaminant associated with the use of plastic materials, was the only BNA compound detected. DEHP was detected in all of the samples collected at concentrations ranging from 0.29 to 1.1 mg/kg.



T-4250 (CONCRETE SLAB)



DRAWING NUMBER

APPROVED BY

CHECKED BY

DRAWN
K. MACK 05-02-96

OHM CORPORATION
HOPKINTON, MA

PLOT SCALE: 1" = 1'

DISCRETE SAMPLE IDENTIFICATION	COMPOSITE SAMPLE IDENTIFICATION
SBSA39NC1 SBSA39NC2 SBSA39NC3	SBSA39NC
SBSA39EC1 SBSA39EC2 SBSA39EC3	SBSA39EC
SBSA39WC1 SBSA39WC2 SBSA39WC3	SBSA39WC
SBSA39SC1 SBSA39SC2 SBSA39SC3	SBSA39SC
SBSA39BC1 SBSA39BC2 SBSA39BC3	SBSA39BC

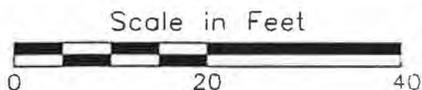


FIGURE 2-1

SA 39 - SYLVANIA SITE
FORT DEVENS
AYER, MASSACHUSETTS

PREPARED FOR
NEW ENGLAND DIVISION - USACE
WALTHAM, MA

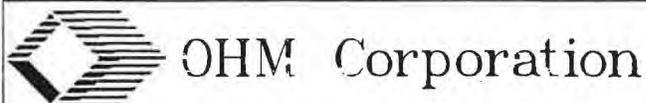


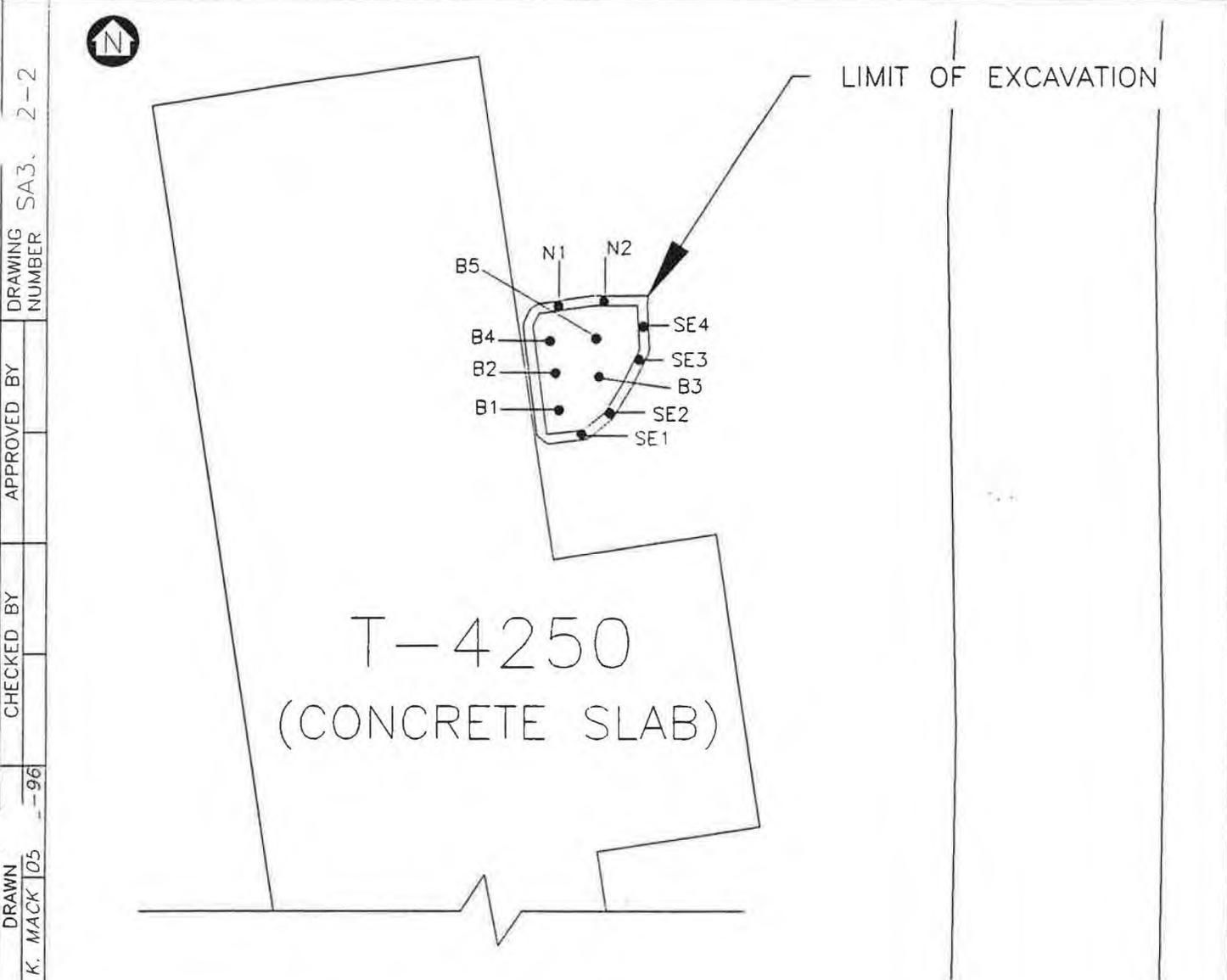
Table 2-2
 TPH Confirmation Soil Sample Results
 Closure Report - SA 39

Sample ID	Sample Date	Sample Location	Sample Depth (ft)	TPH Result (mg/kg)
SBSA39NC	02-Aug-95	north sidewall	4.5 - 4.8	ND (15)
SBSA39EC	02-Aug-95	east sidewall	4.5 - 5.2	ND (16)
SBSA39WC	02-Aug-95	west sidewall	3.9 - 5.5	ND (16)
SBSA39DUP	02-Aug-95	west sidewall	3.9 - 5.5	ND (16)
SBSA39SC	02-Aug-95	south sidewall	4.0 - 4.9	ND (16)
SBSA39BC	02-Aug-95	bottom	6.4 - 6.7	ND (16)

NOTES: TPH = total petroleum hydrocarbons
 mg/kg = milligram per kilogram
 ND () = indicates TPH was not detected at the specified practical quantification limit (PQL)

Confirmation composite samples were also collected from the bottom and sidewalls of the PCB-contaminated soil removal area. These samples were collected on August 25, 1995 and were sent to AENI for PCB analysis by EPA Method 8080. Composite samples were also collected from each of the excavated soil stockpiles (SBSA39L1C and SBSA39L2C). The sample locations making up the confirmation composite samples are provided in Figure 2-2. The composite sample from the bottom of the excavation was collected in triplicate. Two of the split samples were sent to AENI and the third split was submitted to the USACE QA laboratory.

The confirmation sample results are summarized in Table 2-3 and the AENI laboratory analytical report is included in Appendix B. Results of the confirmation samples collected from the excavated area indicate that the 2 mg/kg cleanup goal had been achieved.



DRAWING NUMBER SA3. 2-2

APPROVED BY

CHECKED BY

96

DRAWN K. MACK 05

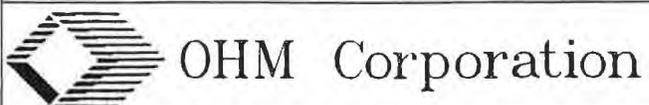
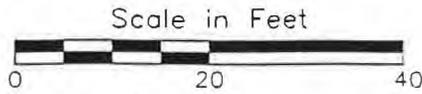
OHM CORPORATION HOPKINTON, MA

DISCRETE SAMPLE IDENTIFICATION	COMPOSITE SAMPLE IDENTIFICATION
SBSA39B1 SBSA39B2 SBSA39B3 SBSA39B4 SBSA39B5	SBSA39BC
SBSA39N1 SBSA39N2	SBSA39NC
SBSA39SE1 SBSA39SE2 SBSA39SE3 SBSA39SE4	SBSA39SEC

FIGURE 2-2

SA 39 - SYLVANIA SITE
 FORT DEVENS
 AYER, MASSACHUSETTS

PREPARED FOR
 NEW ENGLAND DIVISION - USACE
 WALTHAM, MA



PLOT SCALE: 1"

Table 2-3
PCB Confirmation Soil Sample Results
Closure Report - SA 39

Sample ID	Sample Date	Sample Location	Sample Depth (ft)	PCB Result (mg/kg)
SBSA39BCA	25-Aug-95	bottom	2.0	0.84
SBSA39DUPA	25-Aug-95	bottom	2.0	0.92
SBSA39SEC	25-Aug-95	east sidewall	1.0 - 2.0	0.96
SBSA39NCA	25-Aug-95	north sidewall	1.0 - 2.0	ND (0.04)
SBSA39L1C	25-Aug-95	stockpiled soil - 1-foot layer	N/A	2.0
SBSA39L2C	25-Aug-95	stockpiled soil - 2-foot layer	N/A	1.4

NOTES: N/A = not applicable
mg/kg = milligram per kilogram
ND () = indicates PCBs were not detected at the specified practical quantification limit (PQL)

2.4 Backfilling and Site Restoration

Both excavation areas within SA 39 were backfilled with clean fill material taken from the North Post of Fort Devens. This fill material was sampled and screened for TPH, BTEX, pesticides and PCBs prior to its use on site.

2.5 Waste Characterization & Disposal

Samples were collected from the petroleum-contaminated and the PCB-contaminated stockpiles of excavated soil in order to characterize the material for disposal. Samples from both excavation areas were analyzed for TPH, TCLP metals, TCLP organics, semivolatile organic compounds, PCBs, volatile organic compounds, metals, and RCRA characteristics (ignitability, corrosivity, & reactivity). The samples from the petroleum-contaminated soil stockpile were also analyzed for PCBs and semivolatile organic compounds. As discussed in Section 2.3, composite samples had already been collected from the PCB-contaminated soil stockpiles for PCB analysis. The additional parameters which the samples from the PCB-contaminated stockpiles were analyzed for were RCRA metals, polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). The analytical reports for the waste characterization samples are located in Appendix C. All TCLP results were below regulatory levels and the RCRA characteristics test results were negative indicating that the soil was non-hazardous. The characterization sample data indicated that the soils from both excavation areas could be reused as cover material at lined landfills in the State of Massachusetts.

The 101 tons (approximately 67 cubic yards (cy)) of soil removed from the petroleum-contaminated excavation area and the 24.9 tons (approximately 16.5 cy) of soil removed from the PCB-contaminated area have been transferred to a temporary soil storage facility adjacent to Building 202 in the northeast portion of the Main Post. The petroleum-contaminated soil was transferred to cell A of the storage facility, while the

PCB-contaminated soil was placed in cell B. The shipments were documented using Material Shipping Record & Log (MSR) forms which are provided as Appendix D of this report.

2.6 Quality Assurance/Quality Control

Appropriate quality assurance/quality control (QA/QC) measures were taken to ensure the collection of representative soil samples and the generation of accurate and reproducible analytical data.

2.6.1 Sample Collection Quality Control

Soil samples were collected using either a stainless steel trowel or disposable polyethylene scoops. Composite samples were thoroughly homogenized in stainless steel sampling buckets. The sampling equipment was decontaminated using the following procedure:

- 1) Non-phosphate soap & water rinse;
- 2) tap water rinse;
- 3) distilled water rinse;
- 4) 10% nitric acid rinse;
- 5) distilled water rinse;
- 6) methanol rinse; and
- 7) distilled water rinse.

Sample integrity was also maintained by changing gloves between each sample location. The confirmation composite samples from the west sidewall of the petroleum-contaminated soil excavation, the bottom of the PCB-contaminated soil excavation, and the waste characterization samples were collected in triplicate for QA/QC purposes. A comparison of the results of samples SBSA39WC, SBSA39BCA, EXSA3901, EXSA39M, and EXSA39V with their respective duplicate sample indicates a good correlation.

All samples collected on site were entered on a chain of custody and documented on a sample collection log and a permanent logbook. Samples sent off-site were properly preserved, packaged and overnight shipped to the proper laboratory.

2.6.2 Laboratory Quality Control

Quality control measures were taken in the on-site laboratory to ensure the accuracy and precision of the analytical data. TPH concentrations were determined using an infrared spectrometer (IR). A calibration curve was developed for the IR, prior to the start up of sampling activities, to establish detection limits and document linearity of the instrument response. A single calibration point was run in triplicate to demonstrate measurement precision. Continuing calibrations were also performed on a daily basis thereafter to provide a check on instrument response.

The off-site laboratory took the proper quality control measures as specified in the methods used. Samples were properly preserved upon receipt by the laboratory and sample extraction and analysis were performed within the holding times specified in the methods. Blank and spike samples associated with the SA 39 samples were within acceptable QC limits. Refer to the analytical reports for more specific QC information.



The USACE Environmental Laboratory prepared a Chemical Quality Assurance Report (CQAR) to compare their data with the results generated by the contractor laboratory (AENI). The report indicates that the results of the primary (contractor lab) and QA samples agreed overall in 144 (100%) of the 144 comparisons. Refer to Appendix E for the CQAR.

SECTION 3.0 CONCLUSIONS

SA 39, also known as the Sylvania Site, is located south of Route 2 within the current boundaries of Oxbow National Wildlife Refuge in Harvard, Massachusetts. The area was part of the Fort Devens South Post until 1973. Two buildings (Buildings 4249 and 4250) were formerly located on the property. In 1984, a PCB spill from an overturned transformer occurred near former Building 4250. The spill affected a 288 square foot area adjacent to the transformer. Contaminated soil containing PCBs at concentrations above 50 mg/kg was removed. Eight 85-gallon drums of contaminated soil and the transformer were reportedly removed and taken to the Hazardous Waste Storage Area (SA 22).

Arthur D. Little (ADL) conducted investigations of SA 39 to verify that all of the PCB contamination had been adequately removed and to determine if any additional contamination associated with former underground storage tanks (USTs) or leach fields was present. Based on ADL's investigation, an area containing elevated TPH concentrations was identified on the southeast side of the former Building 4250 foundation. The source of this contamination is believed to be from a fuel oil UST that may have formerly been located within this area. Residual PCB contamination was also identified within the former PCB spill area on the northeast side of this foundation.

The NED contracted OHM to remove the petroleum- and PCB-contaminated soils from SA 39. OHM removed 101 tons (approximately 67 cy) of petroleum-contaminated soil and 24.9 tons (approximately 16.5 cy) of PCB-contaminated soil. Photographs of the removals are provided as Appendix F. Confirmation soil samples were collected from both of the excavation areas to document that the cleanup goals (500 mg/kg for TPH and 2 mg/kg for PCBs) had been attained. Proper QA/QC measures were also observed to ensure the collection of accurate and reproducible data. The excavated soil from both excavation areas was transported to the temporary soil storage facility adjacent to Building 202 for eventual disposal at the Consolidation Landfill at Fort Devens. Based on the results of the confirmation samples, no further action is recommended at this site.

Appendix A
On-site Laboratory Soil Screening Data

**Soil Sample Collection Log
Fort Devens - Project #16208**

Date: 8-1-95

Site Name: SA-39

Weather: Sunny 85-90

Samplers: BD, GG

Sample ID Number	Time	Comp/Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt. B	Ref. Pt. C		
SGSA39W1	1133	G	5'6"	16'8"	15'10"	Gold/Tan sand	1 X 40-1 VSA
W2	1135	G	5'0"	14'11"	15'9"	Gold/Tan sand	1 X 40-1 VSA
W3	1137	G	3'11"	12'4"	14'4"	Brown organic soil	1 X 40-1 VSA
W4	1140	G	5'1"	6'11"	9'8"	Gold/Tan sand	1 X 40-1 VSA
W5	1142	G	4'10"	6'5"	6'0"	Gold/Tan sand	1 X 40-1 VSA
W6	1145	G	4'8"	9'0"	6'11"	Gold/Tan sand	1 X 40-1 VSA
W7	1147	G	4'9"	14'1"	11'6"	Gold/Tan sand	1 X 40-1 VSA
W8	1150	G	5'5"	17'4"	15'3"	Gold/Tan sand	1 X 40-1 VSA

Ref. Pt. A: Corner of Cement pad

Ref. Pt. B: 20 Foot up the cement pad from corner A as seen on map
C: 25 "

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # _____ USACE - coc # _____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other _____

Relinquished by (dd/tt): Willie Dal 8-1-95 12:55 Received by (dd/tt): _____

Relinquished by (dd/tt): _____ Received by (dd/tt): _____

**Soil Sample Collection Log
Fort Devens - Project #16208**

Date: 8-1-95

Site Name: SA-39

Weather: Sunny 85-90

Samplers: BD, GG

Sample ID Number	Time	Comp/Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt. <u>B</u>	Ref. Pt. <u>C</u>		
S35A 39 B1	1153	G	6'11"	11'11"	10'2"	Gold/Tan sand	1x40ml VSA
B2	1157	G	6'10"	14'2"	12'9"	Gold/Tan sand	1x40ml VSA
B3	1200	G	7'6"	11'10"	12'10"	Gold/Tan sand	1x40ml VSA
B4	1207	G	6'10"	8'5"	9'6"	Gold/Tan sand	1x40ml VSA

Ref. Pt. A: Corner of cement pad

Ref. Pt. B: 10' up from corner of cement pad as seen on attached map
C 25'

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # _____ USACE- coc # _____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other _____

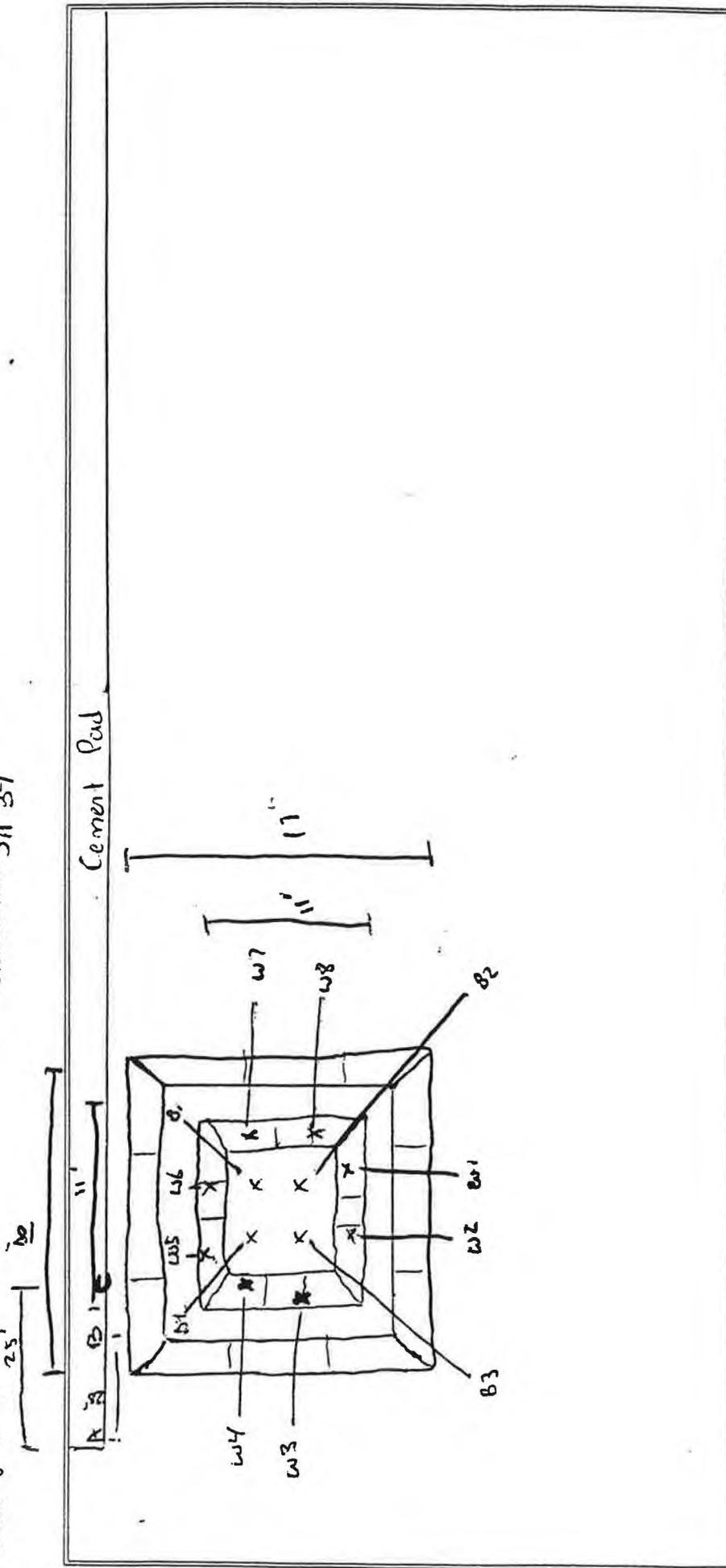
Relinquished by (dd/tt): 1st Lt. Dal 8-1-95 1215 Received by (dd/tt): _____

Relinquished by (dd/tt): _____ Received by (dd/tt): _____

Sample Location Map
 Fort Devens - Project #16208

Date: 8-1-95

Site Name: SA 39



Comments/Observations:

- Not to Scale
- All sample ID's have the attached prefix S9SA39

Prepared by: G. D. Dale

TPH Results
On-site Laboratory - Modified Method 418.1
Fort Devens - Project #16208

Pg. ___ of ___

Date: 1 August 1995

Site(s): Bldg P-223, SA-39

Analyst: MRB, GG

Sample ID #	Instrument Response TPH (ppm)	Calibration Adjusted TPH (ppm)	Sample Weight (g)	Extract Vol. (ml)	Dilution	Final Result TPH(ppm)	Qualifier
SBSA39B1	N.D.	N.D.			1	N.D.	
SBSA39B2	N.D.	N.D.			1	N.D.	
SBSA39B3	N.D.	N.D.			1	N.D.	
SBSA39B4	10	6	20.1	22.9	1	7	J
SBSA39W1	N.D.	N.D.			1	N.D.	
SBSA39W2	N.D.	N.D.			1	N.D.	
SBSA39W3	N.D.	N.D.			1	N.D.	
SBSA39W4	11	6	20.2	20.1	1	6	J
SBSA39W5	N.D.	N.D.			1	N.D.	
SBSA39W6	11	6	20.0	20.8	1	7	J
SBSA39W7	N.D.	N.D.			1	N.D.	
SBSA39W8	N.D.	N.D.			1	N.D.	
SBP223BB12	879	585	19.8	19.2	1	567	
SBP223AB13	242	160	20.0	20.7	1	166	
SBP223AB14	447	297	20.0	20.4	1	303	

TPH - Total Petroleum Hydrocarbons

ND - Indicates non detect

Indicates estimated concentration below practical quantitation limit

**Soil Sample Collection Log
Fort Devens - Project #16208**

Date: 8-2-95

Site Name: SA39

Weather: Sunny, Warm 85-90 Samplers: 3D, 6G

Sample ID Number	Time	Comp/Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt.	Ref. Pt.		
SB5A39 UC	1301	C	N/A	N/A	N/A	Gold/Tan Sand	1 x 802
EL	1307	C				Gold/Tan Sand	1 x 802
UX	1313	C				Gold/Tan Sand	1 x 802
SC	1320	C				Gold/Tan Sand	1 x 802
BL	1327	C				Gold/Tan Sand	1 x 802
DUP	1313	C				Gold/Tan Sand	1 x 802
TRP	1313	C	↓	↓	↓	Gold/Tan Sand	1 x 802
							1 x 802

Ref. Pt. B: 20' down eastern portion of Bldg Foundation

Ref. Pt. C: 25' " "

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 99988 USACE - coc # 107730

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other Semi-volatiles (TCC)

Relinquished by (dd/tt): William Dale 8-2-95 1335 Received by (dd/tt): _____

linquished by (dd/tt): _____ Received by (dd/tt): _____

Sample Collection Log Supplemental Form
Composite Sample Data
Fort Devens - Project #16208

Date: 8-2-95

Site: SA34

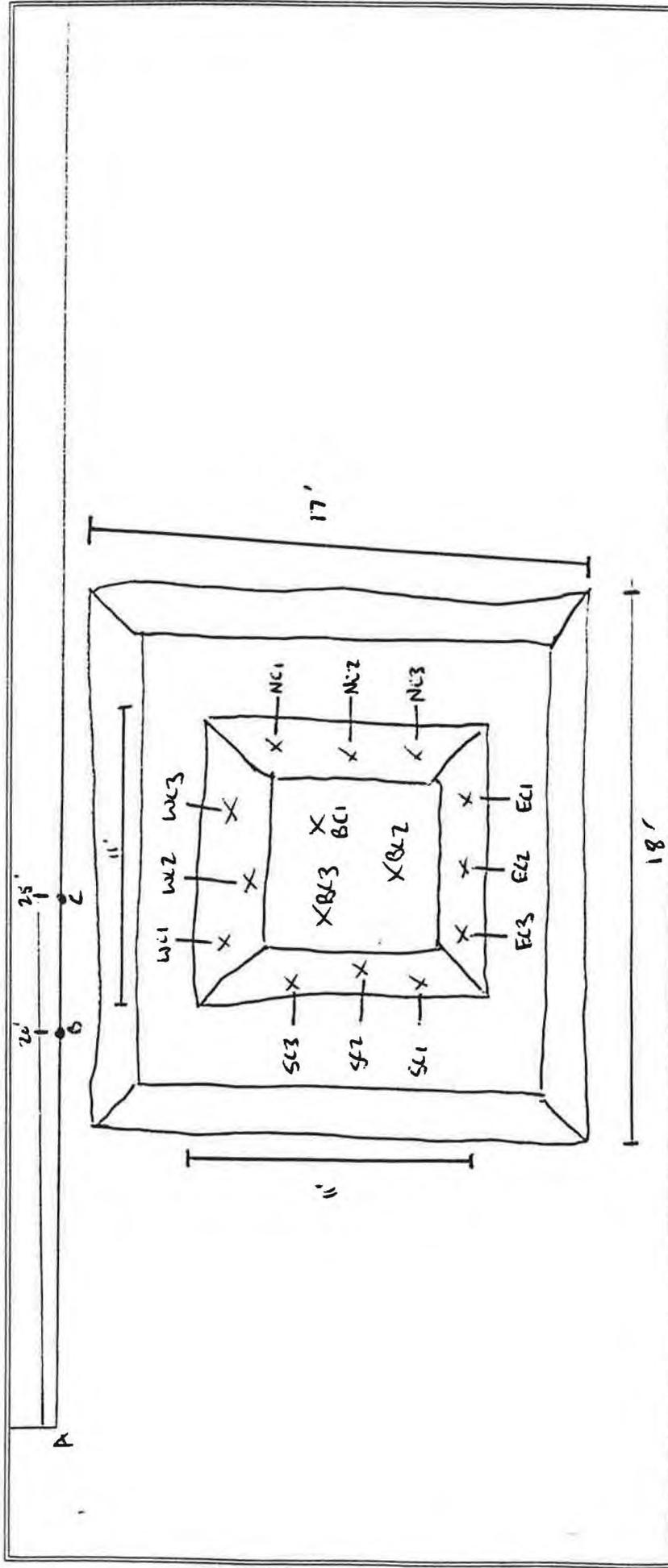
Sampler: BD, CG

Composite Sample ID	Discrete Sample ID	Sample Depth (ft)	Coordinates		Sample Description
			Ref. Pt. B	Ref. Pt. C	
SBSA39AK	XC1	4'6"	13'9"	9'10"	
	XC2	4'9"	15'1"	12'10"	
	XC3	4'8"	15'11"	17'6"	
SBSA39SC	SC1	4'0"	12'1"	14'5"	
	SC2	4'8"	9'4"	11'6"	
	SC3	4'10"	6'9"	9'1"	
SBSA39EC	EC1	4'10"	17'4"	16'4"	
	EC2	5'3"	15'11"	15'11"	
	EC3	4'6"	15'3"	17'1"	
SBSA39LX	LX1	4'9"	5'9"	6'8"	
	LX2	5'6"	7'4"	6'0"	
	LX3	3'11"	10'9"	7'8"	
SBSA39BL	BL1	6'8"	11'6"	9'8"	
	BL2	6'6"	12'7"	12'5"	
	BL3	6'5"	9'0"	10'0"	

Sample Location Map
Fort Devens - Project #16208

Site Name: SA 39

Date: 8-2-95



Comments/Observations:

- all samples are components of composites
- X Sample location

Prepared by: Bill Dalk

**Soil Sample Collection Log
Fort Devens - Project #16208**

ie: 8-25-95

Site Name: SA 39

Weather: Sunny

Samplers: GG

Sample ID Number	Time	Comp/Grab	Sample Depth (ft)	Coordinates Ref. Pt. Ref. Pt.	Sample Description	# of Bottles
SBSA39BCA	1449	C			Gold Sand	1 x 8oz
SBSA39WIS	1500	C				
SBSA39SEC	1511	C				
SBSA39LIC	1513	C				
SBSA39LXC	1525	C				
SBSA39DUPA	1449	C				
SBSA39RPA	1449	C			↓	↓
SBSA39NCA	1454	C			↓	↓

Ref. Pt. _____

Ref. Pt. _____

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 158223 USACE - coc # 158222

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other PCB's

Relinquished by (dd/tt): M. Hummel 8-25-95 1530 Received by (dd/tt): M. Hummel 8-25-95 1530

Relinquished by (dd/tt): _____ Received by (dd/tt): _____

Sample Collection Log Supplemental Form
Composite Sample Data
Fort Devens - Project #16208

Date: 8-25-95

Site: SA 39

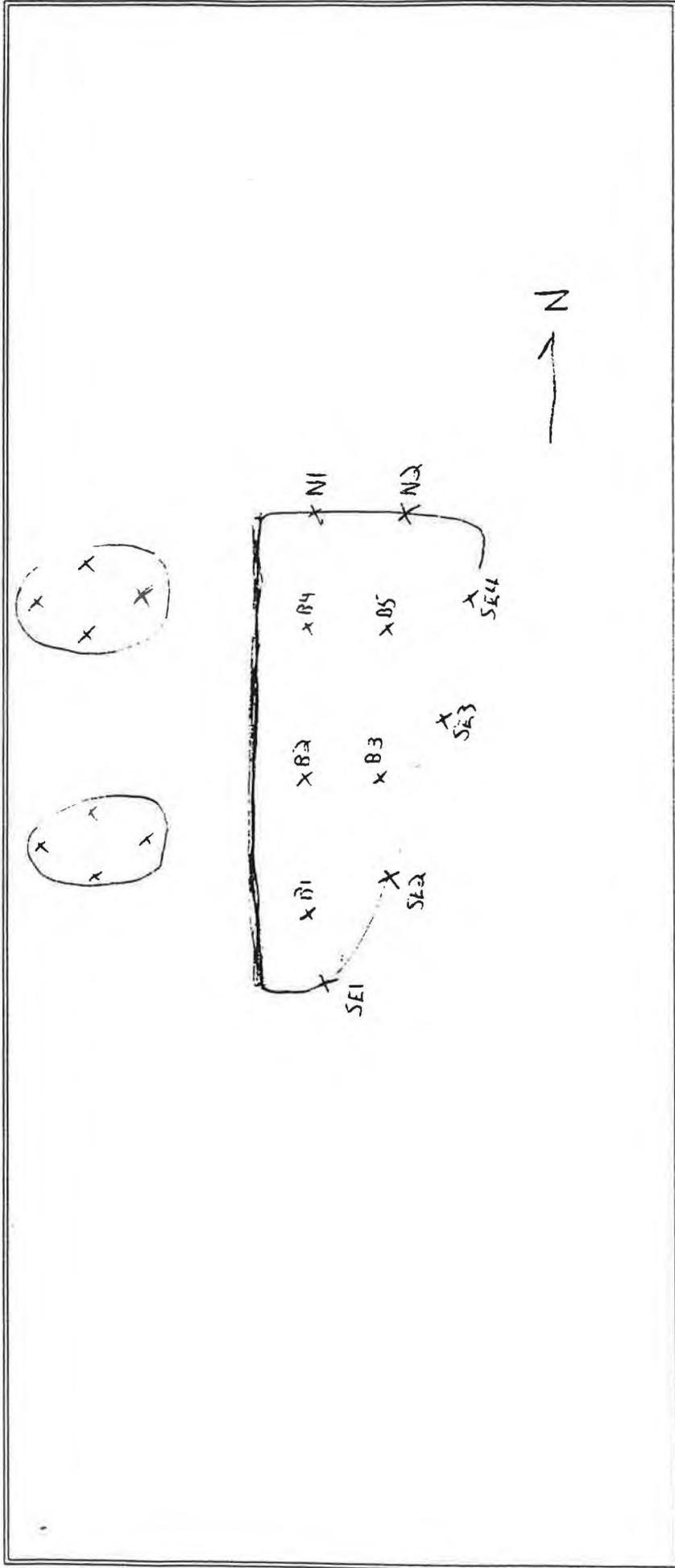
Sampler: GG

Composite Sample ID	Discrete Sample ID	Sample Depth (ft)	Coordinates		Sample Description
			Ref. Pt.	Ref. Pt.	
SBSA39BC DUPA. TRPA	B1				Gold Sand
	B2				↓
	B3				
	B4				
	B5				↓
<hr/>					
SBSA39WC 4A					
<hr/>					
SBSA39NC	N1				Gold Sand
	N2				↓
<hr/>					
SBSA39SEC	SE1				Gold Sand
	SE2				↓
	SE3				
	SE4				
<hr/>					

Sample Location Map
Fort Devens - Project #16208

Date: 8-25-95

Site Name: SA 39



Comments/Observations:

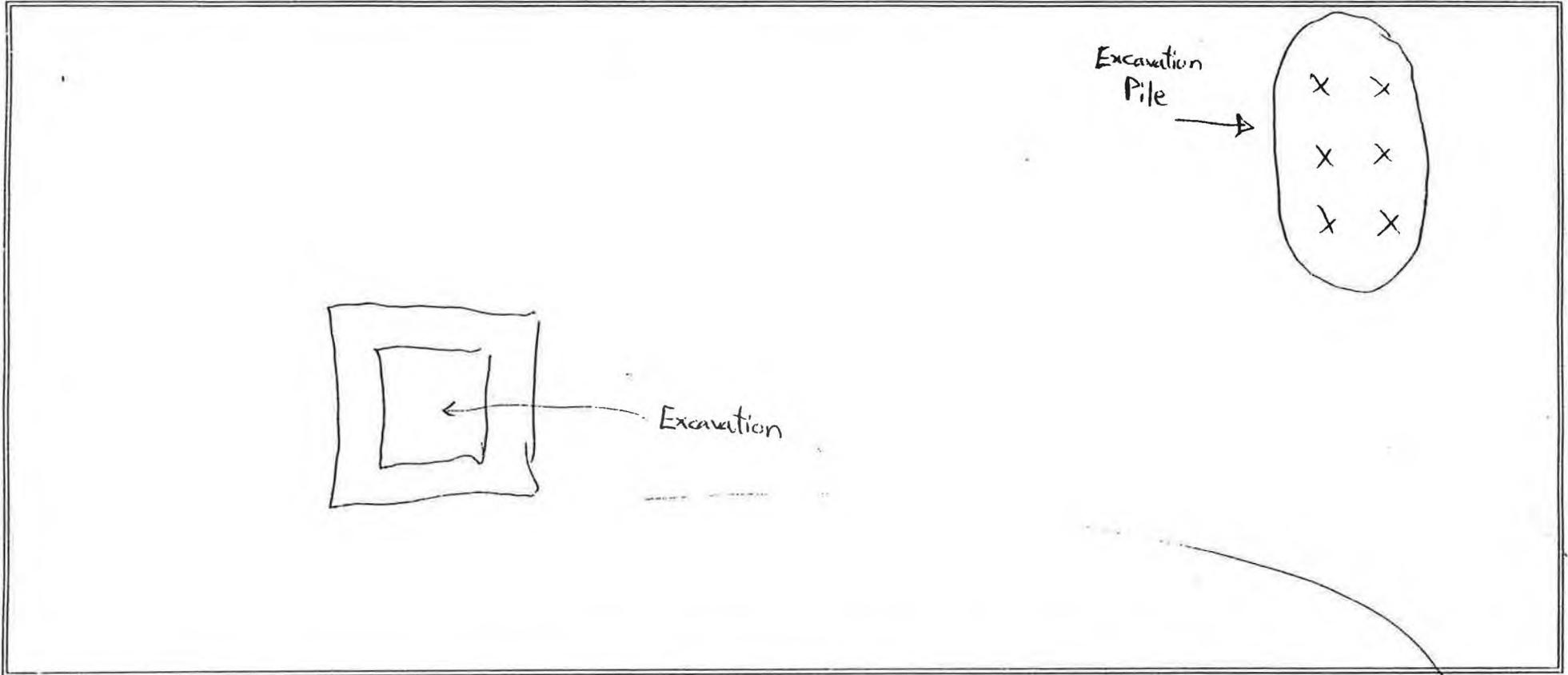
- x- discrete sample location
- Composites taken from each pile, bottom of excavation, north wall and southeast wall

Prepared by: Greg Guimond

Site Location Map
Fort Devens - Project #16208

Date: 08/03/95

Site Name: SA 39



Comments/Observations:

x - Sample location

Composite sample taken

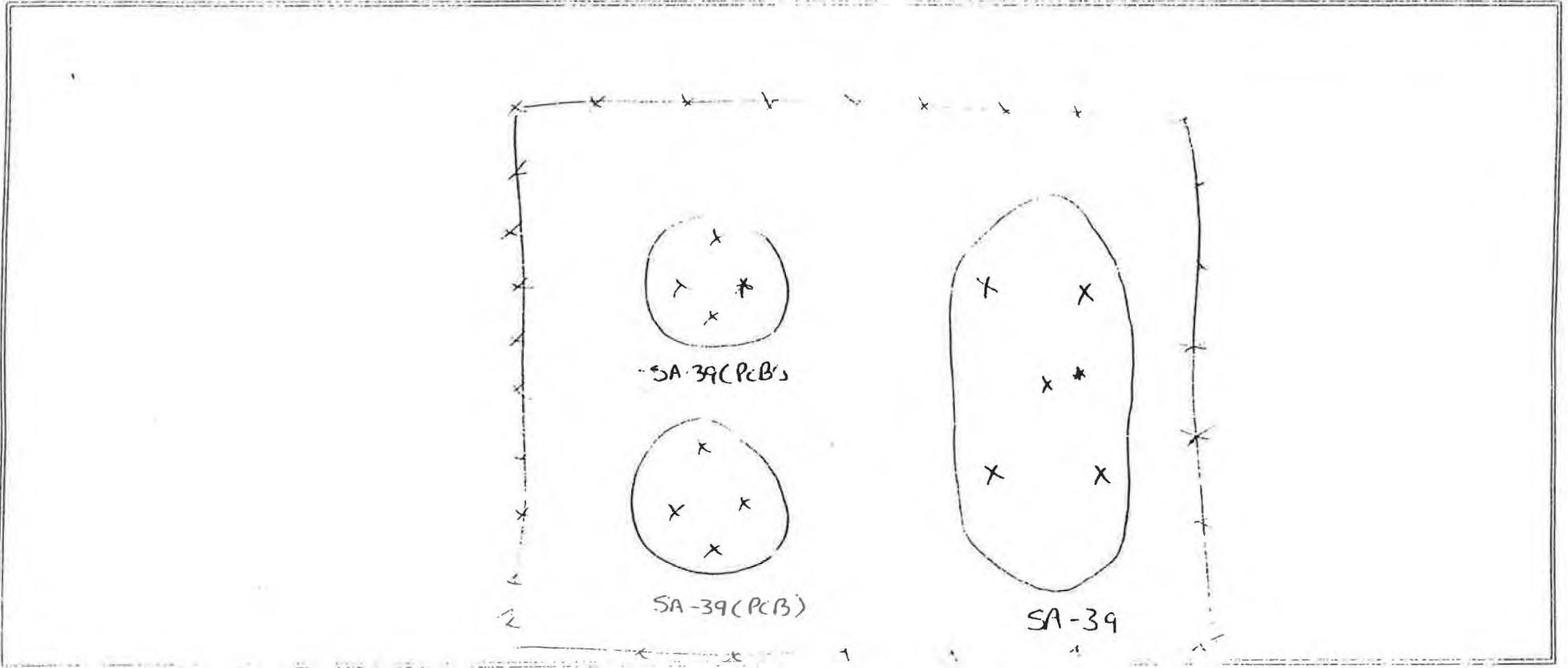
Samples labelled with the prefix EXSA39

Prepared by: Greg Guilmond

San. Site Location Map
Fort Devens - Project #16208

Date: 9/19/95

Site Name: SA 39 / SA 39 (PCB's)



Comments/Observations

x denotes unique sample point for composite
* denotes location of grab sample for tot. VOC's.

Prepared by: M. Jones

**Soil Sample Collection Log
Fort Devens - Project #16208**

Date: 9/19/95

Site Name: SA 39 (PCB)

Weather: Sunny, 78°

Samplers: MJ/GG

Sample ID Number	Time	Comp/Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt.	Ref. Pt.		
<u>EXSA39PCB01</u>	<u>1158</u>	<u>C</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Gold Sand</u>	<u>1x1L 3x8oz</u>
<u>EXSA39PCB02</u>	<u>1200</u>	<u>G</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Gold Sand</u>	<u>2x40ml</u>

Ref. Pt. : N/A

Ref. Pt. : N/A

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 159359 USACE - coc #

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other TCLP, tot. volatiles, RCRA char, TPH, PAHs PCBs, Metals

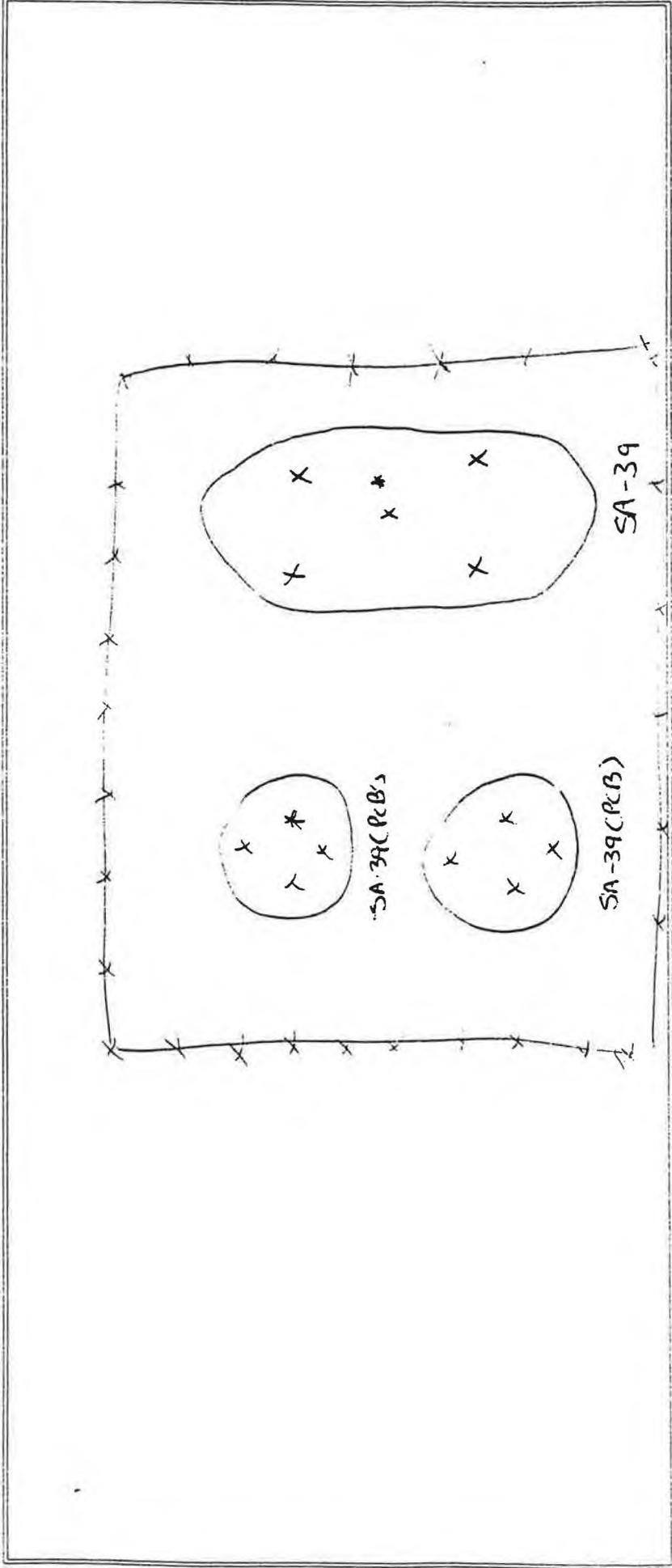
Relinquished by (dd/tt): Matthew Jones 9/19/95 ^{16:40} Received by (dd/tt):

Relinquished by (dd/tt): Received by (dd/tt):

Sample Location Map
Fort Devens - Project #16208

Pg. 2 of 2

Date: 9/19/95
Site Name: SA 39 / SA 39C PCB's



Comments/Observations: X denotes unique sample point for composite
* denotes location of grab sample for VOC's.

Prepared by: M. Jones

Appendix B
AENI Analytical Reports - Confirmation Soil Sample Results

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508032
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 08, 1995
Analysis: Total Petroleum Hydrocarbons, EPA 418.1M

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>
SBSA39NC	9508032-001	08/02/95	08/03/95
SBSA39EC	9508032-002	08/02/95	08/03/95
SBSA39WC	9508032-003	08/02/95	08/03/95
SBSA39SC	9508032-004	08/02/95	08/03/95
SBSA39BC	9508032-005	08/02/95	08/03/95
SBSA39DUP	9508032-006	08/02/95	08/03/95

Six soil samples were received and analyzed for Total Petroleum Hydrocarbons.

The samples were extracted on 08/04/95 and analyzed on 08/08/95.

All quality control met standard laboratory criteria.

This report consists of tabulated sample results.

Report Released By:


Rhonda Green-Barron
General Chemistry Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508032
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 08, 1995
Analysis: Total Petroleum Hydrocarbons, (EPA 418.1M)

<u>Client ID</u>	<u>AENI ID</u>	<u>%Solids</u>	<u>Result, mg/Kg</u>
SBSA39NC	9508032-001	97.4	<15
SBSA39EC	9508032-002	94.3	<16
SBSA39WC	9508032-003	96.7	<16
SBSA39SC	9508032-004	97.2	<16
SBSA39BC	9508032-005	95.5	<16
SBSA39DUP	9508032-006	95.5	<16
	Method Blank	100	<15

(1) Results reported on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

Project Number: 9508-032
Client Name: OH Materials
Project Title: Fort Devens
Ayer, MA

Six soil samples were analyzed for the semivolatile organic compounds in the TCL list by method 8270. The analyses followed the standard AENI QA/QC and holding time requirements.

This package consists of tabulated results of the sample and the method blanks, along with the QC forms II, III, and IV.

Data Released

Minh-Thuy L. Nguyen (8/14/95)
Minh-Thuy L. Nguyen
GC/MS Lab Manager

Semivolatiles Section:

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date Extracted	TCLP	BNA	Date Analyzed
SBSA39NC	032-001	Soil	08/02/95	08/03/95	N.A.	08/08		08/10/95
SBSA39EC	032-002	Soil	08/02/95	08/03/95	N.A.	08/08		08/10/95
SBSA39WC	032-003	Soil	08/02/95	08/03/95	N.A.	08/08		08/11/95
SBSA39SC	032-004	Soil	08/02/95	08/03/95	N.A.	08/08		08/10/95
SBSA39BC	032-005	Soil	08/02/95	08/03/95	N.A.	08/08		08/10/95
SBSA39DUP	032-006	Soil	08/02/95	08/03/95	N.A.	08/08		08/11/95

Form I (Tabulated Results)

All sample extractions and analyses were performed within the holding time requirement. All sample results were reported on the basis of dry weights.

Form II (Surrogate Recoveries)

The surrogate recoveries for the samples, QC, and method blank were within the method specified limits.

Form III (MS/MSD Recoveries)

An MS/MSD was performed on sample SBSA39DUP. All spike recoveries were within criteria. Three %RPDs were outside of the criteria.

Form IV (Method Blank Results)

The method blank was free of target analytes.

20
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHM
 Project No.: 9508032 Site: _____ Location: _____ Group: _____
 Level: (low/med) LOW

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	SBLKD1	67	81	82	109	71	85			
02	SBSA39NC	62	75	77	107	65	87			
03	SBSA39EC	58	73	74	104	61	75			
04	SBSA39SC	50	63	58	97	64	81			
05	SBSA39BC	70	87	92	115	62	100			
06	SBSA39DUPMSD	65	69	79	111	75	96			
07	SBSA39WC	65	67	67	94	63	64			
08	SBSA39DUP	75	87	88	99	83	72			
09	SBSA39DUPMS	70	78	90	92	73	70			
10										
11										
12										
13										
14										
15										
16										
17										
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26										
27										
28										
29										
30										

QC LIMITS

S1 (2FP) - 2-Fluorophenol (25-121)
 S2 (PHL) - Phenol-d5 (24-113)
 S3 (NBZ) - Nitrobenzene-d5 (23-120)
 S4 (FBP) - 2-Fluorobiphenyl (30-115)
 S5 (TBP) - 2,4,6-Tribromophenol (19-122)
 S6 (TPH) - Terphenyl-d14 (18-137)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9508032 Site: _____ Location: _____ Group: _____Matrix Spike - Sample No.: SBSA39DUP Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	6700	0	5000	75	(26-90)
2-Chlorophenol	6700	0	5000	75	(25-102)
1,4-Dichlorobenzene	3300	0	2800	85	(28-104)
N-Nitroso-di-n-propylamine	3300	0	3200	97	(41-126)
1,2,4-Trichlorobenzene	3300	0	3000	91	(38-107)
4-Chloro-3-methylphenol	6700	0	5900	88	(26-103)
Acenaphthene	3300	0	3300	100	(31-137)
2,4-Dinitrotoluene	3300	0	2700	82	(28-89)
4-Nitrophenol	6700	0	5800	87	(11-114)
Pentachlorophenol	6700	0	5800	87	(17-109)
Pyrene	3300	0	3000	91	(35-142)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #		QC LIMITS RPD REC.	
			% REC #	% RPD #	RPD	REC.
Phenol	6700	4700	70	6	35	(26-90)
2-Chlorophenol	6700	4600	69	8	50	(25-102)
1,4-Dichlorobenzene	3300	2400	73	15	27	(28-104)
N-Nitroso-di-n-propylamine	3300	1900	58	51 *	38	(41-126)
1,2,4-Trichlorobenzene	3300	2500	76	18	23	(38-107)
4-Chloro-3-methylphenol	6700	5200	78	13	33	(26-103)
Acenaphthene	3300	3900	118	17	19	(31-137)
2,4-Dinitrotoluene	3300	2800	85	4	47	(28-89)
4-Nitrophenol	6700	3100	46	61 *	50	(11-114)
Pentachlorophenol	6700	2300	34	86 *	47	(17-109)
Pyrene	3300	3600	109	18	36	(35-142)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

Comments: _____

46
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
SBLK01

Lab Name: AENI MD Contract: OHM
 Project No.: 9508032 Site: _____ Location: _____ Group: _____
 Lab File ID: DH093.D Lab Sample ID: 0808-JB
 Instrument ID: MSD 1 Date Extracted: 8/8/95
 Matrix: (soil/water) SOIL Date Analyzed: 8/10/95
 Level: (low/med) LOW Time Analyzed: 1721

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBSA39NC	#001	DH095.D	08/10/95
02	SBSA39EC	#002	DH096.D	08/10/95
03	SBSA39SC	#004	DH098.D	08/10/95
04	SBSA39BC	#005	DH099.D	08/10/95
05	SBSA39DUPMSD	#006MSD	DH102.D	08/11/95
06	SBSA39WC	#003	DH131.D	08/11/95
07	SBSA39DUP	#006	DH132.D	08/11/95
08	SBSA39DUPMS	#006MS	DH133.D	08/11/95
09				
10				
11				
12				
13				
14				
15				
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27				
28				
29				
30				

COMMENTS:

SBSA39NC

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: DH095.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 3 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
111-44-4	bis(2-Chloroethyl)ether		340	U
108-95-2	Phenol		340	U
95-57-8	2-Chlorophenol		340	U
541-73-1	1,3-Dichlorobenzene		340	U
106-46-7	1,4-Dichlorobenzene		340	U
95-50-1	1,2-Dichlorobenzene		340	U
108-60-1	bis(2-chloroisopropyl)ether		340	U
95-48-7	2-Methylphenol		340	U
67-72-1	Hexachloroethane		340	U
621-64-7	N-Nitroso-di-n-propylamine		340	U
106-44-5	4-Methylphenol		340	U
98-95-3	Nitrobenzene		340	U
78-59-1	Isophorone		340	U
88-75-5	2-Nitrophenol		340	U
105-67-9	2,4-Dimethylphenol		340	U
111-91-1	bis(2-Chloroethoxy)methane		340	U
120-83-2	2,4-Dichlorophenol		340	U
120-82-1	1,2,4-Trichlorobenzene		340	U
91-20-3	Naphthalene		340	U
106-47-8	4-Chloroaniline		340	U
87-68-3	Hexachlorobutadiene		340	U
59-50-7	4-Chloro-3-methylphenol		340	U
91-57-6	2-Methylnaphthalene		340	U
77-47-4	Hexachlorocyclopentadiene		340	U
88-06-2	2,4,6-Trichlorophenol		340	U
95-95-4	2,4,5-Trichlorophenol		860	U
91-58-7	2-Chloronaphthalene		340	U
88-74-4	2-Nitroaniline		860	U
208-96-8	Acenaphthylene		340	U
131-11-3	Dimethylphthalate		340	U
606-20-2	2,6-Dinitrotoluene		340	U
83-32-9	Acenaphthene		340	U
99-09-2	3-Nitroaniline		860	U

SBSA39NC

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: DH095.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 3 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		860	U
132-64-9	Dibenzofuran		340	U
121-14-2	2,4-Dinitrotoluene		340	U
100-02-7	4-Nitrophenol		860	U
86-73-7	Fluorene		340	U
7005-72-3	4-Chlorophenyl-phenylether		340	U
84-66-2	Diethylphthalate		340	U
100-01-6	4-Nitroaniline		860	U
534-52-1	4,6-Dinitro-2-methylphenol		860	U
86-30-6	n-Nitrosodiphenylamine		340	U
101-55-3	4-Bromophenyl-phenylether		340	U
118-74-1	Hexachlorobenzene		340	U
87-86-5	Pentachlorophenol		860	U
85-01-8	Phenanthrene		340	U
120-12-7	Anthracene		340	U
84-74-2	Di-n-butylphthalate		340	U
86-74-8	Carbazole		340	U
206-44-0	Fluoranthene		340	U
129-00-0	Pyrene		340	U
85-68-7	Butylbenzylphthalate		340	U
91-94-1	3,3'-Dichlorobenzidine		340	U
56-55-3	Benzo[a]anthracene		340	U
218-01-9	Chrysene		340	U
117-81-7	bis(2-Ethylhexyl)phthalate		350	
117-84-0	Di-n-octylphthalate		340	U
205-99-2	Benzo[b]fluoranthene		340	U
207-08-9	Benzo[k]fluoranthene		340	U
50-32-8	Benzo[a]pyrene		340	U
193-39-5	Indeno[1,2,3-cd]pyrene		340	U
53-70-3	Dibenz[a,h]anthracene		340	U
191-24-2	Benzo[g,h,i]perylene		340	U

SBSA39EC

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: DH096.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 6 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
111-44-4	bis(2-Chloroethyl)ether		350	U
108-95-2	Phenol		350	U
95-57-8	2-Chlorophenol		350	U
541-73-1	1,3-Dichlorobenzene		350	U
106-46-7	1,4-Dichlorobenzene		350	U
95-50-1	1,2-Dichlorobenzene		350	U
108-60-1	bis(2-chloroisopropyl)ether		350	U
95-48-7	2-Methylphenol		350	U
67-72-1	Hexachloroethane		350	U
621-64-7	N-Nitroso-di-n-propylamine		350	U
106-44-5	4-Methylphenol		350	U
98-95-3	Nitrobenzene		350	U
78-59-1	Isophorone		350	U
88-75-5	2-Nitrophenol		350	U
105-67-9	2,4-Dimethylphenol		350	U
111-91-1	bis(2-Chloroethoxy)methane		350	U
120-83-2	2,4-Dichlorophenol		350	U
120-82-1	1,2,4-Trichlorobenzene		350	U
91-20-3	Naphthalene		350	U
106-47-8	4-Chloroaniline		350	U
87-68-3	Hexachlorobutadiene		350	U
59-50-7	4-Chloro-3-methylphenol		350	U
91-57-6	2-Methylnaphthalene		350	U
77-47-4	Hexachlorocyclopentadiene		350	U
88-06-2	2,4,6-Trichlorophenol		350	U
95-95-4	2,4,5-Trichlorophenol		880	U
91-58-7	2-Chloronaphthalene		350	U
88-74-4	2-Nitroaniline		880	U
208-96-8	Acenaphthylene		350	U
131-11-3	Dimethylphthalate		350	U
606-20-2	2,6-Dinitrotoluene		350	U
83-32-9	Acenaphthene		350	U
99-09-2	3-Nitroaniline		880	U

SBSA39EC

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: DH096.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 6 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		880	U
132-64-9	Dibenzofuran		350	U
121-14-2	2,4-Dinitrotoluene		350	U
100-02-7	4-Nitrophenol		880	U
86-73-7	Fluorene		350	U
7005-72-3	4-Chlorophenyl-phenylether		350	U
84-66-2	Diethylphthalate		350	U
100-01-6	4-Nitroaniiline		880	U
534-52-1	4,6-Dinitro-2-methylphenol		880	U
86-30-6	n-Nitrosodiphenylamine		350	U
101-55-3	4-Bromophenyl-phenylether		350	U
118-74-1	Hexachlorobenzene		350	U
87-86-5	Pentachlorophenol		880	U
85-01-8	Phenanthrene		350	U
120-12-7	Anthracene		350	U
84-74-2	Di-n-butylphthalate		350	U
86-74-8	Carbazole		350	U
206-44-0	Fluoranthene		350	U
129-00-0	Pyrene		350	U
85-68-7	Butylbenzylphthalate		350	U
91-94-1	3,3'-Dichlorobenzidine		350	U
56-55-3	Benzo[a]anthracene		350	U
218-01-9	Chrysene		350	U
117-81-7	bis(2-Ethylhexyl)phthalate		440	
117-84-0	Di-n-octylphthalate		350	U
205-99-2	Benzo[b]fluoranthene		350	U
207-08-9	Benzo[k]fluoranthene		350	U
50-32-8	Benzo[a]pyrene		350	U
193-39-5	Indeno[1,2,3-cd]pyrene		350	U
53-70-3	Dibenz[a,h]anthracene		350	U
191-24-2	Benzo[g,h,i]perylene		350	U

SBSA39WC

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #003

Sample wt/vol: 30.1 (g/mL) G Lab File ID: DH131.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 3 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
111-44-4	bis(2-Chloroethyl)ether		340	U
108-95-2	Phenol		340	U
95-57-8	2-Chlorophenol		340	U
541-73-1	1,3-Dichlorobenzene		340	U
106-46-7	1,4-Dichlorobenzene		340	U
95-50-1	1,2-Dichlorobenzene		340	U
108-60-1	bis(2-chloroisopropyl)ether		340	U
95-48-7	2-Methylphenol		340	U
67-72-1	Hexachloroethane		340	U
621-64-7	N-Nitroso-di-n-propylamine		340	U
106-44-5	4-Methylphenol		340	U
98-95-3	Nitrobenzene		340	U
78-59-1	Isophorone		340	U
88-75-5	2-Nitrophenol		340	U
105-67-9	2,4-Dimethylphenol		340	U
111-91-1	bis(2-Chloroethoxy)methane		340	U
120-83-2	2,4-Dichlorophenol		340	U
120-82-1	1,2,4-Trichlorobenzene		340	U
91-20-3	Naphthalene		340	U
106-47-8	4-Chloroaniline		340	U
87-68-3	Hexachlorobutadiene		340	U
59-50-7	4-Chloro-3-methylphenol		340	U
91-57-6	2-Methylnaphthalene		340	U
77-47-4	Hexachlorocyclopentadiene		340	U
88-06-2	2,4,6-Trichlorophenol		340	U
95-95-4	2,4,5-Trichlorophenol		860	U
91-58-7	2-Chloronaphthalene		340	U
88-74-4	2-Nitroaniline		860	U
208-96-8	Acenaphthylene		340	U
131-11-3	Dimethylphthalate		340	U
606-20-2	2,6-Dinitrotoluene		340	U
83-32-9	Acenaphthene		340	U
99-09-2	3-Nitroaniline		860	U

Lab Name: AENI MD Contract: OHM
 Project No.: 9508032 Site: _____ Location: _____ Group: _____
 Matrix: (soil/water) SOIL Lab Sample ID: #003
 Sample wt/vol: 30.1 (g/mL) G Lab File ID: DH131.D
 Level: (low/med) LOW Date Received: 8/3/95
 % Moisture: 3 decanted: (Y/N): N Date Extracted: 8/8/95
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
51-28-5	2,4-Dinitrophenol		860	U
132-64-9	Dibenzofuran		340	U
121-14-2	2,4-Dinitrotoluene		340	U
100-02-7	4-Nitrophenol		860	U
86-73-7	Fluorene		340	U
7005-72-3	4-Chlorophenyl-phenylether		340	U
84-66-2	Diethylphthalate		340	U
100-01-6	4-Nitroaniline		860	U
534-52-1	4,6-Dinitro-2-methylphenol		860	U
86-30-6	n-Nitrosodiphenylamine		340	U
101-55-3	4-Bromophenyl-phenylether		340	U
118-74-1	Hexachlorobenzene		340	U
87-86-5	Pentachlorophenol		860	U
85-01-8	Phenanthrene		340	U
120-12-7	Anthracene		340	U
84-74-2	Di-n-butylphthalate		340	U
86-74-8	Carbazole		340	U
206-44-0	Fluoranthene		340	U
129-00-0	Pyrene		340	U
85-68-7	Butylbenzylphthalate		340	U
91-94-1	3,3'-Dichlorobenzidine		340	U
56-55-3	Benzo(a)anthracene		340	U
218-01-9	Chrysene		340	U
117-81-7	bis(2-Ethylhexyl)phthalate		340	U
117-84-0	Di-n-octylphthalate		340	U
205-99-2	Benzo(b)fluoranthene		340	U
207-08-9	Benzo(k)fluoranthene		340	U
50-32-8	Benzo(a)pyrene		340	U
193-39-5	Indeno[1,2,3-cd]pyrene		340	U
53-70-3	Dibenz(a,h)anthracene		340	U
191-24-2	Benzo(g,h,i)perylene		340	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #004

Sample wt/vol: 30.6 (g/mL) G Lab File ID: DH098.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
111-44-4	bis(2-Chloroethyl)ether		340	U
108-95-2	Phenol		340	U
95-57-8	2-Chlorophenol		340	U
541-73-1	1,3-Dichlorobenzene		340	U
106-46-7	1,4-Dichlorobenzene		340	U
95-50-1	1,2-Dichlorobenzene		340	U
108-60-1	bis(2-chloroisopropyl)ether		340	U
95-48-7	2-Methylphenol		340	U
67-72-1	Hexachloroethane		340	U
621-64-7	N-Nitroso-di-n-propylamine		340	U
106-44-5	4-Methylphenol		340	U
98-95-3	Nitrobenzene		340	U
78-59-1	Isophorone		340	U
88-75-5	2-Nitrophenol		340	U
105-67-9	2,4-Dimethylphenol		340	U
111-91-1	bis(2-Chloroethoxy)methane		340	U
120-83-2	2,4-Dichlorophenol		340	U
120-82-1	1,2,4-Trichlorobenzene		340	U
91-20-3	Naphthalene		340	U
106-47-8	4-Chloroaniline		340	U
87-68-3	Hexachlorobutadiene		340	U
59-50-7	4-Chloro-3-methylphenol		340	U
91-57-6	2-Methylnaphthalene		340	U
77-47-4	Hexachlorocyclopentadiene		340	U
88-06-2	2,4,6-Trichlorophenol		340	U
95-95-4	2,4,5-Trichlorophenol		850	U
91-58-7	2-Chloronaphthalene		340	U
88-74-4	2-Nitroaniline		850	U
208-96-8	Acenaphthylene		340	U
131-11-3	Dimethylphthalate		340	U
606-20-2	2,6-Dinitrotoluene		340	U
83-32-9	Acenaphthene		340	U
99-09-2	3-Nitroaniline		850	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #004

Sample wt/vol: 30.6 (g/mL) G Lab File ID: DH098.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		850	U
132-64-9	Dibenzofuran		340	U
121-14-2	2,4-Dinitrotoluene		340	U
100-02-7	4-Nitrophenol		850	U
86-73-7	Fluorene		340	U
7005-72-3	4-Chlorophenyl-phenylether		340	U
84-66-2	Diethylphthalate		340	U
100-01-6	4-Nitroaniline		850	U
534-52-1	4,6-Dinitro-2-methylphenol		850	U
86-30-6	n-Nitrosodiphenylamine		340	U
101-55-3	4-Bromophenyl-phenylether		340	U
118-74-1	Hexachlorobenzene		340	U
87-86-5	Pentachlorophenol		850	U
85-01-8	Phenanthrene		340	U
120-12-7	Anthracene		340	U
84-74-2	Di-n-butylphthalate		340	U
86-74-8	Carbazole		340	U
206-44-0	Fluoranthene		340	U
129-00-0	Pyrene		340	U
85-68-7	Butylbenzylphthalate		340	U
91-94-1	3,3'-Dichlorobenzidine		340	U
56-55-3	Benzo[a]anthracene		340	U
218-01-9	Chrysene		340	U
117-81-7	bis(2-Ethylhexyl)phthalate		300	J
117-84-0	Di-n-octylphthalate		340	U
205-99-2	Benzo[b]fluoranthene		340	U
207-08-9	Benzo[k]fluoranthene		340	U
50-32-8	Benzo[a]pyrene		340	U
193-39-5	Indeno[1,2,3-cd]pyrene		340	U
53-70-3	Dibenz[a,h]anthracene		340	U
191-24-2	Benzo[g,h,i]perylene		340	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #005

Sample wt/vol: 30.4 (g/mL) G Lab File ID: DH099.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
111-44-4	bis(2-Chloroethyl)ether		340	U
108-95-2	Phenol		340	U
95-57-8	2-Chlorophenol		340	U
541-73-1	1,3-Dichlorobenzene		340	U
106-46-7	1,4-Dichlorobenzene		340	U
95-50-1	1,2-Dichlorobenzene		340	U
108-60-1	bis(2-chloroisopropyl)ether		340	U
95-48-7	2-Methylphenol		340	U
67-72-1	Hexachloroethane		340	U
621-64-7	N-Nitroso-di-n-propylamine		340	U
106-44-5	4-Methylphenol		340	U
98-95-3	Nitrobenzene		340	U
78-59-1	Isophorone		340	U
88-75-5	2-Nitrophenol		340	U
105-67-9	2,4-Dimethylphenol		340	U
111-91-1	bis(2-Chloroethoxy)methane		340	U
120-83-2	2,4-Dichlorophenol		340	U
120-82-1	1,2,4-Trichlorobenzene		340	U
91-20-3	Naphthalene		340	U
106-47-8	4-Chloroaniline		340	U
87-68-3	Hexachlorobutadiene		340	U
59-50-7	4-Chloro-3-methylphenol		340	U
91-57-6	2-Methylnaphthalene		340	U
77-47-4	Hexachlorocyclopentadiene		340	U
88-06-2	2,4,6-Trichlorophenol		340	U
95-95-4	2,4,5-Trichlorophenol		860	U
91-58-7	2-Chloronaphthalene		340	U
88-74-4	2-Nitroaniline		860	U
208-96-8	Acenaphthylene		340	U
131-11-3	Dimethylphthalate		340	U
606-20-2	2,6-Dinitrotoluene		340	U
83-32-9	Acenaphthene		340	U
99-09-2	3-Nitroaniline		860	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #005

Sample wt/vol: 30.4 (g/mL) G Lab File ID: DH099.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		860	U
132-64-9	Dibenzofuran		340	U
121-14-2	2,4-Dinitrotoluene		340	U
100-02-7	4-Nitrophenol		860	U
86-73-7	Fluorene		340	U
7005-72-3	4-Chlorophenyl-phenylether		340	U
84-66-2	Diethylphthalate		340	U
100-01-6	4-Nitroaniline		860	U
534-52-1	4,6-Dinitro-2-methylphenol		860	U
86-30-6	n-Nitrosodiphenylamine		340	U
101-55-3	4-Bromophenyl-phenylether		340	U
118-74-1	Hexachlorobenzene		340	U
87-86-5	Pentachlorophenol		860	U
85-01-8	Phenanthrene		340	U
120-12-7	Anthracene		340	U
84-74-2	Di-n-butylphthalate		340	U
86-74-8	Carbazole		340	U
206-44-0	Fluoranthene		340	U
129-00-0	Pyrene		340	U
85-68-7	Butylbenzylphthalate		340	U
91-94-1	3,3'-Dichlorobenzidine		340	U
56-55-3	Benzo(a)anthracene		340	U
218-01-9	Chrysene		340	U
117-81-7	bis(2-Ethylhexyl)phthalate		1100	
117-84-0	Di-n-octylphthalate		340	U
205-99-2	Benzo(b)fluoranthene		340	U
207-08-9	Benzo(k)fluoranthene		340	U
50-32-8	Benzo(a)pyrene		340	U
193-39-5	Indeno(1,2,3-cd)pyrene		340	U
53-70-3	Dibenz(a,h)anthracene		340	U
191-24-2	Benzo(g,h,i)perylene		340	U

Lab Name: AENI MD Contract: OHM
 Project No.: 9508032 Site: _____ Location: _____ Group: _____
 Matrix: (soil/water) SOIL Lab Sample ID: #006
 Sample wt/vol: 30.3 (g/mL) G Lab File ID: DH132.0
 Level: (low/med) LOW Date Received: 8/3/95
 % Moisture: 6 decanted: (Y/N): N Date Extracted: 8/8/95
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
111-44-4	bis(2-Chloroethyl)ether		350	U
108-95-2	Phenol		350	U
95-57-8	2-Chlorophenol		350	U
541-73-1	1,3-Dichlorobenzene		350	U
106-46-7	1,4-Dichlorobenzene		350	U
95-50-1	1,2-Dichlorobenzene		350	U
108-60-1	bis(2-chloroisopropyl)ether		350	U
95-48-7	2-Methylphenol		350	U
67-72-1	Hexachloroethane		350	U
621-64-7	N-Nitroso-di-n-propylamine		350	U
106-44-5	4-Methylphenol		350	U
98-95-3	Nitrobenzene		350	U
78-59-1	Isophorone		350	U
88-75-5	2-Nitrophenol		350	U
105-67-9	2,4-Dimethylphenol		350	U
111-91-1	bis(2-Chloroethoxy)methane		350	U
120-83-2	2,4-Dichlorophenol		350	U
120-82-1	1,2,4-Trichlorobenzene		350	U
91-20-3	Naphthalene		350	U
106-47-8	4-Chloroaniline		350	U
87-68-3	Hexachlorobutadiene		350	U
59-50-7	4-Chloro-3-methylphenol		350	U
91-57-6	2-Methylnaphthalene		350	U
77-47-4	Hexachlorocyclopentadiene		350	U
88-06-2	2,4,6-Trichlorophenol		350	U
95-95-4	2,4,5-Trichlorophenol		880	U
91-58-7	2-Chloronaphthalene		350	U
88-74-4	2-Nitroaniline		880	U
208-96-8	Acenaphthylene		350	U
131-11-3	Dimethylphthalate		350	U
606-20-2	2,6-Dinitrotoluene		560	U
83-32-9	Acenaphthene		350	U
99-09-2	3-Nitroaniline		880	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #006

Sample wt/vol: 30.3 (g/mL) G Lab File ID: DH132.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 6 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		880	U
132-64-9	Dibenzofuran		350	U
121-14-2	2,4-Dinitrotoluene		350	U
100-02-7	4-Nitrophenol		880	U
86-73-7	Fluorene		350	U
7005-72-3	4-Chlorophenyl-phenylether		350	U
84-66-2	Diethylphthalate		350	U
100-01-6	4-Nitroaniline		880	U
534-52-1	4,6-Dinitro-2-methylphenol		880	U
86-30-6	n-Nitrosodiphenylamine		350	U
101-55-3	4-Bromophenyl-phenylether		350	U
118-74-1	Hexachlorobenzene		350	U
87-86-5	Pentachlorophenol		880	U
85-01-8	Phenanthrene		350	U
120-12-7	Anthracene		350	U
84-74-2	Di-n-butylphthalate		350	U
86-74-8	Carbazole		350	U
206-44-0	Fluoranthene		350	U
129-00-0	Pyrene		350	U
85-68-7	Butylbenzylphthalate		350	U
91-94-1	3,3'-Dichlorobenzidine		350	U
56-55-3	Benzo[a]anthracene		350	U
218-01-9	Chrysene		350	U
117-81-7	bis(2-Ethylhexyl)phthalate		1200	
117-84-0	Di-n-octylphthalate		350	U
205-99-2	Benzo[b]fluoranthene		350	U
207-08-9	Benzo[k]fluoranthene		350	U
50-32-8	Benzo[a]pyrene		350	U
193-39-5	Indeno[1,2,3-cd]pyrene		350	U
53-70-3	Dibenz[a,h]anthracene		350	U
191-24-2	Benzo[g,h,i]perylene		350	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0808-JB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DH093.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 0 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
111-44-4	bis(2-Chloroethyl)ether		330	U
108-95-2	Phenol		330	U
95-57-8	2-Chlorophenol		330	U
541-73-1	1,3-Dichlorobenzene		330	U
106-46-7	1,4-Dichlorobenzene		330	U
95-50-1	1,2-Dichlorobenzene		330	U
108-60-1	bis(2-chloroisopropyl)ether		330	U
95-48-7	2-Methylphenol		330	U
67-72-1	Hexachloroethane		330	U
621-64-7	N-Nitroso-di-n-propylamine		330	U
106-44-5	4-Methylphenol		330	U
98-95-3	Nitrobenzene		330	U
78-59-1	Isophorone		330	U
88-75-5	2-Nitrophenol		330	U
105-67-9	2,4-Dimethylphenol		330	U
111-91-1	bis(2-Chloroethoxy)methane		330	U
120-83-2	2,4-Dichlorophenol		330	U
120-82-1	1,2,4-Trichlorobenzene		330	U
91-20-3	Naphthalene		330	U
106-47-8	4-Chloroaniline		330	U
87-68-3	Hexachlorobutadiene		330	U
59-50-7	4-Chloro-3-methylphenol		330	U
91-57-6	2-Methylnaphthalene		330	U
77-47-4	Hexachlorocyclopentadiene		330	U
88-06-2	2,4,6-Trichlorophenol		330	U
95-95-4	2,4,5-Trichlorophenol		830	U
91-58-7	2-Chloronaphthalene		330	U
88-74-4	2-Nitroaniline		830	U
208-96-8	Acenaphthylene		330	U
131-11-3	Dimethylphthalate		330	U
606-20-2	2,6-Dinitrotoluene		330	U
83-32-9	Acenaphthene		330	U
99-09-2	3-Nitroaniline		830	U

Lab Name: AENI MD Contract: OHM

Project No.: 9508032 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0808-JB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DH093.D

Level: (low/med) LOW Date Received: 8/3/95

% Moisture: 0 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
51-28-5	2,4-Dinitrophenol		830	U
132-64-9	Dibenzofuran		330	U
121-14-2	2,4-Dinitrotoluene		330	U
100-02-7	4-Nitrophenol		830	U
86-73-7	Fluorene		330	U
7005-72-3	4-Chlorophenyl-phenylether		330	U
84-66-2	Diethylphthalate		330	U
100-01-6	4-Nitroaniline		830	U
534-52-1	4,6-Dinitro-2-methylphenol		830	U
86-30-6	n-Nitrosodiphenylamine		330	U
101-55-3	4-Bromophenyl-phenylether		330	U
118-74-1	Hexachlorobenzene		330	U
87-86-5	Pentachlorophenol		830	U
85-01-8	Phenanthrene		330	U
120-12-7	Anthracene		330	U
84-74-2	Di-n-butylphthalate		330	U
86-74-8	Carbazole		330	U
206-44-0	Fluoranthene		330	U
129-00-0	Pyrene		330	U
85-68-7	Butylbenzylphthalate		330	U
91-94-1	3,3'-Dichlorobenzidine		330	U
56-55-3	Benzo[a]anthracene		330	U
218-01-9	Chrysene		330	U
117-81-7	bis(2-Ethylhexyl)phthalate		330	U
117-84-0	Di-n-octylphthalate		330	U
205-99-2	Benzo[b]fluoranthene		330	U
207-08-9	Benzo[k]fluoranthene		330	U
50-32-8	Benzo[a]pyrene		330	U
193-39-5	Indeno[1,2,3-cd]pyrene		330	U
53-70-3	Dibenz[a,h]anthracene		330	U
191-24-2	Benzo[g,h,i]perylene		330	U



OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0015
Field Technical Services
Rev. 08/89

9508032

No. 99988

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME		PROJECT LOCATION		ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)										
Fort Devens		Ayer, MA												
PROJ NO	PROJECT CONTACT	PROJECT TELEPHONE NO.												
16208	Mike Quinlan	(508) 772-2019												
CLIENT'S REPRESENTATIVE			PROJECT MANAGER/SUPERVISOR											
USACE			Kevin Mack											
ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	REMARKS						
1	SBSA39NC	08-02-95	1301	✓		Gold/Tan Sand	1x8oz	✓	✓					-001
2	SBSA39EC	08-02-95	1307	✓		Gold/Tan Sand	1x8oz	✓	✓					-002
3	SBSA39WC	08-02-95	1313	✓		Gold/Tan Sand	1x8oz	✓	✓					-003
4	SBSA39SC	08-02-95	1320	✓		Gold/Tan Sand	1x8oz	✓	✓					-004
5	SBSA39BC	08-02-95	1327	✓		Gold/Tan Sand	1x8oz	✓	✓					-005
6	SBSA39DUP	08-02-95	1313	✓		Gold/Tan Sand	1x8oz	✓	✓					-006
7														
8														
9														
10														

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-6	With Del	Federal Express Airbill # 123 2237 027	08-02-95	1500	-Temp blank included = 20C @ login (R) -Preserved at 4°C -3 Day TAT
2			<i>[Signature]</i>	8/3	1000	
3						
4						

SAMPLER'S SIGNATURE
With Del

AMERICAN ENVIRONMENTAL NETWORK, INC.

August 31, 1995

Client: OHM CORPORATION
Case: 9508301
Project: FORT DEVENS
Analysis: PCBs by SW-846 Method 8080

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
SBSA39BCA	9508301-001	08/25/95	08/28/95	08/28/95	08/30/95
SBSA39SEC	9508301-002	08/25/95	08/28/95	08/28/95	08/30/95
SBSA39L1C	9508301-003	08/25/95	08/28/95	08/28/95	08/30/95
SBSA39L2C	9508301-004	08/25/95	08/28/95	08/28/95	08/30/95
SBSA39NCA	9508301-005	08/25/95	08/28/95	08/28/95	08/30/95
SBSA39DUPA	9508301-006	08/25/95	08/28/95	08/28/95	08/30/95

Six soil samples were extracted and analyzed for PCB's by SW-846 method 8080.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and lab control sample recovery (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected at or above the detection limit. The samples were extracted and analyzed within the method recommended holding time.

Form II (Surrogate Spike Recoveries)

All recoveries are based on a single column analysis.

All surrogate recoveries were within EPA CLP criteria (60-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was prepared with this sample delivery group. LCS recovery was within SW-846 method 8080 criteria (29-131%).

MS/MSD was performed on sample SBSA39DUPA (AENI# 9508301-006). The spiking compound (AR1254) was masked by high levels of AR1260 in the matrix. Percent recoveries and RPD could not be evaluated.

Data Released By

CE Ferrin, Jr.
Charles E. Ferrin, Jr.
GC/LC Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA398CA

AENI #: 9508301-001

Concentration: Low
 Date Sampled: 08/25/95
 Date Received: 08/28/95
 Date Extract Prepared: 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 2.2

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		41	U
AR1260	840	41	

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.06

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA39SEC

AENI #: 9508301-002

Concentration: Low
 Date Sampled : 08/25/95
 Date Received : 08/28/95
 Date Extract Prepared : 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 4.3

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		41	U
AR1260	960	41	

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.81

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA39L1C

AENI #: 9508301-003

Concentration: Low
 Date Sampled : 08/25/95
 Date Received : 08/28/95
 Date Extract Prepared : 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 3.2

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		39	U
AR1260	2000	39	

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 31.57

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA39L2C

AENI #: 9508301-004

Concentration: Low
 Date Sampled : 08/25/95
 Date Received : 08/28/95
 Date Extract Prepared : 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 3.8

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		21	U
AR1221		21	U
AR1232		21	U
AR1242		21	U
AR1248		21	U
AR1254		41	U
AR1260	1400	41	

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.08

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA39NCA

AENI #: 9508301-005

Concentration: Low
 Date Sampled: 08/25/95
 Date Received: 08/28/95
 Date Extract Prepared: 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix: SOIL
 Percent Moisture: 3.1

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		40	U
AR1260		40	U

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.83

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: SBSA390UPA

AENI #: 9508301-006

Concentration: Low
 Date Sampled : 08/25/95
 Date Received : 08/28/95
 Date Extract Prepared : 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 3

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		40	U
AR1260	920	40	

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.8

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508301
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: BLANK

AENI #: 0828JA

Concentration: Low
 Date Sampled: N/A
 Date Received: N/A
 Date Extract Prepared: 08/28/95
 Date Analyzed: 08/30/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix: SOIL
 Percent Moisture: 0

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		40	U
AR1260		40	U

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30

Vt - Volume of total extract (ul) - 10000

CHAIN-OF-CUSTODY RECORD

9508301

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME Fort Devens						PROJECT LOCATION Ayer, MA						NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) PCB'S												
PROJ NO. 16208			PROJECT CONTACT Mike Quinkan			PROJECT TELEPHONE NO. (508) 772-2019																			
CLIENT'S REPRESENTATIVE USACE						PROJECT MANAGER/SUPERVISOR Kevin Mack																			
ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)										REMARKS									
1	SBSA39BCA	8-25-95	1449	X		Gold Sand										1x8oz X -001									
2	SBSA39SEC	8-25-95	1511	X		Gold Sand										1x8oz X 002									
3	SBSA39L1C	8-25-95	1518	X		Gold Sand										1x8oz X 003									
4	SBSA39L2C	8-25-95	1525	X		Gold Sand										1x8oz X 004									
5	SBSA39NCA	8-25-95	1454	X		Gold Sand										1x8oz X 005									
6	SBSA39DUPA	8-25-95	1449	X		Gold Sand										1x8oz X 006									
7																									
8																									
9																									
10																									

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-6	H. Hummond	247 3591046 Federal Express Airbill #	8-25-95	1800	- Samples preserved at 4°C - Temp blank included - 3 day TAT - cooler rec'd @ lab Sat. 9/26 SAMPLER'S SIGNATURE Gregory Hummond
2			B. T. ...	8/28	800	
3						
4						

Appendix C
AENI Analytical Reports - Waste Characterization Soil Samples

AMERICAN ENVIRONMENTAL NETWORK, INC

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508050
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 11, 1995
Analysis: General Chemistry Parameters

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>
SB3630I01	9508050-001	08/03/95	08/04/95
EXSA3901	9508050-002	08/03/95	08/04/95
EXSA39DUP	9508050-003	08/03/95	08/04/95

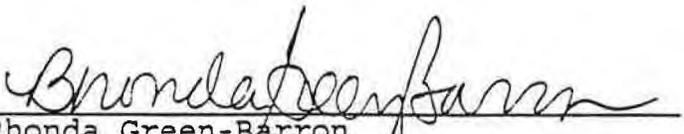
Three soil samples were received and analyzed for General Chemistry Parameters.

The samples were extracted for Total Petroleum Hydrocarbons on 08/09/95 and analyzed on 08/11/95.

All quality control met standard laboratory criteria.

This report consists of tabulated sample results.

Report Released By:


Rhonda Green-Barron
General Chemistry Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508050
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 11, 1995
Sample ID: EXSA3901, dated 08/03/95

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	SW846 9045	5.2	08/08/95
Flashpoint, °F	SW846 1010	>203	08/08/95
Reactive Cyanide, mg/Kg	(1)	<2	08/08/95
Reactive Sulfide, mg/Kg	(2)	<40	08/08/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	280	08/11/95

- (1) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508050
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 11, 1995
Sample ID: EXSA39DUP, dated 08/03/95

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	SW846 9045	5.1	08/08/95
Flashpoint, °F	SW846 1010	>203	08/08/95
Reactive Cyanide, mg/Kg	(1)	<2	08/08/95
Reactive Sulfide, mg/Kg	(2)	<40	08/08/95

- 1) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9508050
Report To: OHM Corporation
Project: Fort Devens #16208
Date: August 11, 1995
Sample ID: Method Blank

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Reactive Cyanide, mg/L	(1)	<0.02	08/08/95
Reactive Sulfide, mg/L	(2)	<1	08/08/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	<26	08/11/95

- (1) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, Md 21045-1992
(410) 730-8525 Fax (410) 997-2586

Client: OHM Corporation
Project: Fort Devens #16208
Case: 9508050
Date: August 10, 1995
Analysis: Metals, TCLP Metals

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Analyzed</u>
SB3630I01	9508050-001	08/03/95	08/04/95	08/09,10/95
EXSA3901	9508050-002	08/03/95	08/04/95	08/09,10/95
EXSA39DUP	9508050-003	08/03/95	08/04/95	08/09,10/95

One grey, wet, fine sand/clay sample was received and analyzed for Metals following SW846 methodologies. Results are reported in units of mg/kg dry weight.

Two brown/gold sand samples were received and analyzed for TCLP Metals following SW846 methodologies. TCLP results are reported in units of ug/L in the leachate.

All quality control met standard laboratory criteria.

This report consists specifically of tabulated sample and QC results.

Report Released By



Christopher Baggett
Metals Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
TCLP METALS

CLIENT: OHM Corporation
AENI SAMPLE #: 9508050-002
CLIENT SAMPLE #: EXSA3901

DATE: 10-Aug-95

UNITS: ug/L in LEACHATE

ANALYTE	METHOD	REPORT LIMIT	SAMPLE RESULT
ARSENIC	6010	500	<500
BARIUM	6010	1,000	<1000
CADMIUM	6010	40	<40
CHROMIUM	6010	100	<100
LEAD	6010	100	<100
MERCURY	7470	1	<1
SELENIUM	6010	250	<250
SILVER	6010	500	<500

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
TCLP METALS

CLIENT: OHM Corporation
AENI SAMPLE #: 9508050-003
CLIENT SAMPLE #: EXSA390UP

DATE: 10-Aug-95

UNITS: ug/L in LEACHATE

ANALYTE	METHOD	REPORT LIMIT	SAMPLE RESULT
ARSENIC	6010	500	<500
BARIUM	6010	1,000	<1000
CADMIUM	6010	40	<40
CHROMIUM	6010	100	<100
LEAD	6010	100	<100
MERCURY	7470	1	<1
SELENIUM	6010	250	<250
SILVER	6010	500	<500

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK AND %RECOVERY LCS

CLIENT: OHM Corporation

DATE: 10-Aug-95

UNITS: ug/L IN LEACHATE

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LABORATORY CONTROL SAMPLE
ARSENIC	6010	<500	98
BARIUM	6010	<1000	107
CADMIUM	6010	<40	103
CHROMIUM	6010	<100	104
LEAD	6010	<100	104
MERCURY	7470	<1.0	96
SELENIUM	6010	<250	95
SILVER	6010	<500	103

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULTS

CLIENT: OHM Corporation
 AENI SAMPLE #: 9508050-003
 CLIENT SAMPLE #: EXSA39DUP

DATE: 10-Aug-95

UNITS: ug/L IN LEACHATE

ANALYTE	SAMPLE RESULT	SPIKED SAMPLE RESULT	DUPLICATE SPIKED RESULTS	SPIKE ADDED	%RECOVERY SPIKE	%RECOVERY DUPLICATE SPIKE	RPD MS/MSD
ARSENIC	<500	2550	2580	2500	102	103	1.17
BARIUM	<1000	5060	5080	5000	101	102	0.39
CADMIUM	<40	505	510	500	101	102	0.99
CHROMIUM	<100	2410	2430	2500	96	97	0.83
LEAD	<100	5070	5100	5000	101	102	0.59
MERCURY	<1	4.11	3.97	4	102	99	3.47
SELENIUM	<250	1260	1280	1250	101	102	1.57
SILVER	<500	2470	2500	2500	99	100	1.21

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL

AMERICAN ENVIRONMENTAL NETWORK, INC.

August 14, 1995

Client: OHM CORPORATION

Case: 9508050

Project: FORT DEVENS

Analysis: TCLP Herbicides by Method 8150

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA3901	9508050-002	08/03/95	08/04/95	08/08/95	08/11/95
EXSA39DUP	9508050-003	08/03/95	08/04/95	08/08/95	08/11/95

Two soil samples were leached according to 40 CFR 261, Appendix II. The leachates were analyzed for 2,4-D and Silvex using SW-846 Method 8150.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

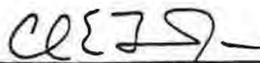
Form II (Surrogate Spike Recoveries)

Eight out of ten surrogate recoveries were within specified criteria (50-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was prepared with this sample delivery group. LCS recoveries were within laboratory criteria (50-150%).

Data Released By


Charles E. Ferrin Jr.
GC/LC Lab Manager

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9508050
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS

Sample Number EXSA3901

AENI # 9508050-002

Concentration: _____ Low
 Date Sampled: _____ 8/3/95
 Date Received: _____ 8/4/95
 Date Extract Prepared: _____ 8/8/95
 Date Analyzed: _____ 8/11/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.50	U
SILVEX		0.50	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 500
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9508050
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS

Sample Number EXSA39DUP

AENI # 9508050-003

Concentration: _____ Low
 Date Sampled: _____ 8/3/95
 Date Received: _____ 8/4/95
 Date Extract Prepared: _____ 8/8/95
 Date Analyzed: _____ 8/11/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.50	U
SILVEX		0.50	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 500
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9508050
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS

Sample Number BLANK

AENI # BLK 0808LA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Extract Prepared: 8/8/95
 Date Analyzed: 8/11/95
 Conc/Dil Factor: _____ 1
 Matrix _____ WATER

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.25	U
SILVEX		0.25	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 1000
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9508050
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS

Sample Number TCLP BLANK

AENI # TCLP BLK 0808LA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Extract Prepared: _____ 8/8/95
 Date Analyzed: _____ 8/11/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.50	U
SILVEX		0.50	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 500
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK, INC.
HERBICIDE MATRIX SPIKE RECOVERIES

Case No.: 9508050

Client Sample ID: TCLP LCS 0808LA

Client Name: OHM CORPORATION

Date of Analysis: 8/11/95

Project Name: FORT DEVENS

Instrument ID: GC-H

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONC (ug/L)	BS % REC	BSD CONC (ug/L)	BSD % REC	QC LIMITS REC
2,4-D	5.03	0.0	3.02	60	N/A	N/A	50-150
Sivex	5.29	0.0	3.67	69	N/A	N/A	50-150

Spike Recovery: 0 out of 2 outside QC limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

August 10, 1995

Client: OHM CORPORATION

Case: 9508050

Project: FORT DEVENS

Analysis: TCLP Pesticides by SW-846 Method 8080

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA3901	9508050-002	08/03/95	08/04/95	08/09/95	08/10/95
EXSA39DUP	9508050-003	08/03/95	08/04/95	08/09/95	08/10/95

Two soil samples were leached in accordance with 40 CFR 261, Appendix II. The leachates were analyzed for pesticides by SW-846 method 8080.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

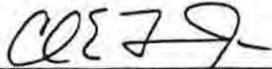
Form II (Surrogate Spike Recoveries)

All surrogate recoveries were within specified criteria (60-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was extracted with this sample set. All LCS recoveries were within specified criteria (see Form III).

Data Released By


Charles E. Ferrin Jr.
GC/LC Lab Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9508050
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number EXSA3901

AENI # 9508050-002

Concentration: _____ Low
 Date Sampled: _____ 8/3/95
 Date Received: _____ 8/4/95
 Date Ext Prepared: _____ 8/9/95
 Date Analyzed: _____ 8/10/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup		Yes		X	No
Separatory Funnel Extraction				X	Yes
Continuous Liquid - Liquid Extraction					Yes
Percent Moisture		N/A			
Matrix:		LEACH			

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

Vi - Volume of extract injected (ul) - _____ 5
 Vs - Volume of Water extracted (ml) - _____ 500
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9508050
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number EXSA39DUP

AENI # 9508050-003

Concentration: _____ Low
 Date Sampled: _____ 8/3/95
 Date Received: _____ 8/4/95
 Date Ext Prepared: _____ 8/9/95
 Date Analyzed: _____ 8/10/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Seperatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extration	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	_____ N/A	
Matrix:	_____ <u>LEACH</u>	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

Vi - Volume of extract injected (ul) - _____ 5
 Vs - Volume of Water extracted (ml) - _____ 500
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: 9508050

Project Name: FORT DEVENS

Client Name: OHM CORPORATION

Sample Number BLANK

AENI # BLK 0809LB

Concentration: Low

Date Sampled: N/A

Date Received: N/A

Date Ext Prepared: 8/9/95

Date Analyzed: 8/10/95

Conc/Dil Factor: 1

Method: 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Seperatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	N/A	
Matrix:	LEACH	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.10	U
75-44-8	Heptachlor		0.050	U
1024-57-3	Heptachlor epoxide		0.050	U
72-20-8	Endrin		0.10	U
72-43-5	Methoxychlor		0.50	U
5103-71-9	alpha-Chlordane		0.050	U
5103-74-2	gamma-Chlordane		0.050	U
8001-35-2	Toxaphene		5.0	U

V_i - Volume of extract injected (ul) - 5

V_s - Volume of Water extracted (ml) - 1000

W_s - Weight of sample extracted (g) - N/A

V_t - Volume of total extract (ul) - 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9508050
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number TCLP BLANK

AENI # TCLP BLK 0809LB

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 8/9/95
 Date Analyzed: _____ 8/10/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup		Yes		X	No
Separatory Funnel Extraction				X	Yes
Continuous Liquid - Liquid Extraction					Yes
Percent Moisture		_____ N/A _____			
Matrix:		_____ LEACH _____			

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

Vi - Volume of extract injected (ul) - _____ 5
 Vs - Volume of Water extracted (ml) - _____ 500
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

3E

WATER BLANK SPIKE RECOVERY

Lab Name: American Environmental Network, Inc.

Contract: 9508050

Lab Code: NA

Case No.: NA

SAS No.: NA

Matrix Spike - EPA Sample No.: TCLP LCS 0809LB

Method: 8080

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC	#	QC LIMITS REC.
gamma-BHC (Lindane)	0.40	0.0	0.33	83		56 - 123
Heptachlor	0.40	0.0	0.30	75		40 - 131
Aldrin	0.40	0.0	0.32	80		40 - 120
Dieldrin	1.0	0.0	0.84	84		52 - 126
Endrin	1.0	0.0	0.84	84		56 - 121
4,4'-DDT	1.0	0.0	0.80	80		38 - 127

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

August 10, 1995

Client: OHM CORPORATION

Case: 9508050

Project: FORT DEVENS

Analysis: PCBs by SW-846 Method 8080

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA3901	9508050-002	08/03/95	08/04/95	08/09/95	08/09/95
EXSA39DUP	9508050-003	08/03/95	08/04/95	08/09/95	08/09/95

Two soil samples were extracted and analyzed for PCB's by SW-846 method 8080.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and lab control sample recovery (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected at or above the detection limit. The samples were extracted and analyzed within the method recommended holding time.

Form II (Surrogate Spike Recoveries)

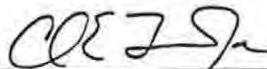
All recoveries are based on a single column analysis.

All surrogate recoveries were within EPA CLP criteria (60-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was prepared with this sample delivery group. LCS recovery was within SW-846 method 8080 criteria (29-131%).

Data Released By



Charles E. Ferrin, Jr.
GC/LC Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508050
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: EXSA3901

AENI #: 9508050-002

Concentration: Low
 Date Sampled : 08/03/95
 Date Received : 08/04/95
 Date Extract Prepared : 08/09/95
 Date Analyzed: 08/09/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 4.2

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		40	U
AR1260		40	U

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.99

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508050
 Client Name: OHM CORPORATION
 Project: FORT DEVENS

CLIENT NUMBER: EXSA39DUP

AENI #: 9508050-003

Concentration: Low
 Date Sampled : 08/03/95
 Date Received : 08/04/95
 Date Extract Prepared : 08/09/95
 Date Analyzed: 08/09/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 3.9

ug/Kg			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		21	U
AR1221		21	U
AR1232		21	U
AR1242		21	U
AR1248		21	U
AR1254		41	U
AR1260		41	U

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30.13

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.
 ORGANIC ANALYSIS DATA SHEET
 PCBs BY 8080

Contract Number: 9508050
 Client Name: ONM CORPORATION
 Project: FORT DEVENS

 CLIENT NUMBER: BLANK

AENI #: 0809VA

Concentration: Low
 Date Sampled: N/A
 Date Received: N/A
 Date Extract Prepared: 08/09/95
 Date Analyzed: 08/09/95
 Conc/Dil Factor: 1

GPC Cleanup: Yes [] No [X]
 Sonication Ext: [X]
 Soxhlett Ext: []
 Matrix SOIL
 Percent Moisture: 0

----- ug/Kg -----			
COMPOUND	CONCENTRATION	DETECTION LIMIT	QUALIFIER
AR1016		20	U
AR1221		20	U
AR1232		20	U
AR1242		20	U
AR1248		20	U
AR1254		40	U
AR1260		40	U

U-Indicates that a compound was analyzed for but not detected at or above the detection limit.

Vi - Volume of extract injected (ul) - 1

Vs - Volume of water extracted (ml) - N/A

Ws - Mass of soil extracted (g) - 30

Vt - Volume of total extract (ul) - 10000

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

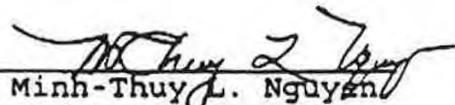
Project Number: 9508050
Client Name: O.H. Materials Corp.
Project Title: Fort Devens
Ayer, MA

One soil sample was analyzed for the volatile organic compounds in the Priority Pollutant list by method 8240. Two soil samples were analyzed for the semivolatile organic compounds in the TCL list by method 8270. The samples were also TCLP leached according to the SW846 guidelines and analyzed for the volatile and semivolatile organic compounds in the list of Toxic Characteristic Constituents by methods 8240 and 8270, respectively.

The analyses followed the standard AENI QA/QC and holding time requirements.

This package consists of tabulated results of the samples and the method blanks, along with the QC forms II, III and IV.

Data Released


Minh-Thuy L. Nguyen
GC/MS Lab Manager

Volatiles Section:

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date TCLP Extracted	Date Analyzed
PP analysis						
SB3630I01	050-001	Soil	08/03/95	08/04/95	n.a.	08/07/95
TCLP analysis						
SB3630I01	050-001	Soil	08/03/95	08/04/95	08/08/95	08/09/95

Form I (Tabulated Results)

All sample extraction and analyses were performed within the holding requirement. The leachates were analyzed at a 1:10 dilution to minimize interference from the leaching solvent. The PP analysis were reported on the basis of dry weight.

Form II (Surrogate Recoveries)

The surrogate recoveries for the sample and the method blanks were within the method specified limits.

Form III (MS Recoveries)

TCL analysis: A batch MS/MSD analysis was reported. All spike recoveries were within criteria, however on spike recovery was above the method advisory limit (22 vs 21%).

TCLP analysis: A batch MS analysis was reported. All spike recoveries were within criteria.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

Semivolatiles Section:

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date Extracted	TCLP	BNA	Date Analyzed
TCL analysis								
SB3630I01	050-001	Soil	08/03/95	08/04/95	n.a.	08/08		08/11/95
EXSA3901	050-002	Soil	08/03/95	08/04/95	n.a.	08/08		08/11/95
TCLP analysis								
EXSA3901	050-002	Soil	08/03/95	08/04/95	08/07	08/08		08/11/95
EXSA39DUP	050-003	Soil	08/03/95	08/04/95	08/07	08/08		08/11/95

Form I (Tabulated Results)

All sample extraction and analyses were performed within the holding time requirement.

Sample SB3630I01 (TCL analysis) was analyzed at a 1:5 dilution due to the high level of background interference.

The leachates were analyzed at a 1:2 dilution to minimize interference from the leaching solvent.

Form II (Surrogate Recoveries)

The surrogate recoveries for all method blanks, QC and samples were within the method specified limits. Note that the TCL analysis of sample SB3630I01 and the TCLP analyses for all samples were flagged with 'D' due to the dilution.

Form III (MS Recoveries)

TCLP analysis: A LCS analysis was reported. All spike recoveries were within criteria.

TCL analysis: A LCS analysis was reported. The recovery of 2,4-dinitrotoluene was good (94%) but above the method advisory limit of 89%. All other recoveries were within criteria

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

TCLP VOA Analysis

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MD

Contract: QHM

Project No.: 9508050

Site: FT. DEVENS

Location: AYER, MA

Group: _____

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK02	101	107	104		
02	TBLK	104	103	100		
03	EXSA3901	106	104	101		
04	EXSA390UP	105	105	104		
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
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16						
17						
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19						
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25						
26						
27						
28						
29						
30						

SMC1 (DCE) - 1,2-Dichloroethane-d4 (76-114)
 SMC2 (TOL) - Toluene-d8 (88-110)
 SMC3 (BFB) - Bromofluorobenzene (86-115)

QC LIMITS
 (76-114)
 (88-110)
 (86-115)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D System Monitoring Compound diluted out

3A
WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: FT. DVENS Location: AYER, MA Group: _____

Matrix Spike - Sample No.: 08085-001
(BATCH QC)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	52	104	(61-145)
Tricloroethene	50	0	41	82	(71-120)
Benzene	50	0	55	110	(76-127)
Toluene	50	0	54	108	(76-125)
Chlorobenzene	50	0	53	106	(75-130)

• Values outside of QC limits

Comments: _____

VOLATILE METHOD BLANK SUMMARY

VBLK02

Lab Name: AEMI MDContract: OHMProject No.: 9508050Site: FT. DEVENSLocation: AYER, MA

Group: _____

Lab File ID: EH107.DLab Sample ID: 0809VBLKDate Analyzed: 8/9/95Time Analyzed: 1045GC Column: CAPID: 0.53 (mm)Heated Purge: (Y/N) NInstrument ID: E7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TBLK	0808TBLK	EH108.D	8/9/95
02	EXSA3901	#002	EH109.D	8/9/95
03	EXSA390UP	#003	EH110.D	8/9/95
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
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26				
27				
28				
29				
30				

COMMENTS:

TCL BNA Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHM
 Project No.: 9508050 Site: _____ Location: _____ Group: _____
 Level: (low/med) LOW

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	SBLK01	67	81	82	109	71	85			
02	SBLK01 MS	70	81	91	115	59	95			
03	SB3630101	86 D	95 D	89 D	100 D	68 D	77 D			
04	EXSA3901	67	80	82	91	98	76			
05										
06										
07										
08										
09										
10										
11										
12										
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29										
30										

QC LIMITS
 S1 (2FP) - 2-Fluorophenol (25-121)
 S2 (PHL) - Phenol-d5 (24-113)
 S3 (NBZ) - Nitrobenzene-d5 (23-120)
 S4 (FBP) - 2-Fluorobiphenyl (30-115)
 S5 (TBP) - 2,4,6-Tribromophenol (19-122)
 S6 (TPH) - Terphenyl-d14 (18-137)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHM
 Project No.: 9508050 Site: _____ Location: _____ Group: _____
 Matrix Spike - Sample No.: SBLK01 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	6700	0	4800	72	(26-90)
2-Chlorophenol	6700	0	4800	72	(25-102)
1,4-Dichlorobenzene	3300	0	2600	79	(28-104)
N-Nitroso-di-n-propylamine	3300	0	2200	67	(41-126)
1,2,4-Trichlorobenzene	3300	0	2700	82	(38-107)
4-Chloro-3-methylphenol	6700	0	5500	82	(26-103)
Acenaphthene	3300	0	3800	115	(31-137)
2,4-Dinitrotoluene	3300	0	3100	94 *	(28-89)
4-Nitrophenol	6700	0	4300	64	(11-114)
Pentachlorophenol	6700	0	1800	27	(17-109)
Pyrene	3300	0	3300	100	(35-142)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD		QC LIMITS	
			% REC #	% RPD #	RPD	REC.
Phenol					35	(26-90)
2-Chlorophenol					50	(25-102)
1,4-Dichlorobenzene					27	(28-104)
N-Nitroso-di-n-propylamine					38	(41-126)
1,2,4-Trichlorobenzene					23	(38-107)
4-Chloro-3-methylphenol					33	(26-103)
Acenaphthene					19	(31-137)
2,4-Dinitrotoluene					47	(28-89)
4-Nitrophenol					50	(11-114)
Pentachlorophenol					47	(17-109)
Pyrene					36	(35-142)

* Values outside of QC limits

Spike Recovery: 1 out of 11 outside limits

Comments: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

SBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

Lab File ID: DH093.D Lab Sample ID: 0808-JB

Instrument ID: MSD 1 Date Extracted: 8/8/95

Matrix: (soil/water) SOIL Date Analyzed: 8/10/95

Level: (low/med) LOW Time Analyzed: 1721

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK01 MS	0808-JB BS	DH094.D	08/10/95
02	SB3630I01	#001	DH121.D	08/11/95
03	EXSA3901	#002	DH122.D	08/11/95
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COMMENTS:

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA3901

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #002

Sample wt/vol: 30.3 (g/mL) G Lab File ID: DH122.D

Level: (low/med) LOW Date Received: 8/4/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
111-44-4	bis(2-Chloroethyl)ether		340	U
108-95-2	Phenol		340	U
95-57-8	2-Chlorophenol		340	U
541-73-1	1,3-Dichlorobenzene		340	U
106-46-7	1,4-Dichlorobenzene		340	U
95-50-1	1,2-Dichlorobenzene		340	U
108-60-1	bis(2-chloroisopropyl)ether		340	U
95-48-7	2-Methylphenol		340	U
67-72-1	Hexachloroethane		340	U
621-64-7	N-Nitroso-di-n-propylamine		340	U
106-44-5	4-Methylphenol		340	U
98-95-3	Nitrobenzene		340	U
78-59-1	Isophorone		340	U
88-75-5	2-Nitrophenol		340	U
105-67-9	2,4-Dimethylphenol		340	U
111-91-1	bis(2-Chloroethoxy)methane		340	U
120-83-2	2,4-Dichlorophenol		340	U
120-82-1	1,2,4-Trichlorobenzene		340	U
91-20-3	Naphthalene		340	U
106-47-8	4-Chloroaniline		340	U
87-68-3	Hexachlorobutadiene		340	U
59-50-7	4-Chloro-3-methylphenol		340	U
91-57-6	2-Methylnaphthalene		340	U
77-47-4	Hexachlorocyclopentadiene		340	U
88-06-2	2,4,6-Trichlorophenol		340	U
95-95-4	2,4,5-Trichlorophenol		860	U
91-58-7	2-Chloronaphthalene		340	U
88-74-4	2-Nitroaniline		860	U
208-96-8	Acenaphthylene		340	U
131-11-3	Dimethylphthalate		340	U
606-20-2	2,6-Dinitrotoluene		340	U
83-32-9	Acenaphthene		340	U
99-09-2	3-Nitroaniline		860	U

18
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA3901

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #002

Sample wt/vol: 30.3 (g/mL) G Lab File ID: DH122.0

Level: (low/med) LOW Date Received: 8/4/95

% Moisture: 4 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/11/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		860	U
132-64-9	Dibenzofuran		340	U
121-14-2	2,4-Dinitrotoluene		340	U
100-02-7	4-Nitrophenol		860	U
86-73-7	Fluorene		340	U
7005-72-3	4-Chlorophenyl-phenylether		340	U
84-66-2	Diethylphthalate		340	U
100-01-6	4-Nitroaniline		860	U
534-52-1	4,6-Dinitro-2-methylphenol		860	U
86-30-6	n-Nitrosodiphenylamine		340	U
101-55-3	4-Bromophenyl-phenylether		340	U
118-74-1	Hexachlorobenzene		340	U
87-86-5	Pentachlorophenol		860	U
85-01-8	Phenanthrene		340	U
120-12-7	Anthracene		340	U
84-74-2	Di-n-butylphthalate		340	U
86-74-8	Carbazole		340	U
206-44-0	Fluoranthene		340	U
129-00-0	Pyrene		340	U
85-68-7	Butylbenzylphthalate		340	U
91-94-1	3,3'-Dichlorobenzidine		340	U
56-55-3	Benzo[a]anthracene		340	U
218-01-9	Chrysene		340	U
117-81-7	bis(2-Ethylhexyl)phthalate		510	
117-84-0	Di-n-octylphthalate		340	U
205-99-2	Benzo[b]fluoranthene		340	U
207-08-9	Benzo[k]fluoranthene		340	U
50-32-8	Benzo[a]pyrene		340	U
193-39-5	Indeno[1,2,3-cd]pyrene		340	U
53-70-3	Dibenz[a,h]anthracene		340	U
191-24-2	Benzo[g,h,i]perylene		340	U

18
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0808-JB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DH093.D

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/Kg
111-44-4	bis(2-Chloroethyl)ether	330	U
108-95-2	Phenol	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
108-60-1	bis(2-chloroisopropyl)ether	330	U
95-48-7	2-Methylphenol	330	U
67-72-1	Hexachloroethane	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
106-44-5	4-Methylphenol	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	830	U
208-96-8	Acenaphthylene	330	U
131-11-3	Dimethylphthalate	330	U
606-20-2	2,6-Dinitrotoluene	330	U
83-32-9	Acenaphthene	330	U
99-09-2	3-Nitroaniline	830	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0808-JB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: OH093.D

Level: (low/med) LOW Date Received: _____

% Moisture: 0 decanted: (Y/N): N Date Extracted: 8/8/95

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 8/10/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg)	ug/Kg	Q
51-28-5	2,4-Dinitrophenol		830	U
132-64-9	Dibenzofuran		330	U
121-14-2	2,4-Dinitrotoluene		330	U
100-02-7	4-Nitrophenol		830	U
86-73-7	Fluorene		330	U
7005-72-3	4-Chlorophenyl-phenylether		330	U
84-66-2	Diethylphthalate		330	U
100-01-6	4-Nitroaniline		830	U
534-52-1	4,6-Dinitro-2-methylphenol		830	U
86-30-6	n-Nitrosodiphenylamine		330	U
101-55-3	4-Bromophenyl-phenylether		330	U
118-74-1	Hexachlorobenzene		330	U
87-86-5	Pentachlorophenol		830	U
85-01-8	Phenanthrene		330	U
120-12-7	Anthracene		330	U
84-74-2	Di-n-butylphthalate		330	U
86-74-8	Carbazole		330	U
206-44-0	Fluoranthene		330	U
129-00-0	Pyrene		330	U
85-68-7	Butylbenzylphthalate		330	U
91-94-1	3,3'-Dichlorobenzidine		330	U
56-55-3	Benzo[a]anthracene		330	U
218-01-9	Chrysene		330	U
117-81-7	bis(2-Ethylhexyl)phthalate		330	U
117-84-0	Di-n-octylphthalate		330	U
205-99-2	Benzo[b]fluoranthene		330	U
207-08-9	Benzo[k]fluoranthene		330	U
50-32-8	Benzo[a]pyrene		330	U
193-39-5	Indeno[1,2,3-cd]pyrene		330	U
53-70-3	Dibenz[a,h]anthracene		330	U
191-24-2	Benzo[g,h,i]perylene		330	U

TCLP BNA Analysis

20
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MO Contract: OHM

Project No.: 9508050 Site: _____ Location: _____ Group: _____

	SAMPLE NO.	S1 (ZFP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	EXSA3901	64 D	64 D	94 D	89 D	97 D	66 D			
02	EXSA390UP	74 D	44 D	100 D	91 D	103 D	69 D			
03	TCLP BLK	50	56	89	74	89	62			
04	TCLP BLK MS	54	55	88	75	91	61			
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QC LIMITS

S1 (ZFP) - 2-Fluorophenol (21-100)
 S2 (PHL) - Phenol-d5 (10-94)
 S3 (NBZ) - Nitrobenzene-d5 (34-114)
 S4 (FBP) - 2-Fluorobiphenyl (43-116)
 S5 (TBP) - 2,4,6-Tribromophenol (10-123)
 S6 (TPH) - Terphenyl-d14 (33-141)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9508050 Site: _____ Location: _____ Group: _____Matrix Spike - Sample No.: TCLP BLK

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	98	49	(12-89)
2-Chlorophenol	200	0	140	70	(27-123)
1,4-Dichlorobenzene	100	0	61	61	(36-97)
N-Nitroso-di-n-propylamine	100	0	110	110	(41-116)
1,2,4-Trichlorobenzene	100	0	60	60	(39-98)
4-Chloro-3-methylphenol	200	0	160	80	(23-97)
Acenaphthene	100	0	79	79	(46-118)
2,4-Dinitrotoluene	100	0	70	70	(24-96)
4-Nitrophenol	200	0	130	65	(10-80)
Pentachlorophenol	200	0	160	80	(9-103)
Pyrene	100	0	76	76	(26-127)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #		QC LIMITS	
			% RPD #	% RPD #	RPD	REC.
Phenol					42	(12-89)
2-Chlorophenol					40	(27-123)
1,4-Dichlorobenzene					28	(36-97)
N-Nitroso-di-n-propylamine					38	(41-116)
1,2,4-Trichlorobenzene					28	(39-98)
4-Chloro-3-methylphenol					42	(23-97)
Acenaphthene					31	(46-118)
2,4-Dinitrotoluene					38	(24-96)
4-Nitrophenol					50	(10-80)
Pentachlorophenol					50	(9-103)
Pyrene					31	(26-127)

(1) N-Nitroso-di-n-propylamine

• Values outside of QC limits

Comments: _____

48
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
TCLP BLK

Lab Name: AENI MD Contract: OHM
 Project No.: 9508050 Site: _____ Location: _____ Group: _____
 Lab File ID: CH108.D Lab Sample ID: TBLK
 Instrument ID: MSD 1 Date Extracted: 8/8/95
 Matrix: (soil/water) WATER Date Analyzed: 8/11/95
 Level: (low/med) _____ Time Analyzed: 2004

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	EXSA3901	#002	CH101.D	08/11/95
02	EXSA39DUP	#003	CH102.D	08/11/95
03	TCLP BLK MS	TBLK MS	CH109.D	08/11/95
04				
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COMMENTS:



OHM Corporation

CHAIN-OF-CUSTODY RECORD

AFIN

Form 001

Technical Service

Rev. 08/8

9508050

No. 99981

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME		PROJECT LOCATION		NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)						REMARKS	
Fort Devens		Ayer, MA			<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TRPH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Semi-volatiles (TCL)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PCRA QVAR</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PCB's</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TCLP</div> </div>							
PROJ NO	PROJECT CONTACT	PROJECT TELEPHONE NO										
16208	Mike Quinlan	(508) 772-2019										
CLIENT'S REPRESENTATIVE			PROJECT MANAGER/SUPERVISOR									
USACE			Kevin Mack									
ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)						
1	EXSA3901	08-03-95	1218	✓		Brown/Gold Sand				3x8oz 1x1L	✓ ✓ ✓ ✓ ✓	-003
2	EXSA39 DUP	08-03-95	1218	✓		Brown/Gold Sand				1x8oz 1x1L	✓ ✓ ✓	-003
3												
4												
5												
6												
7												
8												
9												
10												

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-2	A. Hummer	Federal Express Airbill # 122 7623 284	08-03-95		- Preserved at 4°C - Temp blank included = 2.5°C (P) - 3 Day TAT
2			B. J. ...	8/4	1000	
3						
4						

SAMPLER'S SIGNATURE

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

September 26, 1995

Ms. Margaret Bleau
OHM Remediation
2613 Lake George Street
Ayer, Mass 01432

Dear Ms Bleau:

Enclosed are results of the analyses performed on the samples received 9/14/95.

The samples were analyzed in accordance with EPA-approved procedures.

Please feel free to call me at (410) 730-8525 if you have any questions concerning this report.

Sincerely,

Kristina C. Yamarik
Kristina C. Yamarik
Project Manager

9509-158
Enclosures
kcy

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

September 25, 1995

Client: OHM Corporation
Project: Fort Devens #16208
Case: 9509158
Analysis: Metals

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Analyzed</u>
EXSA3901	9509158-001	08/03/95	09/14/95	09/15-24/95
EXSA39DUP	9509158-002	08/03/95	09/14/95	09/15-24/95

Two soil samples were received and analyzed for metals. Results are reported in units of mg/Kg dry weight.

The samples arrived with the hold time for mercury analysis expired.

All QC data were within normal control limits.

Report Released By



Christopher Baggett
Metals Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS

CLIENT: OHM Corporation DATE: 25-Sep-95
AENI ID #: 9509158-001
SAMPLE ID #: EKSA3901 % SOLIDS: 95.8 UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1.0	5.7
BARIUM	6010	10	11
CADMIUM	6010	0.42	< 0.42
CHROMIUM	6010	1.0	4.7
LEAD	6010	1.0	5.2
MERCURY	7471	0.10	< 0.10
SELENIUM	6010	0.52	< 0.52
SILVER	6010	1.0	< 1.0

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS

CLIENT: OHM Corporation DATE: 25-Sep-95
AENI ID #: 9509158-002
SAMPLE ID #: EKSAL9DUP % SOLIDS: 96.1 UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1.0	5.4
BARIUM	6010	10	12
CADMIUM	6010	0.42	< 0.42
CHROMIUM	6010	1.0	5.4
LEAD	6010	1.0	5.6
MERCURY	7471	0.10	< 0.10
SELENIUM	6010	0.52	< 0.52
SILVER	6010	1.0	< 1.0

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK / LCS & RECOVERY

CLIENT: OHM Corporation

DATE: 25-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LCS
ARSENIC	6010	< 1	94
BARIUM	6010	< 10	103
CADMIUM	6010	< 0.4	99
CHROMIUM	6010	< 1	94
LEAD	6010	< 1	99
MERCURY	7471	< 0.1	95
SELENIUM	6010	< 0.5	95
SILVER	6010	< 1	96

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509158-001 (Hg) / 9509169 (ICP)MSD
 SAMPLE ID #: EKSA3901/AENI

DATE: 25-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	9.5	19	10	89
BARIUM	1240	1430	209	NA
CADMIUM	3.4	7.8	5.2	83
CHROMIUM	112	127	21	NA
LEAD	2750	2890	52	NA
MERCURY	< 0.1	0.86	1	82
SELENIUM	< 0.52	7.9	10	75
SILVER	< 1	8.8	10	84

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509158-001(Hg)/9509169(ICP)
 SAMPLE ID #: EKSAJ901/AENI

DATE: 25-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	9.5	10	10	86
BARIUM	1240	1490	209	NA
CADMIUM	3.4	7.9	5.2	86
CHROMIUM	112	133	21	NA
LEAD	2750	2980	52	NA
MERCURY	< 0.1	0.86	1	82
SELENIUM	< 0.52	8.2	10	78
SILVER	< 1	8.8	10	84

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

Project Number: 9509-240
Client Name: O.H. Materials
Project Title: Fort Devens
Ayer, MA

Five soil samples were analyzed for the volatile organic compounds in the priority pollutant list by method 8240.

Three soil samples were analyzed for the polynuclear aromatic hydrocarbons by method 8270.

Three soil samples were TCLP leached according to the SW846 guidelines, and analyzed for the volatile and semivolatile organic compounds in the list of Toxic Characteristic Constituents, by methods 8240 and 8270, respectively.

The analyses followed the standard AENI QA/QC and holding time requirements.

This package consists of tabulated results of the samples and the method blanks, along with the QC forms II, III and IV.

Data Released

Minh-Thuy L. Nguyen
Minh-Thuy L. Nguyen
GC/MS Lab Manager

VOLATILES Section:

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date TCLP Leached	Date Analyzed
PP Analysis:						
EXSA39V	240-003	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39DUPA	240-004	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39PCB02	240-007	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AV1	240-012	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AVDUP	240-013	Soil	09/19/95	09/21/95	N.A.	09/27/95
TCLP Analysis:						
EXA39PCB01	240-006	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42A01	240-010	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42ADUPA	240-011	Soil	09/19/95	09/21/95	09/27/95	09/28/95

Form I (Tabulated Results)

All sample preparation and analyses were performed within the holding time requirement.

The results of the PP analysis were reported on the basis of dry weight.

The leachates were analyzed at a 1:10 dilution to minimize background interference.

Form II (Surrogate Recoveries)

The surrogate recoveries for the samples and the method blanks were within the method specified criteria.

Form III (MS/MSD Recoveries)

PP Analysis: A batch MS/MSD analysis was reported. All spike recoveries and all %RPD were within the method advisory limits.

TCLP Analysis: A batch MS analysis was reported. All spike recoveries were within the method advisory limits.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

PP VOA Analysis

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AEM MDContract: OHMProject No.: 9509240Site: FT. DEVENSLocation: AYER, MA

Group: _____

Level: (low/med) LOW

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK01	97	96	103		
02	EXSA39V	95	105	96		
03	EXSA39DUPA	95	107	91		
04	EXSA39PCB02	92	105	86		
05	EXSA42AV1	94	108	96		
06	EXSA42AVDUP	94	99	99		
07						
08						
09						
10						
11						
12						
13						
14						
15						
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19						
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22						
23						
24						
25						
26						
27						
28						
29						
30						

SMC1 (DCE) - 1,2-Dichloroethane-d4

SMC2 (TOL) - Toluene-d8

SMC3 (BFB) - Bromofluorobenzene

QC LIMITS

(70-121)

(81-117)

(74-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: FT DEVENS Location: _____ Group: _____Matrix Spike - Sample No.: BATCH QC Level: (low/med) LOW
9509244-005

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	56	0	39	70	(59-172)
Trichloroethene	56	0	41	73	(62-137)
Benzene	56	0	52	93	(66-142)
Toluene	56	0	63	113	(59-139)
Chlorobenzene	56	0	57	102	(60-133)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MS % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	56	39	70	0	22	(59-172)
Trichloroethene	56	42	75	2	24	(62-137)
Benzene	56	53	95	2	21	(66-142)
Toluene	56	59	105	7	21	(59-139)
Chlorobenzene	56	54	96	5	21	(60-133)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Comments: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK01

Lab Name: AEM MD Contract: OHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Lab File ID: F1521.D Lab Sample ID: 0927VBLK

Date Analyzed: 9/27/95 Time Analyzed: 1910

GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) Y

Instrument ID: F7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	EXSA39V	#003	F1522.D	9/27/95
02	EXSA39DUPA	#004	F1523.D	9/27/95
03	EXSA39PCB02	#007	F1524.D	9/27/95
04	EXSA42AV1	#012	F1525.D	9/27/95
05	EXSA42AVDUP	#013	F1526.D	9/27/95
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
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30				

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA39V

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1522.D

Level: (low/med) LOW Date Received: 9/21/95

% Moisture: not dec. 4 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	<u>ug/Kg</u>
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5.2	U
107-13-1	Acrylonitrile	100	U
107-2-8	Acrolein	100	U
75-69-4	Trichlorofluoromethane	5.2	U
75-35-4	1,1-Dichloroethene	5.2	U
75-34-4	1,1-Dichloroethane	5.2	U
156-60-5	trans-1,2-Dichloroethene	5.2	U
67-66-3	Chloroform	5.2	U
107-06-2	1,2-Dichloroethane	5.2	U
71-55-6	1,1,1-Trichloroethane	5.2	U
56-23-5	Carbon Tetrachloride	5.2	U
75-27-4	Bromodichloromethane	5.2	U
78-87-5	1,2-Dichloropropane	5.2	U
10061-01-5	cis-1,3-Dichloropropene	5.2	U
79-01-6	Trichloroethene	5.2	U
71-43-2	Benzene	5.2	U
124-48-1	Dibromochloromethane	5.2	U
10061-02-6	trans-1,3-Dichloropropene	5.2	U
79-00-5	1,1,2-Trichloroethane	5.2	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5.2	U
127-18-4	Tetrachloroethene	5.2	U
79-34-5	1,1,2,2-Tetrachloroethane	5.2	U
108-88-3	Toluene	5.2	U
108-90-7	Chlorobenzene	5.2	U
100-41-4	Ethylbenzene	5.2	U
541-73-1	1,3-Dichlorobenzene	5.2	U
106-46-7	1,4-Dichlorobenzene	5.2	U
95-50-1	1,2-Dichlorobenzene	5.2	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA39DUPA

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1523.D

Level: (low/med) LOW Date Received: 9/21/95

% Moisture: not dec. 5 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
74-87-3	Chloromethane		11	U
74-83-9	Bromomethane		11	U
75-01-4	Vinyl Chloride		11	U
75-00-3	Chloroethane		11	U
75-09-2	Methylene Chloride		5.3	U
107-13-1	Acrylonitrile		110	U
107-2-8	Acrolein		110	U
75-69-4	Trichlorofluoromethane		5.3	U
75-35-4	1,1-Dichloroethene		5.3	U
75-34-4	1,1-Dichloroethane		5.3	U
156-60-5	trans-1,2-Dichloroethene		5.3	U
67-66-3	Chloroform		5.3	U
107-06-2	1,2-Dichloroethane		5.3	U
71-55-6	1,1,1-Trichloroethane		5.3	U
56-23-5	Carbon Tetrachloride		5.3	U
75-27-4	Bromodichloromethane		5.3	U
78-87-5	1,2-Dichloropropane		5.3	U
10061-01-5	cis-1,3-Dichloropropene		5.3	U
79-01-6	Trichloroethene		5.3	U
71-43-2	Benzene		5.3	U
124-48-1	Dibromochloromethane		5.3	U
10061-02-6	trans-1,3-Dichloropropene		5.3	U
79-00-5	1,1,2-Trichloroethane		5.3	U
110-75-8	2-Chloroethylvinylether		11	U
75-25-2	Bromoform		5.3	U
127-18-4	Tetrachloroethene		5.3	U
79-34-5	1,1,2,2-Tetrachloroethane		5.3	U
108-88-3	Toluene		5.3	U
108-90-7	Chlorobenzene		5.3	U
100-41-4	Ethylbenzene		5.3	U
541-73-1	1,3-Dichlorobenzene		5.3	U
106-46-7	1,4-Dichlorobenzene		5.3	U
95-50-1	1,2-Dichlorobenzene		5.3	U

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0927VBLK

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1521.D

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. 0 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	<u>ug/Kg</u>
			Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
107-13-1	Acrylonitrile	100	U
107-2-8	Acrolein	100	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-4	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
71-43-2	Benzene	5	U
124-48-1	Dibromochloromethane	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

September 29, 1995

Client: OHM Corporation
Project: Ft. Devens #16208
Case: 9509240
Analysis: Metals

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Analyzed</u>
EXSA39M	9509240-001	09/19/95	09/21/95	09/25-28/95
EXSA39DUPB	9509240-002	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-005	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-008	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-009	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-010	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-011	09/19/95	09/21/95	09/25-28/95
SA42ACP	9509240-014	09/19/95	09/21/95	09/25-28/95

Three soil samples were received and analyzed for TCLP metals. Results are reported in units of ug/L in the leachate. Six soil samples were received and analyzed for total metals. Results are reported in units of mg/Kg dry weight.

The matrix spike duplicate recovery on the total metals analysis was outside control limits for Cd, Pb and Se. All other QC data were within normal control limits.

Report Released By


Christopher Baggett
Metals Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS

CLIENT: OHM Corporation
 AENI ID #: 9509240-001
 SAMPLE ID #: KLSA39N

DATE: 29-Sep-95

% SOLIDS: 91.5

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1.1	4.9
BARIUM	6010	11	11
CADMIUM	6010	0.44	< 0.44
CHROMIUM	6010	1.1	4.8
LEAD	6010	1.1	4.6
MERCURY	7471	0.11	< 0.11
SELENIUM	6010	0.55	< 0.55
SILVER	6010	1.1	< 1.1

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS

CLIENT: OHM Corporation

DATE: 29-Sep-95

AGENT ID #: 9509240-002

SAMPLE ID #: KXSAJ9DUPS

% SOLIDS: 91.7

UNITS: ug/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1.1	4.8
BARIUM	6010	11	12
CADMIUM	6010	0.44	< 0.44
CHROMIUM	6010	1.1	5
LEAD	6010	1.1	4.4
MERCURY	7471	0.11	< 0.11
SELENIUM	6010	0.55	< 0.55
SILVER	6010	1.1	< 1.1

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK / LCS & RECOVERY

CLIENT: OHM Corporation

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LCS
ARSENIC	6010	< 1	95
BARIUM	6010	< 10	106
CADMIUM	6010	< 0.4	96
CHROMIUM	6010	< 1	98
LEAD	6010	< 1	94
MERCURY	7471	< 0.1	86
SELENIUM	6010	< 0.5	92
SILVER	6010	< 1	98

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 DUPLICATES

CLIENT: OHM Corporation
 AEMT ID #: 9509240-001(ICP)/9509275(Hg)
 SAMPLE ID #: EKSA39H/AEMT

DATE: 29-Sep-95

UNITS: ug/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULTS	DUPLICATE RESULTS	RPD
ARSENIC	4.9	4.8	NA
BARIUM	11	13	NA
CADMIUM	< 0.44	< 0.44	NA
CHROMIUM	4.8	5	NA
LEAD	4.6	4.6	NA
MERCURY	< 0.11	0.12	NA
SELENIUM	< 0.55	< 0.55	NA
SILVER	< 1.1	< 1.1	NA

OC = PERCENT REPRODUCIBILITY EXCEEDS 20%

NA = NOT APPLICABLE BECAUSE SAMPLE OR DUPLICATE CONCENTRATION < 5 x REPORT LIMIT

AEN QC Summary - Off-site Analytical Data
Fort Devens - 16208

Area ID: SA 39 PCB

Sample Type: Confirmation / Characterization / Disposal / Investigative

Sample Information

Package Number	Sample ID #	Lab ID	Date Sampled	Date Shipped	Date Rec'd	Dup/Rinse Collected	Field Dup RPD	Rinsate Clean (Y/N)
9509240	EXSA39A01	MS-001	9-19-95	9-26-95	9-21-95	N		
	EXSA39A02	+007						

Laboratory QC Information

Analytical Parameter	Date Extracted	Date Analyzed	Method Blank	Method Spike	Matrix %R	MSD %R	MS/MSD RPD	Surrogate %R	w/in Control Limits (Y/N)
NOA (PPI)	-	9-23-95	ND	-	70-113	70-105	0-7	50-105	Y
TCDF -A	9/23/95	9/28/95	ND	-	24-118	-	-	43-108	Y
PAH	9/23/95	9/26/95	ND	-	64-76	-	-	62-111	Y
TCDF B/A	9/23/95	9/23/95	ND	-	33-90	-	-	34-118	Y
TCDF 223	9/26/95	9-29-95	ND	81	-	-	-	70-130	Y
TCDF He-b	9/25/95	9/23/95	ND	-	75-83	74-89	-	71-104	Y
TCDF He-d	-	9/25-28/95	ND	-	75-87	72-83	-	-	Y
TCDF He-f	-	9-25-28/95	ND	-	78-88	83-104	-	-	Y
TPH	9/25/95	9/28/95	ND	-	-	-	-	-	Y
2X CW	9/28/95		ND	-	-	-	-	-	Y
RA 5	9/26/95		ND	-	-	-	-	-	Y

Comments:

* Samples diluted but surrogates fell within acceptable levels.

** MSD %R was slightly low for Cd, Pb and Se. MS %R was on the low end but acceptable for each analyte. Pb was ok for duplicate recovery (other analytes were BDL). Perhaps matrix interference is being exhibited here.

Except as noted above, all precision and accuracy goals were met. Data package is acceptable.

ARB

CHAIN-OF-CUSTODY RECORD

9509240

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME FT DEVENS		PROJECT LOCATION AYER, MA				ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)	NUMBER OF CONTAINERS	<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TCLP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TOTAL VOLATILES</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PCRA CHEM</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TPH</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PERIS-MER</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PAH'S</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">METALS BREA</div> </div>						
PHOJ NO 16208	PROJECT CONTACT MIKE QUINLAN			PROJECT TELEPHONE NO 508 772-2019										
CLIENT'S REPRESENTATIVE USACE				PROJECT MANAGER/SUPERVISOR KEVIN MACK										
ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB									SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)
1	EXSA39PC801	9/19	1158	X		Gold SAND	1x1L 3xPOZ X	not analyze for PCBs -005/-006						
2	EXSA39PC802	9/19	1200	X		Gold SAND	2x40ml b	-007						
3														
4														
5														
6														
7														
8														
9														
10														

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-2	Matthew Jones	Fed Ex Airbill 275 22 22 606	9/20/95	1200	- Processed TO 4°C - Temp Blank included - 5 day TAT
2			Ally	9/21/95	1025	
3						
4						SAMPLER'S SIGNATURE Matthew Jones

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

Project Number: 9509-240
Client Name: O.H. Materials
Project Title: Fort Devens
Ayer, MA

Five soil samples were analyzed for the volatile organic compounds in the priority pollutant list by method 8240.

Three soil samples were analyzed for the polynuclear aromatic hydrocarbons by method 8270.

Three soil samples were TCLP leached according to the SW846 guidelines, and analyzed for the volatile and semivolatile organic compounds in the list of Toxic Characteristic Constituents, by methods 8240 and 8270, respectively.

The analyses followed the standard AENI QA/QC and holding time requirements.

This package consists of tabulated results of the samples and the method blanks, along with the QC forms II, III and IV.

Data Released

Minh-Thuy L. Nguyen 10/02/91
Minh-Thuy L. Nguyen
GC/MS Lab Manager

VOLATILES Section:

=====

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date TCLP Leached	Date Analyzed
PP Analysis:						
EXSA39V	240-003	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39DUPA	240-004	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39PCB02	240-007	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AV1	240-012	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AVDUP	240-013	Soil	09/19/95	09/21/95	N.A.	09/27/95
TCLP Analysis:						
EXA39PCB01	240-006	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42A01	240-010	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42ADUPA	240-011	Soil	09/19/95	09/21/95	09/27/95	09/28/95

=====

Form I (Tabulated Results)

All sample preparation and analyses were performed within the holding time requirement.

The results of the PP analysis were reported on the basis of dry weight.

The leachates were analyzed at a 1:10 dilution to minimize background interference.

Form II (Surrogate Recoveries)

The surrogate recoveries for the samples and the method blanks were within the method specified criteria.

Form III (MS/MSD Recoveries)

PP Analysis: A batch MS/MSD analysis was reported. All spike recoveries and all %RPD were within the method advisory limits.

TCLP Analysis: A batch MS analysis was reported. All spike recoveries were within the method advisory limits.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

SEMIVOLATILES Section:

Client ID	AENI ID	Matrix	Date Sampl.	Date Recevd	Date TCLP	Date Extracted BNA	Date Analyz
PAH Analysis:							
EXSA39PCB01	240-005	Soil	09/19	09/21	N.A.	09/25	09/26
EXSA42A01	240-008	Soil	09/19	09/21	N.A.	09/25	09/26
EXSA42ADUPA	240-009	Soil	09/19	09/21	N.A.	09/25	09/26
TCLP Analysis:							
EXSA39PCB01	240-006	Soil	09/19	09/21	09/22	09/23	09/27
EXSA42A01	240-010	Soil	09/19	09/21	09/22	09/23	09/27
EXSA42ADUPA	240-011	Soil	09/19	09/21	09/22	09/23	09/27

Form I (Tabulated Results)

All sample preparation and analyses were performed within the holding time requirement.

The PAH analyses were performed at a 1:2 dilution due to the presence of high level non target target analytes. The results were reported on the basis of dry weight.

The leachates were analyzed at a 1:2 dilution to minimize background interference.

Form II (Surrogate Recoveries)

The surrogate recoveries for all samples, method blanks and LCS were within criteria. Note that all samples were flagged with 'D' due to the dilution.

Form III (MS Recoveries)

A LCS (PAH analysis) and a TCLP BLK LCS (TCLP analysis) analyses were reported. All spike recoveries were within the method advisory limits.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

PP VOA Analysis

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MDContract: OHMProject No.: 9509240Site: FT. DEVENSLocation: AYER, MA

Group: _____

Level: (low/med) LOW

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK01	97	96	103		
02	EXSA39V	95	105	96		
03	EXSA39DUPA	95	107	91		
04	EXSA39PC802	92	105	86		
05	EXSA42AV1	94	108	96		
06	EXSA42AVDUP	94	99	99		
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SMC1 (DCE) - 1,2-Dichloroethane-d4

SMC2 (TOL) - Toluene-d8

SMC3 (BFB) - Bromofluorobenzene

QC LIMITS

(70-121)

(81-117)

(74-121)

Column to be used to flag recovery values

• Values outside of contract required QC limits

D System Monitoring Compound diluted out

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: FT DEVENS Location: _____ Group: _____Matrix Spike - Sample No.: BATCH QC Level: (low/med) LOW
9509244-005

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	56	0	39	70	(59-172)
Trichloroethene	56	0	41	73	(62-137)
Benzene	56	0	52	93	(66-142)
Toluene	56	0	63	113	(59-139)
Chlorobenzene	56	0	57	102	(60-133)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MS % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	56	39	70	0	22 (59-172)
Trichloroethene	56	42	75	2	24 (62-137)
Benzene	56	53	95	2	21 (66-142)
Toluene	56	59	105	7	21 (59-139)
Chlorobenzene	56	54	96	5	21 (60-133)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Comments: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK01

Lab Name: AENI MD Contract: OHM
 Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____
 Lab File ID: FI521.D Lab Sample ID: 0927VBLK
 Date Analyzed: 9/27/95 Time Analyzed: 1910
 GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) Y
 Instrument ID: F7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	EXSA39V	#003	FI522.D	9/27/95
02	EXSA39DUPA	#004	FI523.D	9/27/95
03	EXSA39PCB02	#007	FI524.D	9/27/95
04	EXSA42AV1	#012	FI525.D	9/27/95
05	EXSA42AVDUP	#013	FI526.D	9/27/95
06				
07				
08				
09				
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COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA39PC802

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1524.D

Level: (low/med) LDW Date Received: 9/21/95

% Moisture: not dec. 4 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	<u>ug/Kg</u>	
74-87-3	Chloromethane		10	U
74-83-9	Bromomethane		10	U
75-01-4	Vinyl Chloride		10	U
75-00-3	Chloroethane		10	U
75-09-2	Methylene Chloride		5.2	U
107-13-1	Acrylonitrile		100	U
107-2-8	Acrolein		100	U
75-69-4	Trichlorofluoromethane		5.2	U
75-35-4	1,1-Dichloroethene		5.2	U
75-34-4	1,1-Dichloroethane		5.2	U
156-60-5	trans-1,2-Dichloroethene		5.2	U
67-66-3	Chloroform		5.2	U
107-06-2	1,2-Dichloroethane		5.2	U
71-55-6	1,1,1-Trichloroethane		5.2	U
56-23-5	Carbon Tetrachloride		5.2	U
75-27-4	Bromodichloromethane		5.2	U
78-87-5	1,2-Dichloropropane		5.2	U
10061-01-5	cis-1,3-Dichloropropene		5.2	U
79-01-6	Trichloroethene		5.2	U
71-43-2	Benzene		5.2	U
124-48-1	Dibromochloromethane		5.2	U
10061-02-6	trans-1,3-Dichloropropene		5.2	U
79-00-5	1,1,2-Trichloroethane		5.2	U
110-75-8	2-Chloroethylvinylether		10	U
75-25-2	Bromoform		5.2	U
127-18-4	Tetrachloroethene		5.2	U
79-34-5	1,1,2,2-Tetrachloroethane		5.2	U
108-88-3	Toluene		5.2	U
108-90-7	Chlorobenzene		5.2	U
100-41-4	Ethylbenzene		5.2	U
541-73-1	1,3-Dichlorobenzene		5.2	U
106-46-7	1,4-Dichlorobenzene		5.2	U
95-50-1	1,2-Dichlorobenzene		5.2	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0927VBLK

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1521.D

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. 0 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/Kg
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
107-13-1	Acrylonitrile	100	U
107-2-8	Acrolein	100	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-4	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
71-43-2	Benzene	5	U
124-48-1	Dibromochloromethane	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U

TCLP VOA Analysis

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site: FT. DEVENS

Location: AYER, MA

Group: _____

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK02	97	105	102		
02	TBLK	98	109	108		
03	EXSA39PCB01	94	103	104		
04	EXSA42A01	95	105	106		
05	EXSA42ADUPA	93	105	106		
06						
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SMC1 (DCE) = 1,2-Dichloroethane-d4 (76-114)
 SMC2 (TOL) = Toluene-d8 (88-110)
 SMC3 (BFB) = Bromofluorobenzene (86-115)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D System Monitoring Compound diluted out

3A
WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Name: AENI MD Contract: OHM
Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____
Matrix Spike - Sample No.: 09276-003

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	43	86	(61-145)
Trichloroethene	50	0	42	84	(71-120)
Benzene	50	0	52	104	(76-127)
Toluene	50	0	56	112	(76-125)
Chlorobenzene	50	0	59	118	(75-130)

• Values outside of QC limits

Comments: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK02

Lab Name: AENI MD Contract: OHM
 Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____
 Lab File ID: E1383.D Lab Sample ID: 0928VBLK
 Date Analyzed: 9/28/95 Time Analyzed: 1111
 GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) N
 Instrument ID: E7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TBLK	0927TBLK	E1384.D	9/28/95
02	EXSA39PCB01	#006	E1389.D	9/28/95
03	EXSA42A01	#010	E1390.D	9/28/95
04	EXSA42ADUPA	#011	E1391.D	9/28/95
05				
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COMMENTS:

PAH Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Level: (low/med) LOW

	SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	#	#	#	#	#	TOT OUT
01	SBLK01	71	76	57						
02	SBLK01MS	71	75	57						
03	EXSA39PCB01	82 D	111 D	44 D						
04	EXSA42A01	69 D	77 D	55 D						
05	EXSA42ADUPA	57 D	67 D	49 D						
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S1 (NBZ) - Nitrobenzene-d5
 S2 (FBP) - 2-Fluorobiphenyl
 S3 (TPH) - Terphenyl-d14

QC LIMITS
 (23-120)
 (30-115)
 (18-137)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHM
 Project No.: 9509240 Site: _____ Location: _____ Group: _____
 Matrix Spike - Sample No.: SBLK01 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,4-Dichlorobenzene	3300	0	2200	67	(28-104)
N-Nitroso-di-n-propylamine	3300	0	2100	64	(41-126)
1,2,4-Trichlorobenzene	3300	0	2500	76	(41-126)
Acenaphthene	3300	0	2500	76	(31-137)
2,4-Dinitrotoluene	3300	0	2400	73	(28-89)
Pyrene	3300	0	2100	64	(35-142)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,4-Dichlorobenzene					27 (28-104)
N-Nitroso-di-n-propylamine					38 (41-126)
1,2,4-Trichlorobenzene					38 (41-126)
Acenaphthene					19 (31-137)
2,4-Dinitrotoluene					47 (28-89)
Pyrene					36 (35-142)

* Values outside of QC limits

Comments: _____

SEMIVOLATILE METHOD BLANK SUMMARY

SBLK01

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Lab File ID: DI356.D Lab Sample ID: 0925-LAInstrument ID: MSD 1 Date Extracted: 9/25/94Matrix: (soil/water) SOIL Date Analyzed: 9/26/95Level: (low/med) LOW Time Analyzed: 1550

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK01MS	0925LCS	DI357.D	09/26/95
02	EXSA39PCB01	#005	DI360.D	09/26/95
03	EXSA42A01	#008	DI361.D	09/26/95
04	EXSA42ADUPA	#009	DI362.D	09/26/95
05				
06				
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COMMENTS:

TCLP BNA Analysis

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: _____ Location: _____ Group: _____

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	SBLK02	34	27	70	71	117	87			
02	TCLPBLK	44	43	77	70	118	73			
03	TCLPBLKMS	45	42	75	70	118	76			
04	EXSA39PCB01	63 D	48 D	88 D	95 D	94 D	94 D			
05	EXSA42A01	53 D	41 D	73 D	78 D	85 D	78 D			
06	EXSA42ADUPA	63 D	55 D	82 D	85 D	84 D	88 D			
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S1 (2FP) - 2-Fluorophenol	QC LIMITS
S2 (PHL) - Phenol-d5	(21-100)
S3 (NBZ) - Nitrobenzene-d5	(10-94)
S4 (FBP) - 2-Fluorobiphenyl	(34-114)
S5 (TBP) - 2,4,6-Tribromophenol	(43-116)
S6 (TPH) - Terphenyl-d14	(10-123)
	(33-141)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Matrix Spike - Sample No.: TCLPBLKCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	75	38	(12-89)
2-Chlorophenol	200	0	110	55	(27-123)
1,4-Dichlorobenzene	100	0	65	65	(36-97)
N-Nitroso-di-n-propylamine	100	0	69	69	(41-116)
1,2,4-Trichlorobenzene	100	0	86	86	(39-98)
4-Chloro-3-methylphenol	200	0	130	65	(23-97)
Acenaphthene	100	0	70	70	(46-118)
2,4-Dinitrotoluene	100	0	81	81	(24-96)
4-Nitrophenol	200	0	95	48	(10-80)
Pentachlorophenol	200	0	180	90	(9-103)
Pyrene	100	0	63	63	(26-127)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Phenol					42	(12-89)
2-Chlorophenol					40	(27-123)
1,4-Dichlorobenzene					28	(36-97)
N-Nitroso-di-n-propylamine					38	(41-116)
1,2,4-Trichlorobenzene					28	(39-98)
4-Chloro-3-methylphenol					42	(23-97)
Acenaphthene					31	(46-118)
2,4-Dinitrotoluene					38	(24-96)
4-Nitrophenol					50	(10-80)
Pentachlorophenol					50	(9-103)
Pyrene					31	(26-127)

(1) N-Nitroso-di-n-propylamine

* Values outside of QC limits

Comments: _____

48
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

SBLK02

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: _____ Location: _____ Group: _____

Lab File ID: C1209.D Lab Sample ID: 0923-RA

Instrument ID: MSD 2 Date Extracted: 9/23/94

Matrix: (soil/water) WATER Date Analyzed: 9/25/95

Level: (low/med) _____ Time Analyzed: 1942

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TCLPBLK	TBLK	C1210.D	09/25/95
02	TCLPBLKMS	TBLKLCS	C1211.D	09/25/95
03	EXSA39PCB01	#006	D1368.D	09/27/95
04	EXSA42A01	#010	D1369.D	09/27/95
05	EXSA42ADUPA	#011	D1374.D	09/27/95
06				
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COMMENTS:

AMERICAN ENVIRONMENTAL NETWORK, INC.

September 28, 1995

Client: OHM CORPORATION

Case: 9509240

Project: FORT DEVENS

Analysis: TCLP Pesticides by SW-846 Method 8080

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/26/95	09/28/95
EXSA42A01	9509240-010	09/19/95	09/21/95	09/26/95	09/28/95
EXSA42ADUPA	9509040-011	09/19/95	09/21/95	09/26/95	09/28/95

Three soil samples were leached in accordance with 40 CFR 261, Appendix II. The leachates were analyzed for pesticides by SW-846 method 8080.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

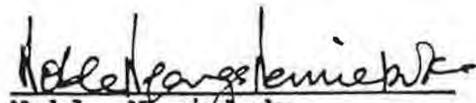
Form II (Surrogate Spike Recoveries)

All surrogate recoveries were within specified criteria (60-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was extracted with this sample set. All LCS recoveries were within specified criteria (see Form III).

Data Released By


Noble Nemieboka
GC/LC Acting Lab Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number EXSA39PC801

AENI # 9509240-008

Concentration: _____ Low
 Date Sampled: _____ 9/19/95
 Date Received: _____ 9/21/95
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	Yes	X	No
Separatory Funnel Extraction		X	Yes
Continuous Liquid - Liquid Extraction			Yes
Percent Moisture	N/A		
Matrix	LEACH		

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

Vi - Volume of extract injected (ul) - _____ 1
 Vs - Volume of Water extracted (ml) - _____ 500
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number BLANK

AENI # BLK 0926VA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Separatory Funnel Extraction	<input type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
Continuous Liquid - Liquid Extraction	<input type="checkbox"/>		<input type="checkbox"/>	Yes
Percent Moisture	_____ N/A			
Matrix	_____ LEACH			

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.10	U
75-44-8	Heptachlor		0.050	U
1024-57-3	Heptachlor epoxide		0.050	U
72-20-8	Endrin		0.10	U
72-43-5	Methoxychlor		0.50	U
5103-71-9	alpha-Chlordane		0.050	U
5103-74-2	gamma-Chlordane		0.050	U
8001-35-2	Toxaphene		5.0	U

Vi - Volume of extract injected (ul) - _____ 1
 Vs - Volume of Water extracted (ml) - _____ 1000
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number TCLP BLANK

AENI # TCLP BLK 0926VA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Separatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	_____ N/A	
Matrix:	_____ <u>LEACH</u>	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

Vi - Volume of extract injected (ul) - _____ 1
 Vs - Volume of Water extracted (ml) - _____ 500
 Ws - Weight of sample extracted (g) - _____ N/A
 Vt - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: 9509240
 Project Name: FORT DEVENS
 Client Name: OHM CORPORATION

Sample Number
 TCLP BLANK SPIKE

AENI # TCLP LCS 0926VA

Concentration: Low
 Date Sampled: N/A
 Date Received: N/A
 Date Ext Prepared: 9/26/95
 Date Analyzed: 9/28/95
 Conc/Dil Factor: 1
 Method: 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Separatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extration	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	N/A	
Matrix:	LEACH	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)	0.33	0.20	
75-44-8	Heptachlor	0.35	0.10	
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin	0.94	0.20	
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

V_i - Volume of extract injected (ul) - 1
 V_e - Volume of Water extracted (ml) - 500
 W_s - Weight of sample extracted (g) - N/A
 V_t - Volume of total extract (ul) - 10,000

WATER BLANK SPIKE RECOVERY

Lab Name: American Environmental Network, Inc.

Contract: 9509240

Lab Code: NA

Case No.: NA

SAS No.: NA

Matrix Spike - EPA Sample No.: TCLP LCS 0926VA

Method: 8080

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC	#	QC LIMITS REC.
gamma-BHC (Lindane)	0.40	0.0	0.33	83		58 - 123
Heptachlor	0.40	0.0	0.35	88		40 - 131
Aldrin	0.40	0.0	0.34	85		40 - 120
Dieldrin	1.0	0.0	0.85	85		52 - 126
Endrin	1.0	0.0	0.94	94		56 - 121
4,4'-DDT	1.0	0.0	0.81	81		38 - 127

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

September 27, 1995

Client: OHM CORPORATION
Case: 9509240
Project: FORT DEVENS #16208
Analysis: TCLP Herbicides by Method 8150

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/25/95	09/27/95
EXSA42ADUPA	9509240-010	09/19/95	09/21/95	09/25/95	09/27/95
EXSA42A01	9509240-011	09/19/95	09/21/95	09/25/95	09/27/95

Three soil samples were leached according to 40 CFR 261, Appendix II. The leachates were analyzed for 2,4-D and Silvex using SW-846 Method 8150.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

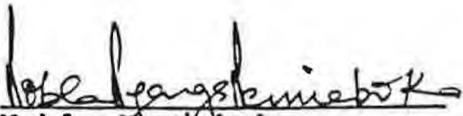
Form II (Surrogate Spike Recoveries)

All surrogate recoveries were within specified criteria (50-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) and lab control sample duplicate (LCSD) were prepared with this sample delivery group. All recoveries were within laboratory criteria.

Data Released By


Noble Memieboka
GC/LC Acting Lab Manager

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9509240
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS #16208

Sample Number EXSA39PCB01

AENI # 9509240-008

Concentration: _____ Low
 Date Sampled: _____ 9/19/95
 Date Received: _____ 9/21/95
 Date Extract Prepared: _____ 9/25/95
 Date Analyzed: _____ 9/27/95
 Conc/Dil Factor: _____ 1
 Matrix: _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.52	U
SILVEX		0.52	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 480
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9509240
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS #16208

Sample Number BLA JK

AENI # BLK 0925LB

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Extract Prepared: _ 9/25/95
 Date Analyzed: _____ 9/26/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted)_ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.25	U
SILVEX		0.25	U

Vi - Volume of extract injected (ul) ___ 1
 Vs - Volume of water extracted (ml) ___ 1000
 Ws - Mass of soil extracted (g) ___ N/A
 Vt - Volume of total extract (ul) ___ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9509240
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS #16208

Sample Number TCLP BLANK

AENI # TCLP BLK 0925LB

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Extract Prepared: _____ 9/25/95
 Date Analyzed: _____ 9/26/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.50	U
SILVEX		0.50	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 500
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK, INC.
HERBICIDE MATRIX SPIKE RECOVERIES

Case No.: 9509240

Client Sample ID: LCS/LCSD 0925LB

Client Name: OHM CORPORATION

Date of Analysis: 9/26/95

Project Name: FORT DEVENS #16208

Instrument ID: GC-H

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONC (ug/L)	BS % REC	BSD CONC (ug/L)	BSD % REC	QC LIMITS REC
2,4-D	5.03	0.0	4.15	83	4.48	89	50-150
Silvex	5.29	0.0	4.20	79	4.12	78	50-150

Spike Recovery: 0 out of 4 outside QC limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

September 29, 1995

Client: OHM Corporation
Project: Ft. Devens #16208
Case: 9509240
Analysis: Metals

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Analyzed</u>
EXSA39M	9509240-001	09/19/95	09/21/95	09/25-28/95
EXSA39DUPB	9509240-002	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-005	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-008	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-009	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-010	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-011	09/19/95	09/21/95	09/25-28/95
SA42ACP	9509240-014	09/19/95	09/21/95	09/25-28/95

Three soil samples were received and analyzed for TCLP metals. Results are reported in units of ug/L in the leachate. Six soil samples were received and analyzed for total metals. Results are reported in units of mg/Kg dry weight.

The matrix spike duplicate recovery on the total metals analysis was outside control limits for Cd, Pb and Se. All other QC data were within normal control limits.

Report Released By



Christopher Baggett
Metals Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
TCLP METALS

CLIENT: OHM Corporation
AENI SAMPLE #: 9509240-006
CLIENT SAMPLE #: EKSA39PCB01

DATE: 28-Sep-95

UNITS: ug/L in LEACHATE

ANALYTE	METHOD	REPORT LIMIT	SAMPLE RESULT
ARSENIC	6010	500	<500
BARIUM	6010	1,000	<1000
CADMIUM	6010	40	<40
CHROMIUM	6010	100	<100
LEAD	6010	100	<100
MERCURY	7470	1	<1
SELENIUM	6010	250	<250
SILVER	6010	500	<500

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METHOD BLANK AND %RECOVERY LCS

CLIENT: OHM Corporation

DATE: 28-Sep-95

UNITS: ug/L IN LEACHATE

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LABORATORY CONTROL SAMPLE
ARSENIC	6010	<500	83
BARIUM	6010	<1000	86
CADMIUM	6010	<40	90
CHROMIUM	6010	<100	89
LEAD	6010	<100	93
MERCURY	7470	<1.0	100
SELENIUM	6010	<250	84
SILVER	6010	<500	85

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULTS

CLIENT: OHM Corporation
 AENI SAMPLE #: 9509236/9509223
 CLIENT SAMPLE #: AENI

DATE: 28-Sep-95

UNITS: ug/L IN LEACHATE

ANALYTE	SAMPLE RESULT	SPIKED SAMPLE RESULT	DUPLICATE SPIKED RESULTS	SPIKE ADDED	%RECOVERY SPIKE	%RECOVERY DUPLICATE SPIKE	%RSD MS/MSD
ARSENIC	<500	2260	2080	2500	90	83	8.29
BARIUM	<1000	4400	4560	5000	88	91	3.57
CADMIUM	<40	488	512	500	98	102	4.80
CHROMIUM	<100	2120	2220	2500	85	89	4.61
LEAD	6010	10600	11200	5000	92	104	5.50
MERCURY	<1	1.78	1.83	2	89	92	2.77
SELENIUM	<250	1160	1220	1250	93	98	5.04
SILVER	<500	1940	2080	2500	78	83	6.97

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS

CLIENT: OHM Corporation

DATE: 29-Sep-95

AENI ID #: 9509240-005

SAMPLE ID #: EKSAJ9PCB01

% SOLIDS: 95.7

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1	4.6
BARIUM	6010	10	11
CADMIUM	6010	0.42	< 0.42
CHROMIUM	6010	1	4.1
LEAD	6010	1	3.8
MERCURY	7471	0.10	< 0.1
SELENIUM	6010	0.52	< 0.52
SILVER	6010	1	< 1

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK / LCS & RECOVERY

CLIENT: OHM Corporation

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

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ANALYTE	METHOD	METHOD BLANK	% RECOVERY LCS
ARSENIC	6010	< 1	95
BARIUM	6010	< 10	106
CADMIUM	6010	< 0.4	96
CHROMIUM	6010	< 1	98
LEAD	6010	< 1	94
MERCURY	7471	< 0.1	86
SELENIUM	6010	< 0.5	92
SILVER	6010	< 1	98

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AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 DUPLICATES

CLIENT: OHM Corporation
 AENI ID #: 9509240-001 (ICP)/9509275 (Hg)
 SAMPLE ID #: EXSA39M/AENI

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULTS	DUPLICATE RESULTS	RPD
ARSENIC	4.9	4.8	NA
BARIUM	11	13	NA
CADMIUM	< 0.44	< 0.44	NA
CHROMIUM	4.8	5	NA
LEAD	4.6	4.6	NA
MERCURY	< 0.11	0.12	NA
SELENIUM	< 0.55	< 0.55	NA
SILVER	< 1.1	< 1.1	NA

OC = PERCENT REPRODUCIBILITY EXCEEDS 20%

NA = NOT APPLICABLE BECAUSE SAMPLE OR DUPLICATE CONCENTRATION < 5 x REPORT LIMIT

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001(ICP)/9509275(Hg)
 SAMPLE ID #: EKSA39M/AENI

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	14	11	81
BARIUM	11	203	219	87
CADMIUM	< 0.44	4.2	5.5	77
CHROMIUM	4.8	22	22	80
LEAD	4.6	46	55	75
MERCURY	< 0.11	0.92	1.1	85
SELENIUM	< 0.55	8.3	11	76
SILVER	< 1.1	8.7	11	80

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001MSD
 SAMPLE ID #: EXSA29M

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	13	11	76
BARIUM	11	192	219	82
CADMIUM	< 0.44	3.9	5.5	72 OC
CHROMIUM	4.8	22	22	80
LEAD	4.6	44	55	73 OC
MERCURY	< 0.11	0.91	1.1	83
SELENIUM	< 0.55	7.9	11	72 OC
SILVER	< 1.1	8.2	11	75

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Fort Devens #16208
Date: September 29, 1995
Analysis: General Chemistry Parameters

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>
EXSA39PCB01	9509240-005	09/19/95	09/21/95
EXSA42A01	9509240-008	09/19/95	09/21/95
EXSA42ADUPA	9509240-009	09/19/95	09/21/95

Three soil samples were received and analyzed for General Chemistry Parameters.

The samples were extracted for Total Petroleum Hydrocarbons on 09/25/95 and analyzed on 09/29/95.

All quality control met standard laboratory criteria.

This report consists of tabulated sample results.

Report Released By:



Rhonda Green-Barron
General Chemistry Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Ft. Devens #16208
Date: September 29, 1995
Sample ID: EXSA39PCB01, dated 09/19/95

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	SW846 9045	6.8	09/26/95
Flashpoint, °F	SW846 1010	>203	09/27/95
Reactive Cyanide, mg/Kg	(1)	<2	09/28/95
Reactive Sulfide, mg/Kg	(2)	<40	09/26/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	6800	09/29/95

- (1) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK, INC.

151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Ft. Devens #16208
Date: September 29, 1995
Sample ID: Method Blank

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Reactive Cyanide, mg/L	(1)	<0.02	09/28/95
Reactive Sulfide, mg/L	(2)	<1	09/26/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	<16	09/29/95

- .) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001 (ICP)/9509275 (Hg)
 SAMPLE ID #: HXSAL39M/AENI

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	14	11	81
BARIUM	11	203	219	87
CADMIUM	< 0.44	4.2	5.5	77
CHROMIUM	4.8	22	22	80
LEAD	4.6	46	55	75
MERCURY	< 0.11	0.92	1.1	85
SELENIUM	< 0.55	8.3	11	76
SILVER	< 1.1	8.7	11	80

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001MSD
 SAMPLE ID #: EKSA39M

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	13	11	76
BARIUM	11	192	219	82
CADMIUM	< 0.44	3.9	5.5	72 OC
CHROMIUM	4.8	22	22	80
LEAD	4.6	44	55	73 OC
MERCURY	< 0.11	0.91	1.1	83
SELENIUM	< 0.55	7.9	11	72 OC
SILVER	< 1.1	8.2	11	75

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

CHAIN-OF-CUSTODY RECORD

158349

9509240

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME <i>FT DEVENS</i>		PROJECT LOCATION <i>AYER, MA</i>				NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)										REMARKS					
PROJ. NO. <i>16208</i>	PROJECT CONTACT <i>MIKE QUINLAN</i>	PROJECT TELEPHONE NO. <i>508-772-2019</i>					METALS (RCRA) TOTAL TOXIC VOC'S															
CLIENT'S REPRESENTATIVE <i>USACE</i>		PROJECT MANAGER/SUPERVISOR <i>SEVIN MACK</i>																				
ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)																
1	EXSA39M	9/19	11:55	X		Brown Sandy Soil	1x8oz	X													-001	
2	EXSA39DUPB	9/19	11:55	X		Brown Sandy Soil	1x8oz	X														-002
3	EXSA39V	9/19	11:59		X	Brown Sandy Soil	2x40ml		X													-003
4	EXSA39DUPA	9/19	11:59		X	Brown Sandy Soil	2x40ml		X													-004
5																						
6																						
7																						
8																						
9																						
10																						

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-4	<i>Matthew Jones</i>	FedEx Airbill # <i>975 9283606</i>			- Preserved to 4°C - Temp Blanks included - 5 day TAT
2			<i>Alex R</i>	9.24.15	11:25	
3						
4						

SAMPLER'S SIGNATURE
Matthew Jones

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

Project Number: 9509-240
Client Name: O.H. Materials
Project Title: Fort Devens
Ayer, MA

Five soil samples were analyzed for the volatile organic compounds in the priority pollutant list by method 8240.

Three soil samples were analyzed for the polynuclear aromatic hydrocarbons by method 8270.

Three soil samples were TCLP leached according to the SW846 guidelines, and analyzed for the volatile and semivolatile organic compounds in the list of Toxic Characteristic Constituents, by methods 8240 and 8270, respectively.

The analyses followed the standard AENI QA/QC and holding time requirements.

This package consists of tabulated results of the samples and the method blanks, along with the QC forms II, III and IV.

Data Released

Minh-Thuy L. Nguyen 10/02/91
Minh-Thuy L. Nguyen
GC/MS Lab Manager

VOLATILES Section:

Client ID	AENI ID	Matrix	Date Sampled	Date Received	Date TCLP Leached	Date Analyzed
PP Analysis:						
EXSA39V	240-003	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39DUPA	240-004	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA39PCB02	240-007	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AV1	240-012	Soil	09/19/95	09/21/95	N.A.	09/27/95
EXSA42AVDUP	240-013	Soil	09/19/95	09/21/95	N.A.	09/27/95
TCLP Analysis:						
EXA39PCB01	240-006	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42A01	240-010	Soil	09/19/95	09/21/95	09/27/95	09/28/95
EXA42ADUPA	240-011	Soil	09/19/95	09/21/95	09/27/95	09/28/95

Form I (Tabulated Results)

All sample preparation and analyses were performed within the holding time requirement.

The results of the PP analysis were reported on the basis of dry weight.

The leachates were analyzed at a 1:10 dilution to minimize background interference.

Form II (Surrogate Recoveries)

The surrogate recoveries for the samples and the method blanks were within the method specified criteria.

Form III (MS/MSD Recoveries)

PP Analysis: A batch MS/MSD analysis was reported. All spike recoveries and all %RPD were within the method advisory limits.

TCLP Analysis: A batch MS analysis was reported. All spike recoveries were within the method advisory limits.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

SEMIVOLATILES Section:

Client ID	AENI ID	Matrix	Date Sampl.	Date Recevd	Date TCLP	Date Extracted BNA	Date Analz
PAH Analysis:							
EXSA39PCB01	240-005	Soil	09/19	09/21	N.A.	09/25	09/26
EXSA42A01	240-008	Soil	09/19	09/21	N.A.	09/25	09/26
EXSA42ADUPA	240-009	Soil	09/19	09/21	N.A.	09/25	09/26
TCLP Analysis:							
EXSA39PCB01	240-006	Soil	09/19	09/21	09/22	09/23	09/27
EXSA42A01	240-010	Soil	09/19	09/21	09/22	09/23	09/27
EXSA42ADUPA	240-011	Soil	09/19	09/21	09/22	09/23	09/27

Form I (Tabulated Results)

All sample preparation and analyses were performed within the holding time requirement.

The PAH analyses were performed at a 1:2 dilution due to the presence of high level non target target analytes. The results were reported on the basis of dry weight.

The leachates were analyzed at a 1:2 dilution to minimize background interference.

Form II (Surrogate Recoveries)

The surrogate recoveries for all samples, method blanks and LCS were within criteria. Note that all samples were flagged with 'D' due to the dilution.

Form III (MS Recoveries)

A LCS (PAH analysis) and a TCLP BLK LCS (TCLP analysis) analyses were reported. All spike recoveries were within the method advisory limits.

Form IV (Method Blank Summary)

The method blanks were free of target analytes.

PP VOA Analysis

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site: FT. DEVENS

Location: AYER, MA

Group: _____

Level: (low/med) LOW

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK01	97	96	103		
02	EXSA39V	95	105	96		
03	EXSA39DUPA	95	107	91		
04	EXSA39PCB02	92	105	86		
05	EXSA42AV1	94	108	96		
06	EXSA42AVDUP	94	99	99		
07						
08						
09						
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11						
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SMC1 (DCE) - 1,2-Dichloroethane-d4	QC LIMITS (70-121)
SMC2 (TOL) - Toluene-d8	(81-117)
SMC3 (BFB) - Bromofluorobenzene	(74-121)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D System Monitoring Compound diluted out

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: FT DEVENS Location: _____ Group: _____Matrix Spike - Sample No.: BATCH QC Level: (low/med) LOW
9509244-005

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	56	0	39	70	(59-172)
Trichloroethene	56	0	41	73	(62-137)
Benzene	56	0	52	93	(66-142)
Toluene	56	0	63	113	(59-139)
Chlorobenzene	56	0	57	102	(60-133)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MS % REC #	% RPD #	QC LIMITS RPD REC.	
1,1-Dichloroethene	56	39	70	0	22	(59-172)
Trichloroethene	56	42	75	2	24	(62-137)
Benzene	56	53	95	2	21	(66-142)
Toluene	56	59	105	7	21	(59-139)
Chlorobenzene	56	54	96	5	21	(60-133)

Column to be used to flag recovery and RPD values with an asterisk

• Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Comments: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Lab File ID: F1521.D Lab Sample ID: 0927VBLK

Date Analyzed: 9/27/95 Time Analyzed: 1910

GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) Y

Instrument ID: F7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	EXSA39V	#003	F1522.D	9/27/95
02	EXSA39DUPA	#004	F1523.D	9/27/95
03	EXSA39PC802	#007	F1524.D	9/27/95
04	EXSA42AV1	#012	F1525.D	9/27/95
05	EXSA42AVDUP	#013	F1526.D	9/27/95
06				
07				
08				
09				
10				
11				
12				
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COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

EXSA39PC802

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: #007

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1524.D

Level: (low/med) LOW Date Received: 9/21/95

% Moisture: not dec. 4 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/Kg
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5.2	U
107-13-1	Acrylonitrile	100	U
107-2-8	Acrolein	100	U
75-69-4	Trichlorofluoromethane	5.2	U
75-35-4	1,1-Dichloroethene	5.2	U
75-34-4	1,1-Dichloroethane	5.2	U
156-60-5	trans-1,2-Dichloroethene	5.2	U
67-66-3	Chloroform	5.2	U
107-06-2	1,2-Dichloroethane	5.2	U
71-55-6	1,1,1-Trichloroethane	5.2	U
56-23-5	Carbon Tetrachloride	5.2	U
75-27-4	Bromodichloromethane	5.2	U
78-87-5	1,2-Dichloropropane	5.2	U
10061-01-5	cis-1,3-Dichloropropene	5.2	U
79-01-6	Trichloroethene	5.2	U
71-43-2	Benzene	5.2	U
124-48-1	Dibromochloromethane	5.2	U
10061-02-6	trans-1,3-Dichloropropene	5.2	U
79-00-5	1,1,2-Trichloroethane	5.2	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5.2	U
127-18-4	Tetrachloroethene	5.2	U
79-34-5	1,1,2,2-Tetrachloroethane	5.2	U
108-88-3	Toluene	5.2	U
108-90-7	Chlorobenzene	5.2	U
100-41-4	Ethylbenzene	5.2	U
541-73-1	1,3-Dichlorobenzene	5.2	U
106-46-7	1,4-Dichlorobenzene	5.2	U
95-50-1	1,2-Dichlorobenzene	5.2	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0927VBLK

Sample wt/vol: 5.0 (g/mL) G Lab File ID: F1521.D

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. 0 Date Analyzed: 9/27/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 1 (uL) Soil Aliquot Volume: 1 (uL)

Concentration Units:

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/Kg
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
107-13-1	Acrylonitrile	100	U
107-2-8	Acrolein	100	U
75-69-4	Trichlorofluoromethane	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-4	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
71-43-2	Benzene	5	U
124-48-1	Dibromochloromethane	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U

TCLP VOA Analysis

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site: FT. DEVENS

Location: AYER, MA

Group: _____

	SAMPLE NO.	SMC1 (DCE) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER #	TOT OUT
01	VBLK02	97	105	102		
02	TBLK	98	108	108		
03	EXSA39PCB01	94	103	104		
04	EXSA42A01	95	105	106		
05	EXSA42ADUPA	93	105	106		
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QC LIMITS

SMC1 (DCE) - 1,2-Dichloroethane-d4

(76-114)

SMC2 (TOL) - Toluene-d8

(88-110)

SMC3 (BFB) - Bromofluorobenzene

(86-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3A
WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Matrix Spike - Sample No.: 09276-003

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	43	86	(61-145)
Trichloroethene	50	0	42	84	(71-120)
Benzene	50	0	52	104	(76-127)
Toluene	50	0	56	112	(76-125)
Chlorobenzene	50	0	59	118	(75-130)

• Values outside of QC limits

Comments: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK02

Lab Name: AENI MD Contract: QHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Lab File ID: E1383.D Lab Sample ID: 0928VBLK

Date Analyzed: 9/28/95 Time Analyzed: 1111

GC Column: CAP ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: E7200

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TBLK	0927TBLK	E1384.D	9/28/95
02	EXSA39PCB01	#006	E1389.D	9/28/95
03	EXSA42A01	#010	E1390.D	9/28/95
04	EXSA42ADUPA	#011	E1391.D	9/28/95
05				
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09				
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COMMENTS:

PAH Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Level: (low/med) LOW

	SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	#	#	#	#	#	TOT OUT
01	SBLK01	71	76	57						
02	SBLK01MS	71	75	57						
03	EXSA39PCB01	82 D	111 D	44 D						
04	EXSA42A01	69 D	77 D	55 D						
05	EXSA42ADUPA	57 D	67 D	49 D						
06										
07										
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30										

S1 (NBZ) - Nitrobenzene-d5
 S2 (FBP) - 2-Fluorobiphenyl
 S3 (TPH) - Terphenyl-d14

QC LIMITS
 (23-120)
 (30-115)
 (18-137)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Matrix Spike - Sample No.: SBLK01 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,4-Dichlorobenzene	3300	0	2200	67	(28-104)
N-Nitroso-di-n-propylamine	3300	0	2100	64	(41-126)
1,2,4-Trichlorobenzene	3300	0	2500	76	(41-126)
Acenaphthene	3300	0	2500	76	(31-137)
2,4-Dinitrotoluene	3300	0	2400	73	(28-89)
Pyrene	3300	0	2100	64	(35-142)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD		QC LIMITS	
			% REC #	% RPD #	RPD	REC.
1,4-Dichlorobenzene					27	(28-104)
N-Nitroso-di-n-propylamine					38	(41-126)
1,2,4-Trichlorobenzene					38	(41-126)
Acenaphthene					19	(31-137)
2,4-Dinitrotoluene					47	(28-89)
Pyrene					36	(35-142)

* Values outside of QC limits

Comments: _____

48
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.
SBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: _____ Location: _____ Group: _____

Lab File ID: DI356.D Lab Sample ID: 0925-LA

Instrument ID: MSD 1 Date Extracted: 9/25/94

Matrix: (soil/water) SOIL Date Analyzed: 9/26/95

Level: (low/med) LOW Time Analyzed: 1550

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK01MS	0925LCS	DI357.D	09/26/95
02	EXSA39PCB01	#005	DI360.D	09/26/95
03	EXSA42A01	#008	DI361.D	09/26/95
04	EXSA42ADUPA	#009	DI362.D	09/26/95
05				
06				
07				
08				
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COMMENTS:

TCLP BNA Analysis

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: _____ Location: _____ Group: _____

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	SBLK02	34	27	70	71	117	87			
02	TCLP8LK	44	43	77	70	118	73			
03	TCLP8LKMS	45	42	75	70	118	76			
04	EXSA39PC801	63 D	48 D	88 D	95 D	94 D	94 D			
05	EXSA42A01	53 D	41 D	73 D	78 D	85 D	78 D			
06	EXSA42ADUPA	63 D	55 D	82 D	85 D	84 D	88 D			
07										
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S1 (2FP) - 2-Fluorophenol	QC LIMITS
S2 (PHL) - Phenol-d5	(21-100)
S3 (NBZ) - Nitrobenzene-d5	(10-94)
S4 (FBP) - 2-Fluorobiphenyl	(34-114)
S5 (TBP) - 2,4,6-Tribromophenol	(43-116)
S6 (TPH) - Terphenyl-d14	(10-123)
	(33-141)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: AENI MD Contract: OHMProject No.: 9509240 Site: _____ Location: _____ Group: _____Matrix Spike - Sample No.: TCLPBLKCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	75	38	(12-89)
2-Chlorophenol	200	0	110	55	(27-123)
1,4-Dichlorobenzene	100	0	65	65	(36-97)
N-Nitroso-di-n-propylamine	100	0	69	69	(41-116)
1,2,4-Trichlorobenzene	100	0	86	86	(39-98)
4-Chloro-3-methylphenol	200	0	130	65	(23-97)
Acenaphthene	100	0	70	70	(46-118)
2,4-Dinitrotoluene	100	0	81	81	(24-96)
4-Nitrophenol	200	0	95	48	(10-80)
Pentachlorophenol	200	0	180	90	(9-103)
Pyrene	100	0	63	63	(26-127)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Phenol					42	(12-89)
2-Chlorophenol					40	(27-123)
1,4-Dichlorobenzene					28	(36-97)
N-Nitroso-di-n-propylamine					38	(41-116)
1,2,4-Trichlorobenzene					28	(39-98)
4-Chloro-3-methylphenol					42	(23-97)
Acenaphthene					31	(46-118)
2,4-Dinitrotoluene					38	(24-96)
4-Nitrophenol					50	(10-80)
Pentachlorophenol					50	(9-103)
Pyrene					31	(26-127)

(1) N-Nitroso-di-n-propylamine

• Values outside of QC limits

Comments: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

SBLK02

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: _____ Location: _____ Group: _____

Lab File ID: CI209.D Lab Sample ID: 0923-RA

Instrument ID: MSD 2 Date Extracted: 9/23/94

Matrix: (soil/water) WATER Date Analyzed: 9/25/95

Level: (low/med) _____ Time Analyzed: 1942

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TCLPBLK	TBLK	CI210.D	09/25/95
02	TCLPBLKMS	TBLKLCS	CI211.D	09/25/95
03	EXSA39PC801	#006	DI368.D	09/27/95
04	EXSA42A01	#010	DI369.D	09/27/95
05	EXSA42ADUPA	#011	DI374.D	09/27/95
06				
07				
08				
09				
10				
11				
12				
13				
14				
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COMMENTS:

AMERICAN ENVIRONMENTAL NETWORK, INC.

September 28, 1995

Client: OHM CORPORATION

Case: 9509240

Project: FORT DEVENS

Analysis: TCLP Pesticides by SW-846 Method 8080

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/26/95	09/28/95
EXSA42A01	9509240-010	09/19/95	09/21/95	09/26/95	09/28/95
EXSA42ADUPA	9509040-011	09/19/95	09/21/95	09/26/95	09/28/95

Three soil samples were leached in accordance with 40 CFR 261, Appendix II. The leachates were analyzed for pesticides by SW-846 method 8080.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

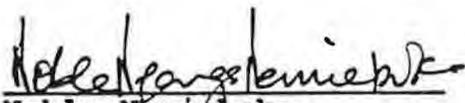
Form II (Surrogate Spike Recoveries)

All surrogate recoveries were within specified criteria (60-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) was extracted with this sample set. All LCS recoveries were within specified criteria (see Form III).

Data Released By


Noble Nemieboka
GC/LC Acting Lab Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number EXSA39PCB01

AENI # 9509240-008

Concentration: _____ Low
 Date Sampled: _____ 9/19/95
 Date Received: _____ 9/21/95
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Separatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	_____ N/A	
Matrix	_____ LEACH	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

V_i - Volume of extract injected (ul) - _____ 1
 V_s - Volume of Water extracted (ml) - _____ 500
 W_s - Weight of sample extracted (g) - _____ N/A
 V_t - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number BLANK

AENI # BLK 0926VA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Separatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	_____ N/A	
Matrix	_____ LEACH	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.10	U
75-44-8	Heptachlor		0.050	U
1024-57-3	Heptachlor epoxide		0.050	U
72-20-8	Endrin		0.10	U
72-43-5	Methoxychlor		0.50	U
5103-71-9	alpha-Chlordane		0.050	U
5103-74-2	gamma-Chlordane		0.050	U
8001-35-2	Toxaphene		5.0	U

V_i - Volume of extract injected (ul) - _____ 1
 V_s - Volume of Water extracted (ml) - _____ 1000
 W_s - Weight of sample extracted (g) - _____ N/A
 V_t - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number TCLP BLANK

AENI # TCLP BLK 0926VA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Separatory Funnel Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Continuous Liquid - Liquid Extraction	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Percent Moisture	_____ N/A	
Matrix:	_____ <u>LEACH</u>	

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)		0.20	U
75-44-8	Heptachlor		0.10	U
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin		0.20	U
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

V_i - Volume of extract injected (ul) - _____ 1
 V_w - Volume of Water extracted (ml) - _____ 500
 W_s - Weight of sample extracted (g) - _____ N/A
 V_t - Volume of total extract (ul) - _____ 10,000

AMERICAN ENVIRONMENTAL NETWORK, INC.

Organic Analysis Data Sheet

TCLP PESTICIDES

Case No.: _____ 9509240
 Project Name: _____ FORT DEVENS
 Client Name: _____ OHM CORPORATION

Sample Number TCLP BLANK SPIKE

AENI # TCLP LCS 0926VA

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Ext Prepared: _____ 9/26/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Method: _____ 8080

GPC Cleanup	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Separatory Funnel Extraction	<input type="checkbox"/>		<input checked="" type="checkbox"/>	Yes
Continuous Liquid - Liquid Extraction	<input type="checkbox"/>		<input type="checkbox"/>	Yes
Percent Moisture	_____ N/A _____			
Matrix:	_____ LEACH _____			

CAS Number	Compound	Concentration ug/L	Detection Limit	Qualifier
58-89-9	gamma-BHC (Lindane)	0.33	0.20	
75-44-8	Heptachlor	0.35	0.10	
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin	0.94	0.20	
72-43-5	Methoxychlor		1.0	U
5103-71-9	alpha-Chlordane		0.10	U
5103-74-2	gamma-Chlordane		0.10	U
8001-35-2	Toxaphene		10	U

V_i - Volume of extract injected (ul) - _____ 1
 V_s - Volume of Water extracted (ml) - _____ 500
 W_s - Weight of sample extracted (g) - _____ N/A
 V_t - Volume of total extract (ul) - _____ 10,000

3E

WATER BLANK SPIKE RECOVERY

Lab Name: American Environmental Network, Inc.

Contract: 9509240

Lab Code: NA

Case No.: NA

SAS No.:

NA

Matrix Spike - EPA Sample No.: TCLP LCS 0926VA

Method: 8080

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC	#	QC LIMITS REC.
gamma-BHC (Lindane)	0.40	0.0	0.33	83		56 - 123
Heptachlor	0.40	0.0	0.35	88		40 - 131
Aldrin	0.40	0.0	0.34	85		40 - 120
Dieldrin	1.0	0.0	0.85	85		52 - 126
Endrin	1.0	0.0	0.94	94		56 - 121
4,4'-DDT	1.0	0.0	0.81	81		38 - 127

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

September 27, 1995

Client: OHM CORPORATION

Case: 9509240

Project: FORT DEVENS #16208

Analysis: TCLP Herbicides by Method 8150

<u>Client ID</u>	<u>AENI#</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/25/95	09/27/95
EXSA42ADUPA	9509240-010	09/19/95	09/21/95	09/25/95	09/27/95
EXSA42A01	9509240-011	09/19/95	09/21/95	09/25/95	09/27/95

Three soil samples were leached according to 40 CFR 261, Appendix II. The leachates were analyzed for 2,4-D and Silvex using SW-846 Method 8150.

The enclosed package consists specifically of tabulated results (Form I), surrogate spike recoveries (Form II), and matrix spike recoveries (Form III).

Form I (Tabulated Results)

The qualifier "U" indicates that a compound was analyzed for but not detected above the reporting limit. The samples were prepared and analyzed within method specified holding time.

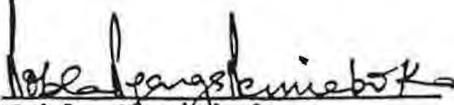
Form II (Surrogate Spike Recoveries)

All surrogate recoveries were within specified criteria (50-150%).

Form III (Matrix Spike Recoveries)

A lab control sample (LCS) and lab control sample duplicate (LCSD) were prepared with this sample delivery group. All recoveries were within laboratory criteria.

Data Released By


Noble Memieboka
GC/LC Acting Lab Manager

AMERICAN ENVIRONMENTAL NETWORK INC.
ORGANIC ANALYSIS DATA SHEET
HERBICIDES METHOD 8150

Case No.: _____ 9509240
Client Name: _____ OHM CORPORATION
Project Name: _____ FORT DEVENS #16208

Sample Number EXSA39PC801

AENI # 9509240-008

Concentration: _____ Low
Date Sampled: _____ 9/19/95
Date Received: _____ 9/21/95
Date Extract Prepared: _____ 9/25/95
Date Analyzed: _____ 9/27/95
Conc/Dil Factor: _____ 1
Matrix: _____ LEACH

GPC Cleanup _____ No
Separatory Funnel Ext.: _____ Yes
Continuous Liq-Liq Ext.: _____ No
Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.52	U
SILVEX		0.52	U

Vi - Volume of extract injected (ul) _____ 1
Va - Volume of water extracted (ml) _____ 480
Ws - Mass of soil extracted (g) _____ N/A
Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9509240
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS #16208

Sample Number BLANK

AENI # BLK 0625LB

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Extract Prepared: 9/25/95
 Date Analyzed: 9/26/95
 Conc/Dil Factor: _____ 1
 Matrix: _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _____ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.25	U
SILVEX		0.25	U

Vi - Volume of extract injected (ul) _____ 1
 Vs - Volume of water extracted (ml) _____ 1000
 Ws - Mass of soil extracted (g) _____ N/A
 Vt - Volume of total extract (ul) _____ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK INC.
 ORGANIC ANALYSIS DATA SHEET
 HERBICIDES METHOD 8150

Case No.: _____ 9509240
 Client Name: _____ OHM CORPORATION
 Project Name: _____ FORT DEVENS #16208

Sample Number TCLP BLANK

AENI # TCLP BLK 0925LB

Concentration: _____ Low
 Date Sampled: _____ N/A
 Date Received: _____ N/A
 Date Extract Prepared: _ 9/25/95
 Date Analyzed: _____ 9/28/95
 Conc/Dil Factor: _____ 1
 Matrix _____ LEACH

GPC Cleanup _____ No
 Separatory Funnel Ext.: _____ Yes
 Continuous Liq-Liq Ext.: _____ No
 Percent Moisture (decanted) _ N/A

Compound	Concentration ug/L	Reporting Limit	Qualifier
2,4 D		0.50	U
SILVEX		0.50	U

Vi - Volume of extract injected (ul) ___ 1
 Vs - Volume of water extracted (ml) ___ 500
 Ws - Mass of soil extracted (g) ___ N/A
 Vt - Volume of total extract (ul) ___ 5000

FORM I

AMERICAN ENVIRONMENTAL NETWORK, INC.
HERBICIDE MATRIX SPIKE RECOVERIES

Case No.: 9509240

Client Sample ID: LCS/LCSD 0925LB

Client Name: OHM CORPORATION

Date of Analysis: 9/26/95

Project Name: FORT DEVENS #16208

Instrument ID: GC-H

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONC (ug/L)	BS % REC	BSD CONC (ug/L)	BSD % REC	QC LIMITS REC
2,4-D	5.03	0.0	4.15	83	4.48	89	50-150
Silvex	5.29	0.0	4.20	79	4.12	78	50-150

Spike Recovery: 0 out of 4 outside QC limits.

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

September 29, 1995

Client: OHM Corporation
Project: Ft. Devens #16208
Case: 9509240
Analysis: Metals

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>	<u>Date Analyzed</u>
EXSA39M	9509240-001	09/19/95	09/21/95	09/25-28/95
EXSA39DUPB	9509240-002	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-005	09/19/95	09/21/95	09/25-28/95
EXSA39PCB01	9509240-006	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-008	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-009	09/19/95	09/21/95	09/25-28/95
EXSA42A01	9509240-010	09/19/95	09/21/95	09/25-28/95
EXSA42ADUPA	9509240-011	09/19/95	09/21/95	09/25-28/95
SA42ACP	9509240-014	09/19/95	09/21/95	09/25-28/95

Three soil samples were received and analyzed for TCLP metals. Results are reported in units of ug/L in the leachate. Six soil samples were received and analyzed for total metals. Results are reported in units of mg/Kg dry weight.

The matrix spike duplicate recovery on the total metals analysis was outside control limits for Cd, Pb and Se. All other QC data were within normal control limits.

Report Released By



Christopher Baggett
Metals Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
TCLP METALS

CLIENT: OHM Corporation
AENI SAMPLE #: 9509240-006
CLIENT SAMPLE #: EXSA39PCB01

DATE: 28-Sep-95

UNITS: ug/L in LEACHATE

ANALYTE	METHOD	REPORT LIMIT	SAMPLE RESULT
ARSENIC	6010	500	<500
BARIUM	6010	1,000	<1000
CADMIUM	6010	40	<40
CHROMIUM	6010	100	<100
LEAD	6010	100	<100
MERCURY	7470	1	<1
SELENIUM	6010	250	<250
SILVER	6010	500	<500

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK AND %RECOVERY LCS

CLIENT: OHM Corporation

DATE: 28-Sep-95

UNITS: ug/L IN LEACHATE

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LABORATORY CONTROL SAMPLE
ARSENIC	6010	<500	83
BARIUM	6010	<1000	86
CADMIUM	6010	<40	90
CHROMIUM	6010	<100	89
LEAD	6010	<100	93
MERCURY	7470	<1.0	100
SELENIUM	6010	<250	84
SILVER	6010	<500	85

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULTS

CLIENT: OHM Corporation
 AENI SAMPLE #: 9509236/9509223
 CLIENT SAMPLE #: AENI

DATE: 28-Sep-95

UNITS: ug/L IN LEACHATE

ANALYTE	SAMPLE RESULT	SPIKED SAMPLE RESULT	DUPLICATE SPIKED RESULTS	SPIKE ADDED	%RECOVERY SPIKE	%RECOVERY DUPLICATE SPIKE	%RSD MS/MSD
ARSENIC	<500	2260	2080	2500	90	83	8.29
BARIUM	<1000	4400	4560	5000	88	91	3.57
CADMIUM	<40	488	512	500	98	102	4.80
CHROMIUM	<100	2120	2220	2500	85	89	4.61
LEAD	6010	10600	11200	5000	92	104	5.50
MERCURY	<1	1.78	1.83	2	89	92	2.77
SELENIUM	<250	1160	1220	1250	93	98	5.04
SILVER	<500	1940	2080	2500	78	83	6.97

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS

CLIENT: OHM Corporation

DATE: 29-Sep-95

AENI ID #: 9509240-005

SAMPLE ID #: EXSAJ9PCB01 % SOLIDS: 95.7

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	REPORTING LIMIT	SAMPLE RESULT
ARSENIC	6010	1	4.6
BARIUM	6010	10	11
CADMIUM	6010	0.42	< 0.42
CHROMIUM	6010	1	4.1
LEAD	6010	1	3.8
MERCURY	7471	0.10	< 0.1
SELENIUM	6010	0.52	< 0.52
SILVER	6010	1	< 1

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METHOD BLANK / LCS & RECOVERY

CLIENT: OHM Corporation

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	METHOD	METHOD BLANK	% RECOVERY LCS
ARSENIC	6010	< 1	95
BARIUM	6010	< 10	106
CADMIUM	6010	< 0.4	96
CHROMIUM	6010	< 1	98
LEAD	6010	< 1	94
MERCURY	7471	< 0.1	86
SELENIUM	6010	< 0.5	92
SILVER	6010	< 1	98

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
METALS DATA ANALYSIS
DUPLICATES

CLIENT: OHM Corporation
AENI ID #: 9509240-001(ICP)/9509275(Hg)
SAMPLE ID #: EXSA39M/AENI

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULTS	DUPLICATE RESULTS	RPD
ARSENIC	4.9	4.8	NA
BARIUM	11	13	NA
CADMIUM	< 0.44	< 0.44	NA
CHROMIUM	4.8	5	NA
LEAD	4.6	4.6	NA
MERCURY	< 0.11	0.12	NA
SELENIUM	< 0.55	< 0.55	NA
SILVER	< 1.1	< 1.1	NA

OC = PERCENT REPRODUCIBILITY EXCEEDS 20%

NA = NOT APPLICABLE BECAUSE SAMPLE OR DUPLICATE CONCENTRATION < 5 x REPORT LIMIT

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001(ICP)/9509275(Hg)
 SAMPLE ID #: EKSA39M/AENI

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	14	11	81
BARIUM	11	203	219	87
CADMIUM	< 0.44	4.2	5.5	77
CHROMIUM	4.8	22	22	80
LEAD	4.6	46	55	75
MERCURY	< 0.11	0.92	1.1	85
SELENIUM	< 0.55	8.3	11	76
SILVER	< 1.1	8.7	11	80

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001MSD
 SAMPLE ID #: EXSAJ9M

DATE: 29-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	13	11	76
BARIUM	11	192	219	82
CADMIUM	< 0.44	3.9	5.5	72 OC
CHROMIUM	4.8	22	22	80
LEAD	4.6	44	55	73 OC
MERCURY	< 0.11	0.91	1.1	83
SELENIUM	< 0.55	7.9	11	72 OC
SILVER	< 1.1	8.2	11	75

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Fort Devens #16208
Date: September 29, 1995
Analysis: General Chemistry Parameters

<u>Client ID</u>	<u>AENI ID</u>	<u>Date Sampled</u>	<u>Date Received</u>
EXSA39PCB01	9509240-005	09/19/95	09/21/95
EXSA42A01	9509240-008	09/19/95	09/21/95
EXSA42ADUPA	9509240-009	09/19/95	09/21/95

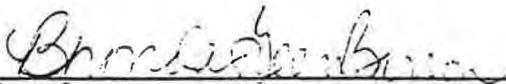
Three soil samples were received and analyzed for General Chemistry Parameters.

The samples were extracted for Total Petroleum Hydrocarbons on 09/25/95 and analyzed on 09/29/95.

All quality control met standard laboratory criteria.

This report consists of tabulated sample results.

Report Released By:


Rhonda Green-Barron
General Chemistry Laboratory Manager

AMERICAN ENVIRONMENTAL NETWORK, INC.

9151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Ft. Devens #16208
Date: September 29, 1995
Sample ID: EXSA39PCB01, dated 09/19/95

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Corrosivity (as pH)	SW846 9045	6.8	09/26/95
Flashpoint, °F	SW846 1010	>203	09/27/95
Reactive Cyanide, mg/Kg	(1)	<2	09/28/95
Reactive Sulfide, mg/Kg	(2)	<40	09/26/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	6800	09/29/95

- (1) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK, INC.

151 Rumsey Road Suite 150, Columbia, MD 21045-1992
(410) 730-8525 Fax (410) 997-2586

Report Number: 9509240
Report To: OHM Corporation
Project: Ft. Devens #16208
Date: September 29, 1995
Sample ID: Method Blank

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	<u>Date Analyzed</u>
Reactive Cyanide, mg/L	(1)	<0.02	09/28/95
Reactive Sulfide, mg/L	(2)	<1	09/26/95
Total Petroleum Hydrocarbons, mg/Kg (3)	EPA 418.1M	<16	09/29/95

-) SW846 Chapter 7.3.3
- (2) SW846 Chapter 7.3.4
- (3) Total Petroleum Hydrocarbon results reported as mg/Kg on a dry weight basis.

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001 (ICP) / 9509275 (Hg)
 SAMPLE ID #: EXSA39M/AENI

DATE: 29-Sep-95
 UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	14	11	81
BARIUM	11	203	219	97
CADMIUM	< 0.44	4.2	5.5	77
CHROMIUM	4.8	22	22	80
LEAD	4.6	46	55	75
MERCURY	< 0.11	0.92	1.1	85
SELENIUM	< 0.55	8.3	11	76
SILVER	< 1.1	8.7	11	80

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

AMERICAN ENVIRONMENTAL NETWORK OF MARYLAND
 METALS DATA ANALYSIS
 SPIKED SAMPLE RECOVERY

CLIENT: OHM Corporation
 AENI ID #: 9509240-001MSD
 SAMPLE ID #: EKSA39M

DATE: 29-Sep-95

UNITS: ug/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	4.9	13	11	76
BARIUM	11	192	219	82
CADMIUM	< 0.44	3.9	5.5	72 OC
CHROMIUM	4.8	22	22	80
LEAD	4.6	44	55	73 OC
MERCURY	< 0.11	0.91	1.1	83
SELENIUM	< 0.55	7.9	11	72 OC
SILVER	< 1.1	8.2	11	75

NA = NOT APPLICABLE BECAUSE SAMPLE CONCENTRATION > 4 TIMES SPIKE LEVEL
 OC = OUT OF CONTROL LIMITS OF 75-125%

CHAIN-OF-CUSTODY RECORD

AEN

158352

9509240

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME		PROJECT LOCATION		NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)							REMARKS						
PROJ NO	PROJECT CONTACT	PROJECT TELEPHONE NO			XCLP	TOTAL VOLATILES	PCRA Uen	TPH	HEAVY METALS	PAH'S	METALS PCRA							
16208	MIKE QUINLAN	508 772-2019																
CLIENT'S REPRESENTATIVE		PROJECT MANAGER/SUPERVISOR																
USACE		KEVIN MACK																
ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)												
1	EXSA39PCB01	9/19	1158	X		Gold SAND					1x1L 3xPOZ	X	X	X	X	X	X	Do not analyze for PCBs -005/-006
2	EXSA39PCB02	9/19	1200	X		Gold SAND					2x40ml							-007
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-2	Matthew Jones	Fed Ex Airbill 275 2222 606	9/20/95	1200	- Preserved To 4 C - Temp Blank included - 5 day TAT
2			Ally Jen	9/21/95	1025	
3						
4						SAMPLER'S SIGNATURE Matthew Jones

Appendix D
Material Shipping Records



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials *not* subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

A Location Information

1. Provide the following information on the location where the waste was generated:

SA-39 (Sylvania Site, former UST for Bldg 4250)

Release name (optional)

South of Rte. 2 within Oxbow National Wildlife Refuge

Street

Location id

Fort Devens

MA

01433

City/Town

State

Zip code

2. Date/Period of generation:

07/31/95 08/01/95

From

To

5. List additional tracking documents associated with this document:

3. U.S. EPA ID number:

MA7210025154

4. 21E release:

yes

no

B Generator Information

1. Provide the following generator information:

U.S. Army - Fort Devens

Name of organization

James C. Chambers

BRAC Environmental Officer

Contact name

Title

AFZD-BEO-Box 1

Street address

Fort Devens

MA

01433

City/Town

State

Zip code

(508) 796-3114

Telephone number and extension

C Owner and/or Operator Information

1. If the owner and/or operator is different from the generator as indicated in Section B, provide the following information:

Check applicable: owner operator

U.S. Army - Fort Devens

Name of organization

James C. Chambers

BRAC Environmental Officer

Contact name

Title

AFZD-BEO-Box 1

Street address

Fort Devens

MA

01433

City/Town

State

Zip code

(508) 796-3114

Telephone number and extension



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

D Transporter/Common Carrier Information

1. Provide the following information:

P.J. Keating Company		N/A	N/A
<i>Transporter/Common carrier name</i> Mark Nikitas		<i>Hazardous waste license number (if applicable)</i>	<i>Licensing state (if applicable)</i>
<i>Contact person</i> 998 Reservoir Road		<i>Title</i>	
<i>Street</i> Lunenburg		MA	01462
<i>City/Town</i> (508) 582-9931		State	Zip code
<i>Telephone number and extension</i>			

E Receiving Facility Information

1. Provide the following information on the receiving facility:

U.S. Army - Fort Devens - Building 202		
<i>Operator/facility name</i> James C. Chambers BRAC Environmental Officer		
<i>Contact person</i> AFZD-BEO-Box 1 Fort Devens, MA 01433		
<i>Street</i> (508) 796-3114		
<i>Telephone number and extension</i>		

2. Type of facility:

- asphalt batch/cold mix
- asphalt batch/hot Mix
- other: Temporary Storage Facility
- landfill/disposal
- landfill/daily cover
- thermal processing
- landfill/structural fill

3. Permit number: N/A

F Description of Material

Check all that apply:

1. a. soil dredge material fill

b. Description:

c. Classification: MIT USDA USAEC ASEE

2. Other:

Modified Burmeister

describe

3. Type of contamination:

a. gasoline diesel fuel #2 oil #4 oil #6 oil waste oil kerosene jet fuel

b. Debris:

demolition vegetative inorganic

c. Other:

Fuel oil

describe



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

F Description of Material (cont.)

4. Constituents of concern (check all that apply):

- As Cd Cr Pb Hg Na PCBs
- HVOCs PATH VOCs PAHs BNAs
- TPH Other:

Barium
describe

5. Analyses performed (check all that apply):

- As Cd Cr Pb Hg Na PCBs
- HVOCs PATH VOCs PAHs BNAs
- TPH TCLP (inorganic) TCLP (organic)
- Other:

RCRA Characterization
describe

6. Screening performed:

Nine
Type
Instrun - Lead
Constituents

7. Estimated volume of materials:

67 cubic yards
Cubic Yards
101 tons
Tons
Other

8. Contaminant source (check one/specify):

- transportation accident use other:
- Former VST location
describe

9. Indicate which waste characterization support documentation is attached

- site history information
- sampling and analytical methods/procedure
- laboratory data field screening data

If supporting documentation is not appended, provide an attachment stating the date and in connection with what document such information was previously submitted to the facility.

G Qualified Environmental Professional Opinion

T.S. Alving & Associates
Name of organization
Todd Alving Licensed Site Professional
Name of professional Title
(508) 435-3679
Telephone number and extension

"I have personally examined and am familiar with the information contained on and submitted with this form. Based on this information, it is my opinion that the testing and assessment actions undertaken were adequate to characterize the waste, and that the facility or location can accept wastes with the characteristics described in this submittal. I am aware that significant penalties including, but not limited to, possible fines and imprisonment may result if I willfully submit information which I know to be false, inaccurate, or materially incomplete."

[Signature]
Signature
10.20.95
Date
4026
License number

Seal





Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

H Certification of Generator

I certify under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information contained herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

James C. Chambers
Signature
1/24/96
Date
Name (print)

I Acknowledgment of Receipt by Receiving Facility

U.S. Army - Fort Devens - Bldg 202
Receiving Facility
James C. Chambers
Representative (print)
BRAC Environmental Officer
The James C. Chambers 1/24/96
Signature Date



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000 & SA 39 (Boucher Powell 127)

J Load Information

Note:
Make additional
copies of this
page as neces-
sary.

LOAD #: 429
 X Mike
 Signature of transporter
B 202 Soil Storage Area, Cell A
 Receiving facility
10.26.95
 Date received
1100
 Time received
10.26.95
 Date of shipment

 Time of shipment
MA E40038
 Truck/Tractor registration
MA 12363
 Trailer registration
56,420 lbs. / 28.21 ton
 Load size (cubic yards/tons)

LOAD #: 430
 X DAN
 Signature of transporter
202 Soil Storage Area, Cell A
 Receiving facility
10.26.95
 Date received
1102
 Time received
10.26.95
 Date of shipment

 Time of shipment
MA B44609
 Truck/Tractor registration
MA 21421
 Trailer registration
46,400 lbs. / 23.20 tons
 Load size (cubic yards/tons)

LOAD #: 431
 X Nal Pope
 Signature of transporter
B.202 Soil Storage Area, Cell A
 Receiving facility
10.26.95
 Date received
1110
 Time received
10.26.95
 Date of shipment

 Time of shipment
MA C 34867
 Truck/Tractor registration
MA 10207
 Trailer registration
48,240 lbs. / 24.12 ton
 Load size (cubic yards/tons)

LOAD #: ~~431~~ 439
 X Mike
 Signature of transporter
B 202 Soil Storage Area, Cell A
 Receiving facility
10.26.95
 Date received
1208
 Time received
10.26.95
 Date of shipment

 Time of shipment
MA E40038
 Truck/Tractor registration
MA 12363
 Trailer registration
51,120 lbs. / 25.56 ton
 Load size (cubic yards/tons)

K Log Sheet Volume Information

202,180 lbs. / 101.09 tons
 Total volume this page (cubic yards/tons)
~~151,060 lbs. / 75.53 tons~~

202,180 lbs. / 101.09 tons
 Total carried forward and this page (cubic yards/tons)



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials *not* subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

IMPORTANT:
This form is *NOT* to be used for the shipment of remediation wastes subject to management under section 310 CMR 40.0035 of the Massachusetts Contingency Plan nor is it to be used in lieu of a hazardous waste manifest for hazardous waste or recyclable materials subject to the Massachusetts Hazardous Waste Regulations 310 CMR 30.000.

A Location Information

1. Provide the following information on the location where the waste was generated:

Sylvania Site, SA-39 (PCB location)

Release name (optional)

south of Rte. 2 within Oxbow National Wildlife Refuge

Street

Fort Devens

Location and

MA

01433

City/Town

State

Zip code

2. Date/Period of generation:

08/25/95 08/25/95

From

To

5. List additional tracking documents associated with this document:

3. U.S. EPA ID number:

MA7210025154

4. 21E release:

yes

no

B Generator Information

1. Provide the following generator information:

U.S. Army - Fort Devens

Name of organization

James C. Chambers

BRAC Environmental Officer

Contact name

Title

AFZD-BEO-Box 1

Street address

Fort Devens

MA

01433

City/Town

State

Zip code

(508) 796-3114

Telephone number and extension

C Owner and/or Operator Information

1. If the owner and/or operator is different from the generator as indicated in Section B, provide the following information:

Check applicable:

owner

operator

U.S. Army - Fort Devens

Name of organization

James C. Chambers

BRAC Environmental Officer

Contact name

Title

AFZD-BEO-Box 1

Street address

Fort Devens

MA

01433

City/Town

State

Zip code

(508) 796-3114

Telephone number and extension



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

D Transporter/Common Carrier Information

1. Provide the following information:

Transporter/Common carrier name	Hazardous waste license number (if applicable)	Licensing state (if applicable)
P.J. Keating Company	N/A	N/A
Contract person	Title	
Mark Nikitas		
Street	City/Town	State
998 Reservoir Road	Lunenburg	MA
Telephone number and extension	Zip code	
	(508) 582-9931	01462

E Receiving Facility Information

1. Provide the following information on the receiving facility:

Operator/Facility name	U.S. Army - Fort Devens - Building 202	
Contract person	Title	
James C. Chambers	BRAC Environmental Officer	
Street	City/Town	State
AFZD-BEO-Box 1	Fort Devens, MA	01433
Telephone number and extension	Zip code	
(508) 796-3114		

2. Type of facility:

- asphalt batch/cold mix
- asphalt batch/hot Mix
- other: Temporary Storage Facility
- landfill/disposal
- landfill/daily cover
- thermal processing
- landfill/structural fill

3. Permit number: N/A

F Description of Material

Check all that apply:

1. a. <input checked="" type="checkbox"/> soil <input type="checkbox"/> dredge material <input type="checkbox"/> fill	3. Type of contamination:
b. Description:	a. <input type="checkbox"/> gasoline <input type="checkbox"/> diesel fuel <input type="checkbox"/> #2 oil <input type="checkbox"/> #4 oil
<u>TAN, FT6C SAND -</u>	<input type="checkbox"/> #6 oil <input type="checkbox"/> waste oil <input type="checkbox"/> kerosene <input type="checkbox"/> jet fuel
<u>TR. GRAV. (F.)</u>	b. <input type="checkbox"/> Debris:
c. Classification:	<input type="checkbox"/> demolition <input type="checkbox"/> vegetative <input type="checkbox"/> inorganic
<input type="checkbox"/> MIT <input type="checkbox"/> USDA	c. <input checked="" type="checkbox"/> Other:
<input type="checkbox"/> USAEC <input type="checkbox"/> ASEE	<u>PCBs</u>
2. <input checked="" type="checkbox"/> Other:	describe
<u>Modified Burmeister</u>	
describe	



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

F Description of Material (cont.)

4. Constituents of concern (check all that apply):

- As Cd Cr Pb Hg Na PCBs
- HVOCs PATH VOCs PAHs BNAs
- TPH Other:

Barium
describe

7. Estimated volume of materials:

16.5 cubic yards
Cubic Yards
24.9 tons
Tons
Other

5. Analyses performed (check all that apply):

- As Cd Cr Pb Hg Na PCBs
- HVOCs PATH VOCs PAHs BNAs
- TPH TCLP (inorganic) TCLP (organic)
- Other:

describe

8. Contaminant source (check one/specify):

transportation accident lost other
PCB Spill
describe

6. Screening performed:

None
Type
Instrument Used
Constituents

9. Indicate which waste characterization support documentation is attached:

- site history information
- sampling and analytical methods/procedure
- laboratory data field screening data

If supporting documentation is not appended provide an attachment stating the date and in connection with what document such information was previously submitted to the facility.

G Qualified Environmental Professional Opinion

T.S. Alving & Associates

Name of organization

Todd Alving

Licensed Site Professional

Name of professional

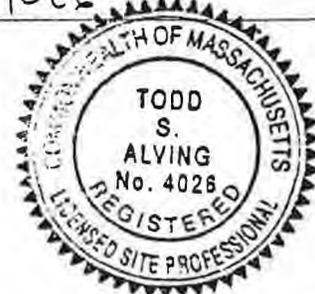
Title

(508) 435-3679

Telephone number and extension

I have personally examined and am familiar with the information contained on and submitted with this form. Based on this information, it is my opinion that the testing and assessment actions undertaken were adequate to characterize the waste, and that the facility or location can accept wastes with the characteristics described in this submittal. I am aware that significant penalties including, but not limited to, possible fines and imprisonment may result if I willfully submit information which I know to be false, inaccurate, or materially incomplete.

[Signature]
Signature
10.10.95
Date
4026
License number:
Seal





Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

H Certification of Generator

I certify under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information contained herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

James C. Chambers
Signature

1/24/96
Date

Name (print)

I Acknowledgment of Receipt by Receiving Facility

U.S. Army - Fort Devens - Bldg 202

Receiving Facility

James C. Chambers

Representative (print)

BRAC Environmental Officer

Title

James C. Chambers
Signature

1/24/96
Date

Date



Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

J Load Information

Note:
Make additional
copies of this
page as neces-
sary.

LOAD #: 086

[Signature]
Signature of transporter
Cell B

Bldg 202 - Soil Staging Area
Receiving facility

10/13/95
Date received

1435
Time received

10/13/95
Date of shipment

Time of shipment

MA E40038
Truck/Tractor registration

MA 12363
Trailer registration

49780 LB / 24.89 tons
Load size (cubic yards/tons)

LOAD #: _____

Signature of transporter

Receiving facility

Date received

Time received

Date of shipment

Time of shipment

Truck/Tractor registration

Trailer registration

Load size (cubic yards/tons)

LOAD #: _____

Signature of transporter

Receiving facility

Date received

Time received

Date of shipment

Time of shipment

Truck/Tractor registration

Trailer registration

Load size (cubic yards/tons)

LOAD #: _____

Signature of transporter

Receiving facility

Date received

Time received

Date of shipment

Time of shipment

Truck/Tractor registration

Trailer registration

Load size (cubic yards/tons)

K Log Sheet Volume Information

49780 LB / 24.89 tons
Total volume this page (cubic yards/tons)

Total carried forward (cubic yards/tons)

49780 LB / 24.89 tons
Total carried forward and this page (cubic yards/tons)

Appendix E
Chemical Quality Assurance Report

RECORD OF TRANSMITTAL

CENED-ED-GL

3 April 1996

FOR Project Engineer, Mr. Mark Applebee
U.S. Army Corps of Engineer,
New England Division
424 Trapelo Rd.
Waltham, MA 02254-9149

SUBJECT: Fort Devens - SA 39 , Chemical Quality
Assurance Report (CQAR)

1. References:

- a. Project No. E0251
- b. Contractor Data Report, Received January 19, 1996.
- c. Memorandum, CEMRD-ED-GC, 16 Aug 1989, Subject: Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTW Projects.

2. Five QA samples were analyzed, resulting in a total of 144 target analyte determinations. Results from analysis of QA samples were compared with results from analysis of the corresponding primary samples (ref 1b). Results of the comparison are as follows:

- a. The contractor's laboratory was American Environmental Network, Inc., Columbia, MD.
- b. Results from the primary and QA samples agreed overall in 144 (100%) of the comparisons.
- c. Results from the primary and QA samples agreed quantitatively in 11 out of 11 (100%) of the comparisons.
- d. There were 0 (0%) major discrepancies between results from the primary and QA laboratory samples.
- e. There were 0 (0%) minor discrepancies between results from the primary and QA laboratory samples.

3. QA analyses were performed at the NED Environmental Laboratory. QA analyses were also performed at E3I, Somerville, MA; GTEL, Milford, NH.

4. The CENED-ED-GL POC is Gary S. Rogowski, 508-928-4238.

Encl

CF (w/encl):
CEMRO-HX-C Thomas Georgian

QA Findings

(Ft. Devens SA 39)

1. QA sample shipping and chain-of-custody deficiencies.

Three shipments of QA samples were received on August 4, September 1 and 21, 1995. Proper sample handling protocols were mostly followed with the following exception: 9/21/95; the VOA vials had a small headspace. The chain-of-custody documents and cooler receipt forms are appended to this report for reference. All shipment information was faxed to Mr. Mark Applebee within 24 hours of receipt.

2. Data comparison for VOA.

There were 30 determinations. In 1 determination VOC's were detected by the QA lab. There was 100% agreement. No major or minor discrepancies were noted. Post analysis pH values were not reported by either the QA or contactor's laboratory.

3. Data comparison for TCLP BNA.

There were 12 determinations. In 0 of these determinations BNA's were detected by the QA lab or contractor's laboratory. There was 100% agreement. There were no major or minor discrepancies.

4. Data comparison for TCLP Metals.

There were 8 determinations. In 2 of these determinations metals were detected by the QA laboratory. There was 100% agreement. No major or minor discrepancies were noted.

5. Data comparison for TCLP Pesticides.

There were 7 determinations. In 1 of these determinations pesticides were detected by the QA laboratory. There was 100% agreement. There were no major or minor discrepancies noted.

6. Data comparison for TCLP VOA.

There were 10 determinations. VOA's were not detected by either the QA lab or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

7. Data comparison for TCLP Herbicides.

There were 2 determinations. In these determinations no herbicides were detected by the QA lab or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

8. Data comparison for BNA.

There were 64 determinations. In 1 of these determinations BNA's were detected by the QA lab. There was 100% agreement. There were no major or minor discrepancies noted.

9. Data comparison for PCB.

There were 2 determinations. In both determinations PCB's were detected by the QA or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

10. Data comparison for TPH.

There was 1 determination. TPH was not detected by either the QA lab or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

11. Data comparison for Metals.

There were 8 determinations. In 4 of these determinations metals were detected by the QA and contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

12. Comments.

Contractor's data package was not in full compliance with Minimum Chemistry Data Reporting Requirements as sample receiving information was not provided.

Quality Assurance Split Sample
Data Comparison Summary

Project: Ft. Devens - SA 39

Test Parameter	Overall Agreement (1)		Quantitative Agreement (2)	
	Number	Percent	Number	Percent
BNA-TCLP	12/12	100	0/0	N/A
Metals-TCLP	8/8	100	2/2	100
Pest-TCLP	7/7	100	1/1	100
VOA-TCLP	10/10	100	0/0	N/A
Herb-TCLP	2/2	100	0/0	N/A
TPH	1/1	100	0/0	N/A
BNA	64/64	100	1/1	100
PCB	2/2	100	2/2	100
VOA	30/30	100	1/1	100
Metals	8/8	100	4/4	100
Total	144/144	100	11/11	100

NOTES:

- (1) Represents the number and percentage agreement of all determinations including analytes not detected by either laboratory.
- (2) Represents the number and percentage agreement of only those determinations where an analyte was detected by at least one laboratory.

APPENDIX A

Analytical Methods

Test Parameter	QA lab	Primary Lab
BNA-TCLP	1311/8270	1311/8270
Metals-TCLP	1311/7000/6010	1311/6010/7000
Pest-TCLP	1311/8081	1311/8080
VOA-TCLP	1311/8260	1311/8240
Herb-TCLP	1311/8150	1311/8150
TPH	418.1	418.1
BNA	8270	8270
VOA	8260	8240
METALS	7000/6010	7000/6010

APPENDIX B
KEY TO COMMENTS ON DATA COMPARISON TABLES

0 - Data agrees if any one of the following apply:

- both values are less than respective detection limit ($N < MDL$)
- $N_1 < MDL_1$ and $N_2 > MDL_2$ but $< MDL_1$
- both values are above respective detection limit ($N > MDL$) and difference between two values satisfies conditions below

Metals $< 2x$ difference for waters, TCLP extracts
 $< 3x$ difference for airs
 $< 10x$ difference for solids and oils

Semivolatiles $< 5x$ difference for all matrices
Volatiles
TPH, BTEX

Pesticides $< 5x$ difference for liquids
Herbicides $< 10x$ difference for solids
PCB's

Alkalinity $< 2x$ difference for all matrices
Hardness, Ammonia
(water quality, etc.)

- 1 - Minor contamination by laboratory contaminant
- 2 - Not tested by both laboratories
- 3 - Minor data discrepancy, disagreement not serious, if any one of the following apply:

- $N_1 < MDL_1$ and $N_2 > MDL_2$ and the difference between values N_2 and MDL_1 does not exceed the upper limit (described below) defining a minor data discrepancy
- both values are above respective detection limit ($N > MDL$) and conditions described below apply to the difference between the two values

Metals $2x < \text{difference} < 5x$ for waters, TCLP extracts
 $10x < \text{difference} < 20x$ for solids, oils
 $3x < \text{difference} < 5x$ for airs

Semivolatiles, $5x < \text{difference} < 10x$ for all matrices
VOA, TPH, BTEX

Pesticide/PCB $5x < \text{difference} < 10x$ for liquids
Herbicides $10x < \text{difference} < 20x$ for solids

Alkalinity $2x < \text{difference} < 5x$ for all matrices
Hardness, Ammonia
(water quality, etc.)

4 - Major data discrepancy, disagreement serious, if any one of the following apply:

- $N_1 < MDL_1$ and $N_2 > MDL_2$ and the difference between values N_2 and MDL_1 exceeds the limit (described below) defining a major data discrepancy
- both values are above respective detection limit ($N > MDL$) and conditions described below apply to the difference between the two values

Metals >5x difference for waters, TCLP extracts, airs
>20x difference for solids, oils

Semivolatiles, >10x difference for all matrices
VOA, TPH, BTEX

Pesticide/PCB >10x difference for liquids
Herbicides >20x difference for solids

Alkalinity >5x difference for all matrices
Hardness, Ammonia
(water quality, etc.)

MDL = Method Detection Limit
N = Analytical result

Key to data qualifiers:

- B - detected in method blank
- J - estimated value, above MDL but below practical quantitation limit
- NR - Not reported

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 32803
 QA FIELD ID: EXSA39TRPA
 QA ANALYSIS DATE: 09/28/95
 QA LABORATORY: NED

CONTRACTOR'S SAMPLE NO.: 9509240-003
 CONTRACTOR'S FIELD ID: EXSA39V
 CONTRACTOR'S ANALYSIS DATE: 09/27/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: SOIL
 DATE SAMPLED: 09/19/95
 UNITS: ng/g

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB MDL	QA LAB	CONTRACTOR CRQL	CONTRACTOR	
Dichlorodifluoromethane	< 7.4			NR	2
Chloromethane	< 2.1		< 10		0
Vinyl chloride	< 1.4		< 10		0
Bromomethane	< 2.7		< 10		0
Chloroethane	< 2.0		< 10		0
Trichlorofluoromethane	< 1.1		< 5.2		0
1,1-Dichloroethane	< 1.7		< 5.2		0
Dichloromethane MeCl2	< 2.0	B 34	< 5.2		1
trans-1,2-Dichloroethane	< 1.8		< 5.2		0
1,1-Dichloroethane	< 1.4		< 5.2		0
2,2-Dichloropropane	< 5.1			NR	2
cis 1,2-Dichloroethane	< 1.6			NR	2
Chloroform	< 1.6		< 5.2		0
Bromochloromethane	< 2.2			NR	2
1,1,1-Trichloroethane	< 2.4		< 5.2		0
1,1-Dichloropropene	< 1.6			NR	2
Carbon Tetrachloride	< 2.2		< 5.2		0
1,2-Dichloroethane	< 3.1		< 5.2		0
Benzene	< 2.2		< 5.2		0
Trichloroethene	< 2.2		< 5.2		0
1,2-Dichloropropane	< 1.8		< 5.2		0
Bromodichloromethane	< 2.0		< 5.2		0
Dibromomethane	< 3.0			NR	2
cis 1,3-Dichloro,1-propene	< 2.5		< 5.2		0
Toluene	< 1.9		< 5.2		0
trans 1,3-Dichloro,1-propene	< 3.6		< 5.2		0
1,1,2-Trichloroethane	< 3.7		< 5.2		0
1,2-Dibromoethane	< 3.7			NR	2
1,3-Dichloropropane	< 2.7			NR	2
Tetrachloroethene	< 1.5		< 5.2		0
Dibromochloromethane	< 2.3		< 5.2		0
Chlorobenzene	< 1.4		< 5.2		0
1,1,1,2-Tetrachloroethane	< 1.5			NR	2
Ethylbenzene	< 1.4		< 5.2		0
m/p Xylene	< 2.0			NR	2
o-Xylene	< 1.5			NR	2
Styrene	< 1.4			NR	2
Bromoform	< 3.3		< 5.2		0
Isopropylbenzene	< 1.5			NR	2

QA SAMPLE NO.: 32803

CONTRACTOR'S SAMPLE NO.: 9509240-003

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB MDL	QA LAB	CONTRACTOR CRQL	CONTRACTOR	
1,1,2,2-Tetrachloroethane	< 5.0		< 5.2		0
1,2,3-Trichloropropane	< 2.7			NR	2
n-Propylbenzene	< 1.4			NR	2
Bromobenzene	< 1.5			NR	2
1,3,5-Trimethylbenzene	< 1.5			NR	2
2-Chlorotoluene	< 1.7			NR	2
4-Chlorotoluene	< 1.2			NR	2
tert-Butylbenzene	< 1.5			NR	2
1,2,4-Trimethylbenzene	< 1.4			NR	2
sec-Butylbenzene	< 1.4			NR	2
p-Isopropyltoluene	< 1.4			NR	2
1,3-Dichlorobenzene	< 1.4		< 5.2		0
1,4-Dichlorobenzene	< 1.5		< 5.2		0
n-Butylbenzene	< 1.5			NR	2
1,2-Dichlorobenzene	< 1.5		< 5.2		0
1,2-Dibromo-3-chloropropane	< 3.5			NR	2
1,2,4-Trichlorobenzene	< 1.5			NR	2
Hexachlorobutadiene	< 1.5			NR	2
Naphthalene	< 2.7	2 5.4		NR	2
1,2,3-Trichlorobenzene	< 2.4			NR	2

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
1,2-Dichloroethane D4 (70-121)	NR	95
Toluene D8 (81-117)	103	105
Dibromofluoromethane (80-120)	110	NR
4-Bromofluorobenzene (74-121)	*73	95

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 32182
 QA FIELD ID: EXSA39TRP
 QA ANALYSIS DATE: 08/22/95
 QA LABORATORY: E3I

CONTRACTOR'S SAMPLE NO.: 9508050-002
 CONTRACTOR'S FIELD ID: EXSA3901
 CONTRACTOR'S ANALYSIS DATE: 08/11/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TCEP EXTRACT
 DATE SAMPLED: 08/03/95
 UNITS: ug/L

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB MDL	QA LAB	CONTRACTOR MDL	CONTRACTOR	
1,4-Dichlorobenzene	< 10		< 40		0
2-Methylphenol	< 10		< 40		0
4-Methylphenol	< 10		< 40		0
Hexachloroethane	< 10		< 40		0
Nitrobenzene	< 10		< 40		0
Hexachlorobutadiene	< 10		< 40		0
2,4,6-Trichlorophenol	< 10		< 40		0
2,4,5-Trichlorophenol	< 25		< 200		0
2,4-Dinitrotoluene	< 10		< 40		0
Hexchlorobenzene	< 10		< 40		0
Pentachlorophenol	< 25		< 200		0
Pyridine	< 10		< 40		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
2-Fluorophenol (21-113)	36	64
Phenol (10-110)	25	64
Nitrobenzene-d5 (35-114)	53	94
2-Fluorobiphenyl (43-116)	53	67
2,4,6-Tribromophenol (10-123)	62	37
4-Terphenyl-d4 (33-141)	60	66

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 32182
 QA FIELD ID: EXSA38TRP
 QA LABORATORY: EBI

CONTRACTOR'S SAMPLE NO.: 9508050-002
 CONTRACTOR'S FIELD ID: EXSA3901
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TCLP EXTRACT
 DATE SAMPLED: 08/03/95
 UNITS: ug/ml

PARAMETER	QA LAB	RESULTS	CONTRACTOR	RESULTS	COMPARISON CODE
	CRQL	QA LAB	MDL	CONTRACTOR	
Silver	< 0.020		< 0.50		0
Arsenic	< 0.040		< 0.50		0
Barium		0.0011	< 1.0		0
Cadmium	< 0.013		< 0.040		0
Chromium	< 0.020		< 0.10		0
Mercury		0.00060	< 0.00010		0
Lead	< 0.025		< 1.0		0
Selenium	< 0.030		< 0.25		0

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 32190	CONTRACTOR'S SAMPLE NO.: 9508050-002
QA FIELD ID: EXSA39TRP	CONTRACTOR'S FIELD ID: EXSA3901
QA ANALYSIS DATE: 09/11/95	CONTRACTOR'S ANALYSIS DATE: 08/10/95
QA LABORATORY: ESI	CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TOLP EXTRACT
 DATE SAMPLED: 08/03/95
 UNITS: ug/L

PARAMETER	RESULTS		DETECTION LIMIT	RESULTS CONTRACTOR	COMPARISON CODE
	QA LAB CRCL	QA LAB			
Gamma-BHC (Lindane)	< 0.153		< 0.20		0
Heptachlor	< 0.153		< 0.10		0
Heptachlor epoxide	< 0.153		< 0.10		0
Endrin	< 0.11		< 0.20		0
Methoxychlor		0.057	< 1.0		0
Chlordane	< 0.11		< 0.10		0
Toxaphene	< 5.3		< 10		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
TCMX (35-113)	91	92
DCB (60-150)	91	93

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 32182
 QA FIELD ID: EXSA19TRP
 QA ANALYSIS DATE: 08/23/95
 QA LABORATORY: ESI

CONTRACTOR'S SAMPLE NO.: 9508050-002
 CONTRACTOR'S FIELD ID: EXSA1901
 CONTRACTOR'S ANALYSIS DATE: 08/09/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TCLP EXTRACT
 DATE SAMPLED: 08/03/95
 UNITS: ug/L

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB MDL	QA LAB	CONTRACTOR CRQL	CONTRACTOR	
Vinyl chloride	< 10		< 100		0
1,1-Dichloroethane	< 5.0		< 50		0
Chloroform	< 5.0		< 50		0
1,2-Dichloroethane	< 5.0		< 50		0
2-Butanone	< 10		< 1000		0
Carbon tetrachloride	< 5.0		< 50		0
Benzene	< 5.0		< 50		0
Trichloroethane	< 5.0		< 50		0
Tetrachloroethane	< 5.0		< 50		0
Chlorobenzene	< 5.0		< 50		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
1,2-Dichloroethane D4 (76-114)	106	106
Toluene D8 (88-110)	98	104
4-Bromofluorobenzene (86-115)	102	104

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.: 31110
 QA FIELD ID: EXSA39TRP
 QA ANALYSIS DATE: 09/17/95
 QA LABORATORY: STEL

CONTRACTOR'S SAMPLE NO.: 95908050-002
 CONTRACTOR'S FIELD ID: EXSA3901
 CONTRACTOR'S ANALYSIS DATE: 08/11/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TCLP EXTRACT
 DATE SAMPLED: 08/03/95
 UNITS: ug/L

PARAMETER	RESULTS		REPORTING LIMIT	RESULTS		COMPARISON CODE
	QA LAB MCL	QA LAB		CONTRACTOR		
2,4-D	< 331		< 0.50			0
2,4,5-TP	< 33		< 3.50			0

SURROGATE RECOVERIES:

	QA	CONTRACTOR
DCPAA (24-154)	NR	67

SEE APPENDIX B FOR KEY TO COMMENTS

QA SAMPLE NO.: 32191
 QA FIELD ID: SBSA39TRP
 QA ANALYSIS DATE: 08/14/95
 QA LABORATORY: E3I

CONTRACTOR'S SAMPLE NO.: 9508032-003
 CONTRACTOR'S FIELD ID: SBSA39WC
 CONTRACTOR'S ANALYSIS DATE: 08/11/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: SOIL
 DATE SAMPLED: 08/02/95
 UNITS: ug/kg

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB CRQL	QA LAB	CONTRACTOR CRQL	CONTRACTOR	
Phenol	< 340		< 340		0
Bis(2-chloroethyl) ether	< 340		< 340		0
2-Chlorophenol	< 340		< 340		0
1,3-Dichlorobenzene	< 340		< 340		0
1,4-Dichlorobenzene	< 340		< 340		0
1,2-Dichlorobenzene	< 340		< 340		0
2-Methylphenol	< 340		< 340		0
Bis(2-chloroisopropyl) ether	< 340		< 340		0
4-Methylphenol	< 340		< 340		0
N-Nitroso-di-n-propylamine	< 340		< 340		0
Hexachloroethane	< 340		< 340		0
Nitrobenzene	< 340		< 340		0
Isophorone	< 340		< 340		0
2-Nitrophenol	< 340		< 340		0
2,4-Dimethylphenol	< 340		< 340		0
Bis(2-chloroethoxy)methane	< 340		< 340		0
2,4-Dichlorophenol	< 860		< 340		0
1,2,4-Trichlorobenzene	< 340		< 340		0
Naphthalene	< 340		< 340		0
4-Chloroaniline	< 340		< 340		0
Hexachlorobutadiene	< 340		< 340		0
4-Chloro-3-methylphenol	< 340		< 340		0
2-Methylnaphthalene	< 340		< 340		0
Hexachlorocyclopentadiene	< 340		< 340		0
2,4,6-Trichlorophenol	< 340		< 340		0
2,4,5-Trichlorophenol	< 860		< 860		0
2-Chloronaphthalene	< 340		< 340		0
2-Nitroaniline	< 860		< 860		0
Dimethylphthalate	< 340		< 340		0
Acenaphthylene	< 340		< 340		0
3-Nitroaniline	< 860		< 860		0
Acenaphthene	< 340		< 340		0
2,4-Dinitrophenol	< 860		< 860		0
4-Nitrophenol	< 860		< 860		0
Dibenzofuran	< 340		< 340		0
2,6-Dinitrotoluene	< 340		< 340		0

QA SAMPLE NO.: 10191

CONTRACTOR'S SAMPLE NO.: 9508032-003

PARAMETER	RESULTS		RESULTS		COMPARISON CODE
	QA LAB CRQL	QA LAB	CONTRACTOR CRQL	CONTRACTOR	
2,4-Dinitrotoluene	< 340		< 340		0
Diethylphthalate	< 340		< 340		0
4-Chlorophenyl-phenylether	< 340		< 340		0
Fluorene	< 340		< 340		0
4-Nitroaniline	< 360		< 360		0
4,6-Dinitro-2-methylphenol	< 360		< 360		0
N-Nitrosodiphenylamine	< 340		< 340		0
4-Bromophenyl-phenylether	< 340		< 340		0
Hexachlorobenzene	< 340		< 340		0
Pentachlorophenol	< 360		< 360		0
Phenanthrene	< 340		< 340		0
Anthracene	< 340		< 340		0
Di-n-butylphthalate	< 340	B 370	< 340		1
Fluoranthene	< 340		< 340		0
Pyrene	< 340		< 340		0
Butylbenzylphthalate	< 340		< 340		0
3,3-Dichlorobenzidine	< 340		< 340		0
Benzo(a)anthracene	< 340		< 340		0
Bis(2ethylhexyl)phthalate	< 340	J 280	< 340		0
Chrysene	< 340		< 340		0
Di-n-octyl phthalate	< 340		< 340		0
Benzo(b)fluoranthene	< 340		< 340		0
Benzo(k)fluoranthene	< 340		< 340		0
Benzo(a)pyrene	< 340		< 340		0
Indeno(1,2,3-cd)pyrene	< 340		< 340		0
Dibenz(a,h)anthracene	< 340		< 340		0
Benzo(g,h,i)perylene	< 340		< 340		0
Carbazole	< 340			NR	2

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
Nitrobenzene-d5 (23-120)	67	67
2-Fluorobiphenyl (30-115)	77	94
Terphenyl-d14 (18-137)	51	64
1,2-Dichlorobenzene-d4 (20-130)	71	NR
Phenol-d6 (24-113)	78	67
2-Fluorophenol (25-121)	61	68
2,4,6-Tribromophenol (19-122)	74	63
2-Chlorophenol-d4 (20-130)	71	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.:	32180	CONTRACTOR'S SAMPLE NO.:	9508050-002
QA FIELD ID:	EXSA39TRP	CONTRACTOR'S FIELD ID:	EXSA3901
QA ANALYSIS DATE:	08/22/95	CONTRACTOR'S ANALYSIS DATE:	08/09/95
QA LABORATORY:	E3I	CONTRACTOR'S LABORATORY:	AENI

MATERIAL DESCRIPTION: SOIL
 DATE SAMPLED: 08/03/95
 UNITS: mg/kg

PARAMETER	QA LAB CRQL	RESULTS	DETECTION LIMIT	RESULTS	COMPARISON CODE
		QA LAB		CONTRACTOR	
Total PCBs		J 0.0088	< 3.025		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
TCMX (60-150)	66	NR
Decachlorobiphenyl (60-150)	96	96

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT: FORT DEVENS - SA 39

QA SAMPLE NO.:	32548	CONTRACTOR'S SAMPLE NO.:	9508301-001
QA FIELD ID:	SBA19TRPA	CONTRACTOR'S FIELD ID:	SBSA39BCA
QA ANALYSIS DATE:	09/14/95	CONTRACTOR'S ANALYSIS DATE:	08/30/95
QA LABORATORY:	E31	CONTRACTOR'S LABORATORY:	AENI

MATERIAL DESCRIPTION: SOIL
 DATE SAMPLED: 08/25/95
 UNITS: mg/kg

PARAMETER	QA LAB IRQL	RESULTS	DETECTION LIMIT	RESULTS	COMPARISON CODE
		QA LAB		CONTRACTOR	
Total PCBs		0.63		0.84	0

SURROGATE RECOVERIES

	QA	CONTRACTOR
TCMX (60-180)	*57	NR
Decachlorobiphenyl (60-180)	*62	64

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA AND CONTRACTOR RESULTS

PROJECT: FORT DEVENS - SA 39

ANALYSIS PERFORMED: TOTAL PETROLEUM HYDROCARBONS

QA LABORATORY: ESI

CONTRACTOR'S LABORATORY: AENI

UNITS: mg/kg

* SAMPLE DATE	SAMPLE MATRIX	CONTRACTOR SAMPLE NO.	CONTRACTOR FIELD ID	ENV. LAB NO.	QA FIELD ID	CONTRACTOR RESULTS	QA LAB RESULTS	C
* 08/02/95	SOIL	9508032-003	SBSA39WC	32181	SBSA39TRP	< 16	< 26	0

COMPARISON OF QA & CONTRACTOR RESULTS
 PROJECT FORT DEVENS - SA 39

QA SAMPLE NO.: 32802
 QA FIELD ID: EXSA39TRFB
 QA LABORATORY: NED

CONTRACTOR'S SAMPLE NO.: 9509240-001
 CONTRACTOR'S FIELD ID: EXSA39M
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: SOIL
 DATE SAMPLED: 09/19/95
 UNITS: ug/g

PARAMETER	QA LAB	RESULTS	CONTRACTOR	RESULTS	COMPARISON CODE
	MDL	QA LAB	MDL	CONTRACTOR	
Silver	< 0.66		< 1.1		0
Arsenic		5.3		4.9	0
Barium		11		11	0
Cadmium	< 0.17		< 0.44		0
Chromium		5.3		4.8	0
Mercury	< 0.10		< 0.11		0
Lead		5.1		4.6	0
Selenium	< 0.46		< 0.55		0

SEE APPENDIX B FOR KEY TO COMMENTS



0251

C.O.C p1 of 2

LAB COPY

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89
158201

OHM MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839 0551 • 419 423-3526

PROJECT NAME Fort Devens		PROJECT LOCATION Ayer, MA			NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) <i>TCLP - FULL lab 8/95</i> <i>PCBs</i>									
PROJECT NO 6208	PROJECT CONTACT Mike Quinlan		PROJECT TELEPHONE NO (508) 772-2019												
CLIENT REPRESENTATIVE USACE		PROJECT MANAGER/SUPERVISOR Kevin Mack													
SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	REMARKS								
EXSA39TRP	0803 95	1218	<input checked="" type="checkbox"/>		Brown/Gold Sand	1x 8oz 1x 1L	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1	<i>M. Quinlan</i>	Federal Express Airbill # 123 2650 264	08-03 95	1530	- Preserved at 4°C - Temp Blank included
2						
3						
4			<i>Cheryl ...</i>	8-4-95	1300	SAMPLER'S SIGNATURE <i>Margaret ...</i>

CENED-ED-GL
 SAMPLE CONTAINER RECEIPT FORM

PROJECT: Fort Devens

Project #: ED 751
 Work Order #: _____

Container received on 8-4-95 and inspected on 8-4-95 By: Phong Nguyen

1. Temperature 5.0 °C. Temperature taken on 8-4-95 (date)
2. Shipper _____ Shipper # 1232650264
 (USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)
3. Container type (Cooler, box, envelope, etc.) _____
4. Were custody seals on outside of container? N/A Yes No
 How many & where: 2 Brown/White Lid, seal date: 8-3-95, seal name: Signature
5. Were custody papers taped to lid inside container? N/A Yes No
6. Custody papers properly filled out? (ink, signed, etc.) Yes No
7. Was project and project # identifiable from custody papers? Yes No
8. Did you sign custody papers in appropriate place? Yes No
9. Did you attach shipper's packing form to this form? N/A Yes No
10. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
11. Were all samples sealed in separate plastic bags? N/A Yes No
12. Did all samples arrive in good condition? Yes No
13. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No
14. Were correct sample containers used for tests indicated? N/A Yes No
15. Were correct preservatives used? (TM pH____, CN- pH____) N/A Yes No
 (TOC pH____, NUTRIENT pH____, TOX pH____, TPH pH____, OTHER pH____)
16. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
17. Was sufficient amount of sample sent in each container? Yes No
18. Did all sample labels agree with custody papers? Yes No
19. Were air volumes noted for air samples? N/A Yes No
20. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies: _____

USACE

E0951

Remediation
Services Corp.

CHAIN-OF-CUSTODY RECORD

Field Tech.

158350

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839 0551 • 419 423-3526

PROJECT NAME FT DEVENS		PROJECT LOCATION AYER	
PROJ NO 16208	PROJECT CONTACT MIKE QUINLAN	PROJECT TELEPHONE NO 508-772-2019	
CLIENT'S REPRESENTATIVE USACE		PROJECT MANAGER/SUPERVISOR KEVIN MACK	

ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)										REMARKS						
								METALS (RCRA) TOTAL VOC'S																
3772	EXSA79TAPB	9/19	11:55	X		Brown Sandy Soil	1x902	X																
3773	EXSA79TAPA	9/19	11:59		X	Brown Sandy Soil	2x40mL	X																
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-2	Matthew Jones	Fed Ex Airbill # 2252288236	9/20/19	1200	- Preserved to 4°C - Temp Blank included - 5 day TAT
2						
3		FEREX	Chad Warner	9/21/19	1200	
4						SAMPLER'S SIGNATURE Matthew Jones

COVER-ED-GUN
SAMPLE CONTAINER RECEIPT FORM

Project: Fort Stevens Topsoil Project #: 111
Work Order #:

Container received on 9.21.95 and inspected on 9.21.95 by: Cheryl Neerwin

1. Temperature 4.8 °C. Temperature taken on 9.21.95 (date)
2. Shipper Shipper #: 795 2984236
(USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)
3. Container type (Cooler) box, envelope, etc.)
4. Were custody seals on outside of container? N/A Yes No
How many & where: 2 Around/under lid, seal date: 9.10.95, seal name:
5. Were custody papers taped to lid inside container? N/A Yes No
6. Custody papers properly filled out? (ink, signed, etc.) Yes No
7. Was project and project # identifiable from custody papers? Yes No
8. Did you sign custody papers in appropriate places? Yes No
9. Did you attach shipper's packing form to this form? N/A Yes No
10. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
11. Were all samples sealed in separate plastic bags? N/A Yes No
12. Did all samples arrive in good condition? Yes No
13. Sample labels complete? (s, date, analysis, preservation, sign.) Yes No
14. Were correct sample containers used for tests indicated? N/A Yes No
15. Were correct preservatives used? (TM pH , CN- pH)
(TOC pH , NUTRIENT pH , TOX pH , TSS pH , OTHER pH) N/A Yes No
16. Were Some vials were found VOA vials bubble-free (E.C) or no headspace (soil)? N/A Yes Yes
17. Was sufficient amount of sample sent in each container? Yes No
18. Did all sample labels agree with custody papers? Yes No
19. Were air volumes noted for air samples? N/A Yes No
20. Were initial weights noted for pre-weighed filters? N/A Yes No

discrepancies:



**Appendix F
Site Photographs**

