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10-18-96



**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.

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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**

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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

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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

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

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

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

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

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.

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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

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 excised 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:

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

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

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

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

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

Results of the SI are presented in Section 4.1.

3.4 SUPPLEMENTAL SITE INVESTIGATION

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

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

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

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

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

Results of the Supplemental SI are presented in Section 4.2.

3.5 PRELIMINARY RISK EVALUATION

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

3.5.1 Human Health Preliminary Risk Evaluation Methodology

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

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

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

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

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

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

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

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

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

3.5.2 Ecological Risk Evaluation Methodology

The ecological PRE at SA 39 included the following elements:

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

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

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

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

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

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

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

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

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

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

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,

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

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

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

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

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

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

4.2 SUPPLEMENTAL SITE INVESTIGATION

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

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

Three soil samples were collected from each of five Geoprobe borings and were field screened for TPH. At each location, samples were collected at the 0 to 2 ft bgs, 4 to 6 ft bgs, and 10 to 12 ft bgs depth intervals. Field screening results (shown on Figure 4-6 and Table 4-8) indicated TPH at concentrations above 500 $\mu\text{g/g}$ in 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 Geoprobe boring 39G-02. Splits of these two samples that were submitted to an offsite laboratory contained TPH at concentrations of 3,400 $\mu\text{g/g}$ (0 to 2 ft bgs 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

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

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

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

4.3 SOIL REMOVAL ACTION

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

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

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

4.3.1 Removal Action Objectives

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

4.3.2 Field Observations and Screening Results

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

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

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

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

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

4.3.3 Waste Characterization and Disposal

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

Based on the waste characterization results, all contaminated soil from both excavations was transferred to the temporary soil storage facility at Building 202, and the excavations were backfilled with clean fill (OHM, 1996). Complete waste characterization results, as well as transportation and disposal documentation, are 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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concentration of residual PCBs in eight surface soil samples remaining in and adjacent to the excavation (collected during both the SI and the Supplemental SI) is 1.89 $\mu\text{g/g}$, which is below the risk-based screening level.

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

5.1.2 Groundwater

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

5.2 PRELIMINARY ECOLOGICAL RISK EVALUATION

The ecological PRE evaluated contaminants in surface soil, subsurface soil, surface water, and sediment.

5.2.1 Soils

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

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

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

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

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

5.2.2 Surface Water

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

5.2.3 Sediment

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

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

5.3 QUALITATIVE EVALUATION OF RESIDUAL RISK

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

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

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

Cleanup standards for the soil removal action at SA 39 were established using the MCP Method 1 S-1/GW-1 soil standards. Soil with PCBs or TPH concentrations 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

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

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

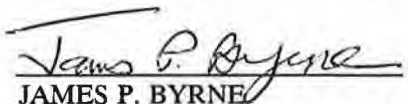


JAMES C. CHAMBERS
BRAC Environmental Coordinator

2 OCT 96

Date

U.S. ENVIRONMENTAL PROTECTION AGENCY



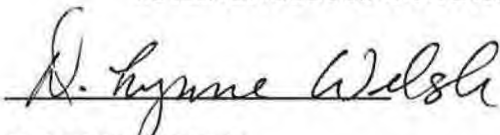
JAMES P. BYRNE
Fort Devens Remedial Project Manager

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

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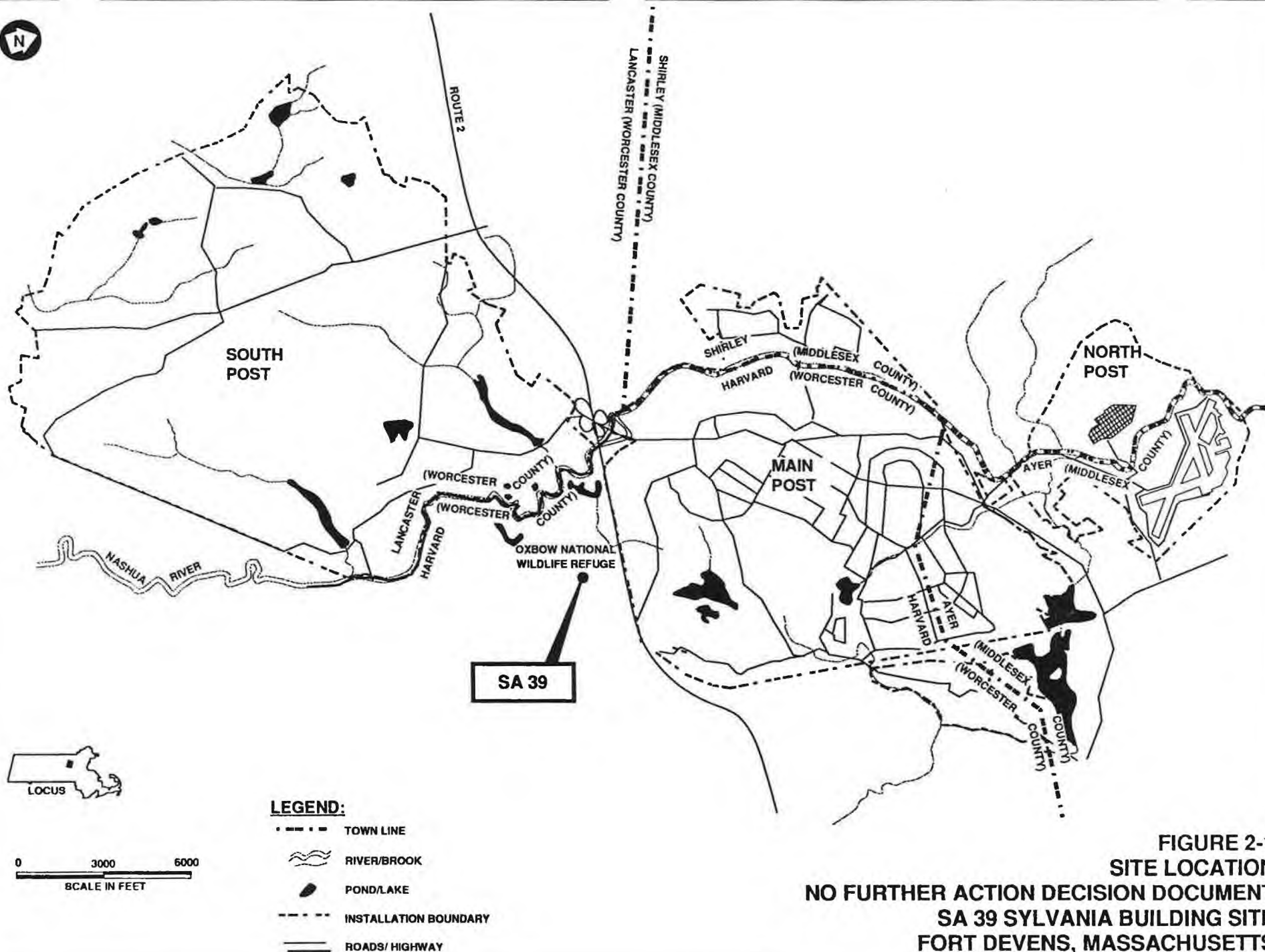
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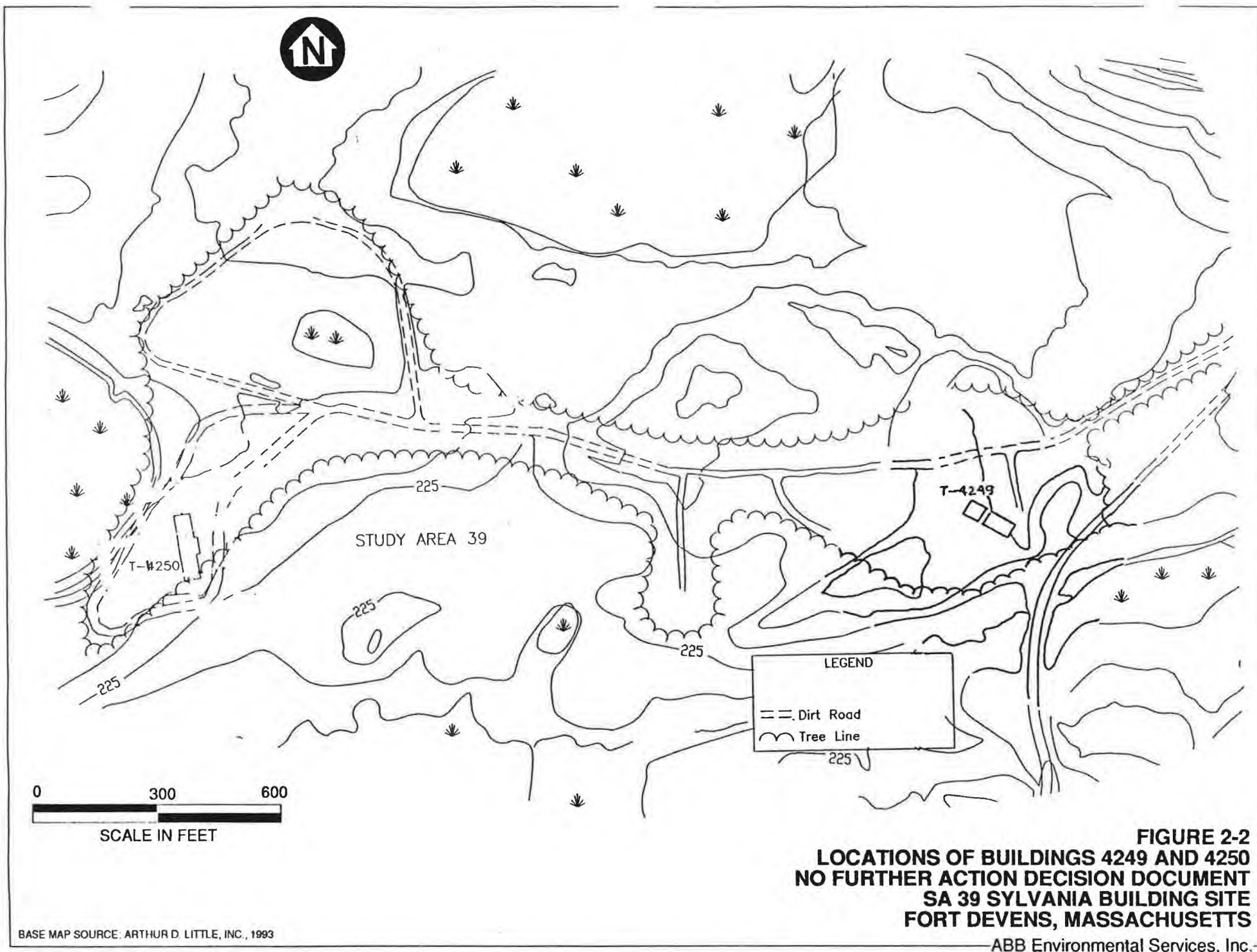
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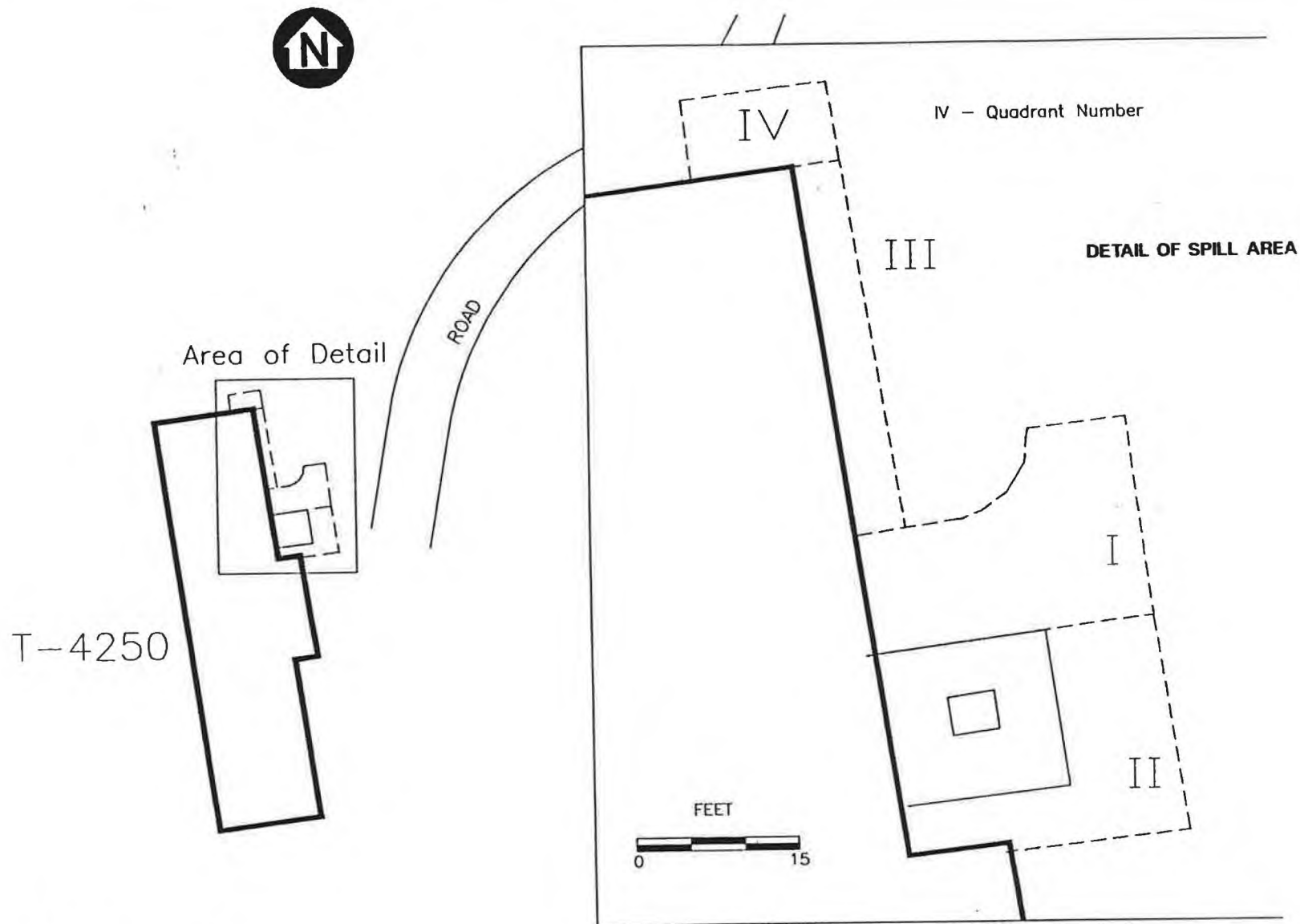
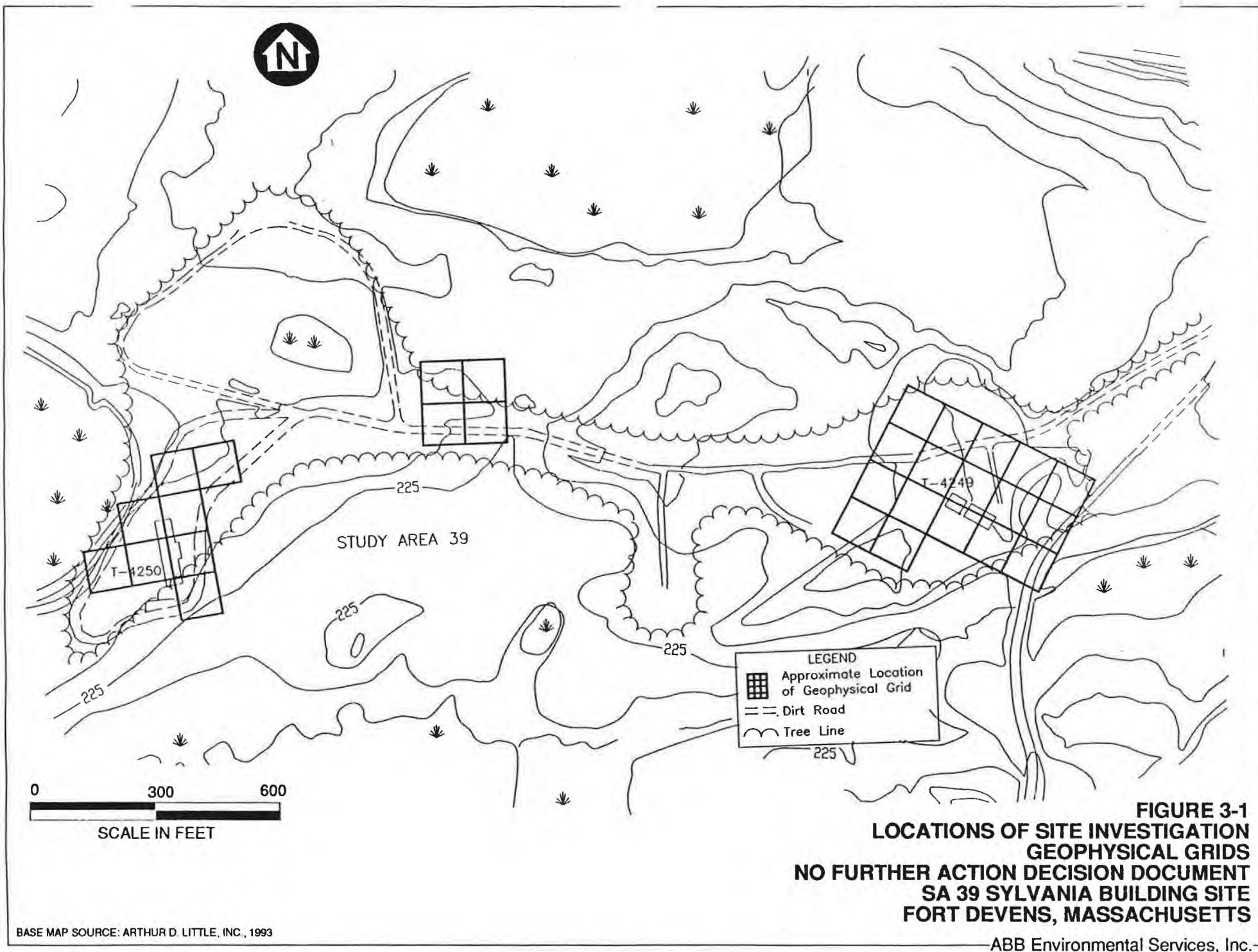
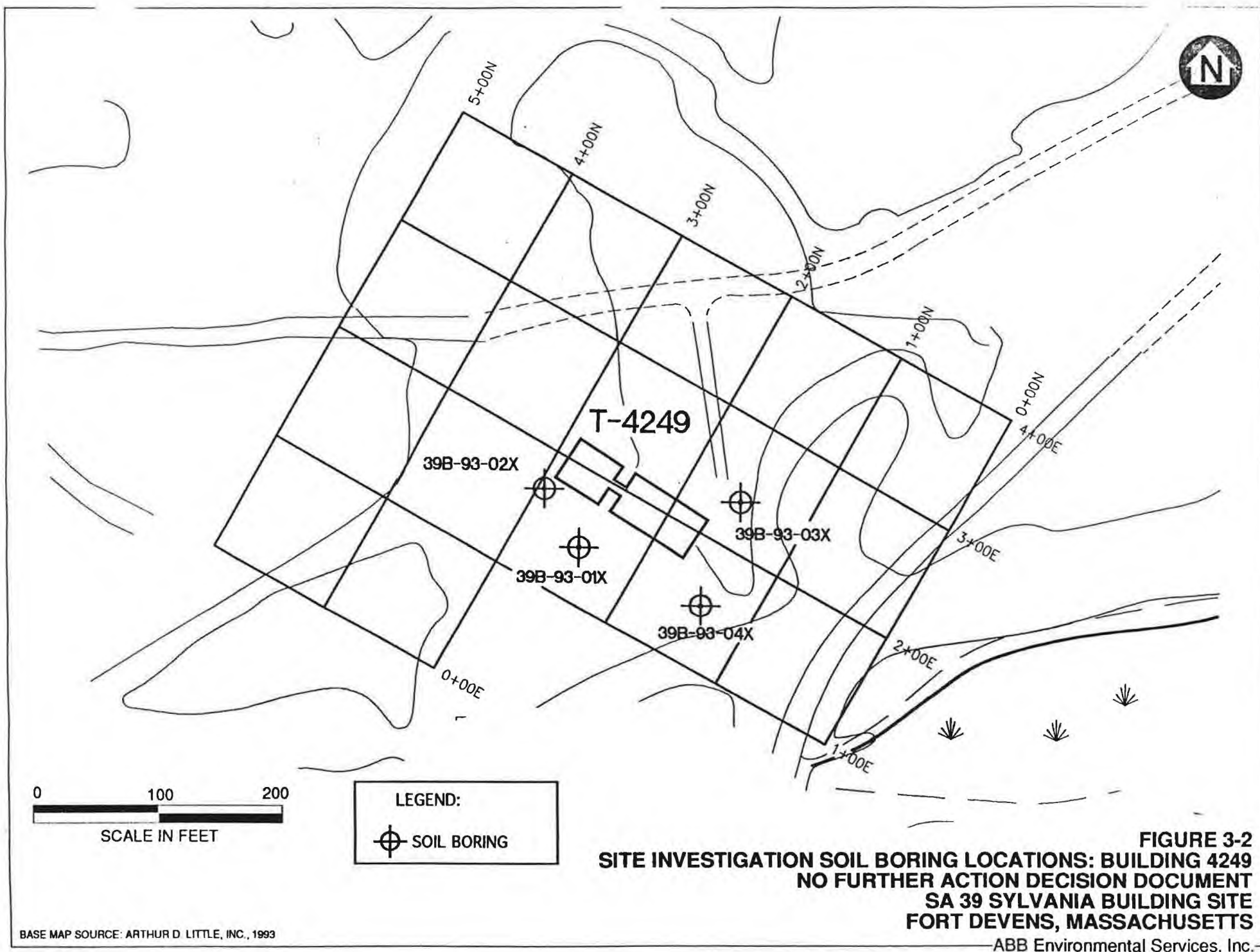
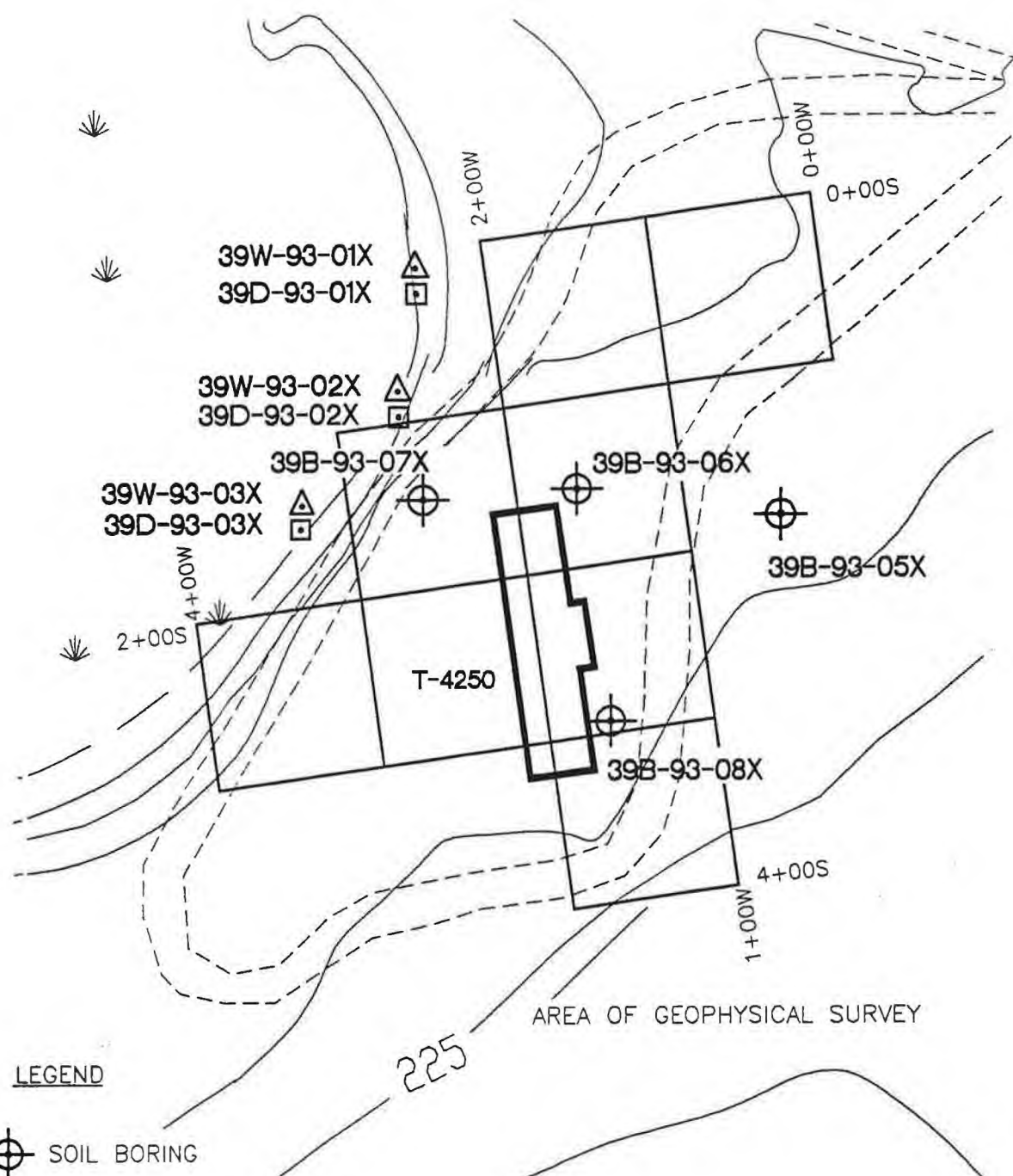





FIGURE 2-3
PCB SPILL QUADRANTS
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.







LEGEND

-  SOIL BORING
-  SURFACE WATER SAMPLE
-  SEDIMENT SAMPLE

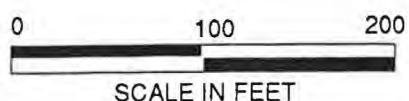


FIGURE 3-3
SITE INVESTIGATION SOIL BORING, SURFACE WATER
AND SEDIMENT SAMPLE LOCATIONS: BUILDING 4250
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

LEGEND:

- SURFACE SOIL
- ⊙ CONCRETE CHIP
- IV QUADRANT NUMBER



Area of Detail

T-4250

ROAD

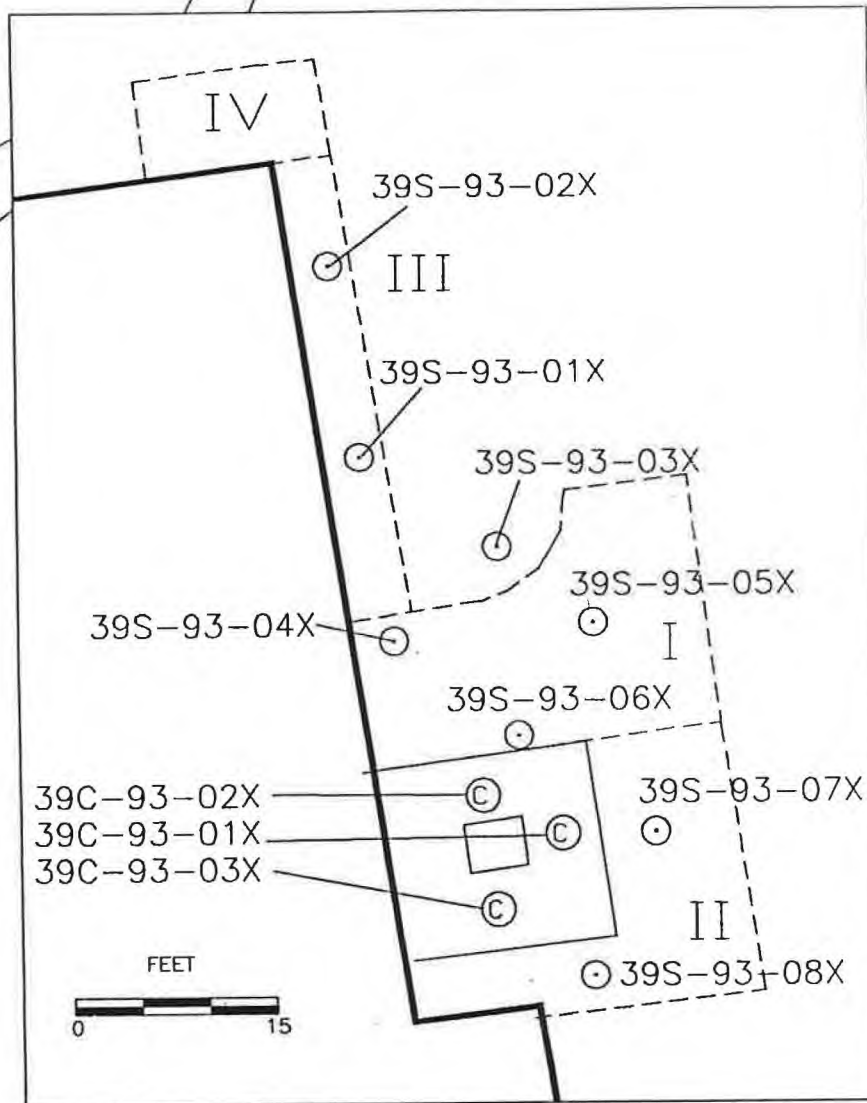


FIGURE 3-4
SITE INVESTIGATION SOIL AND CONCRETE
CHIP SAMPLE LOCATIONS: BUILDING 4250
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

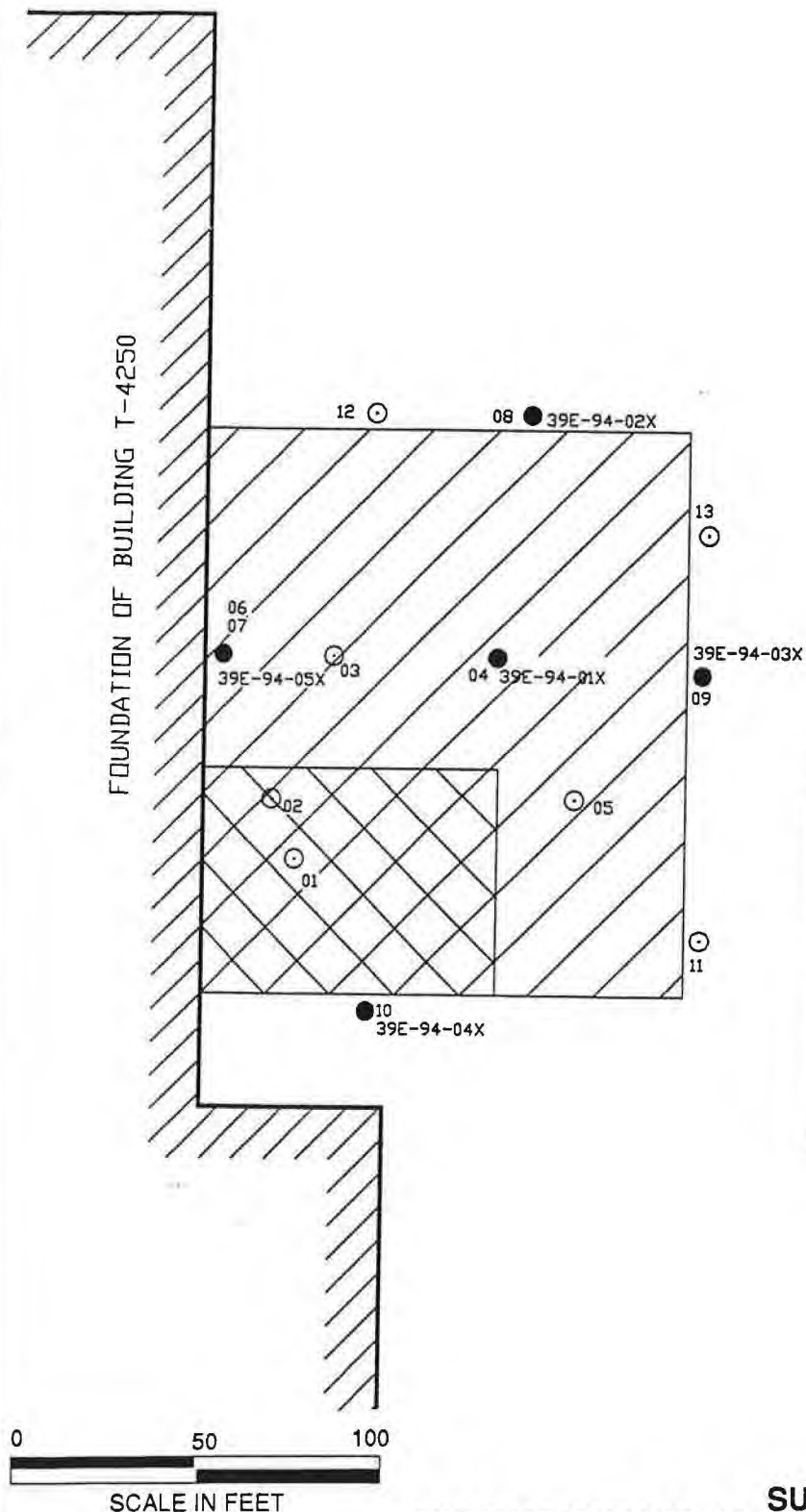
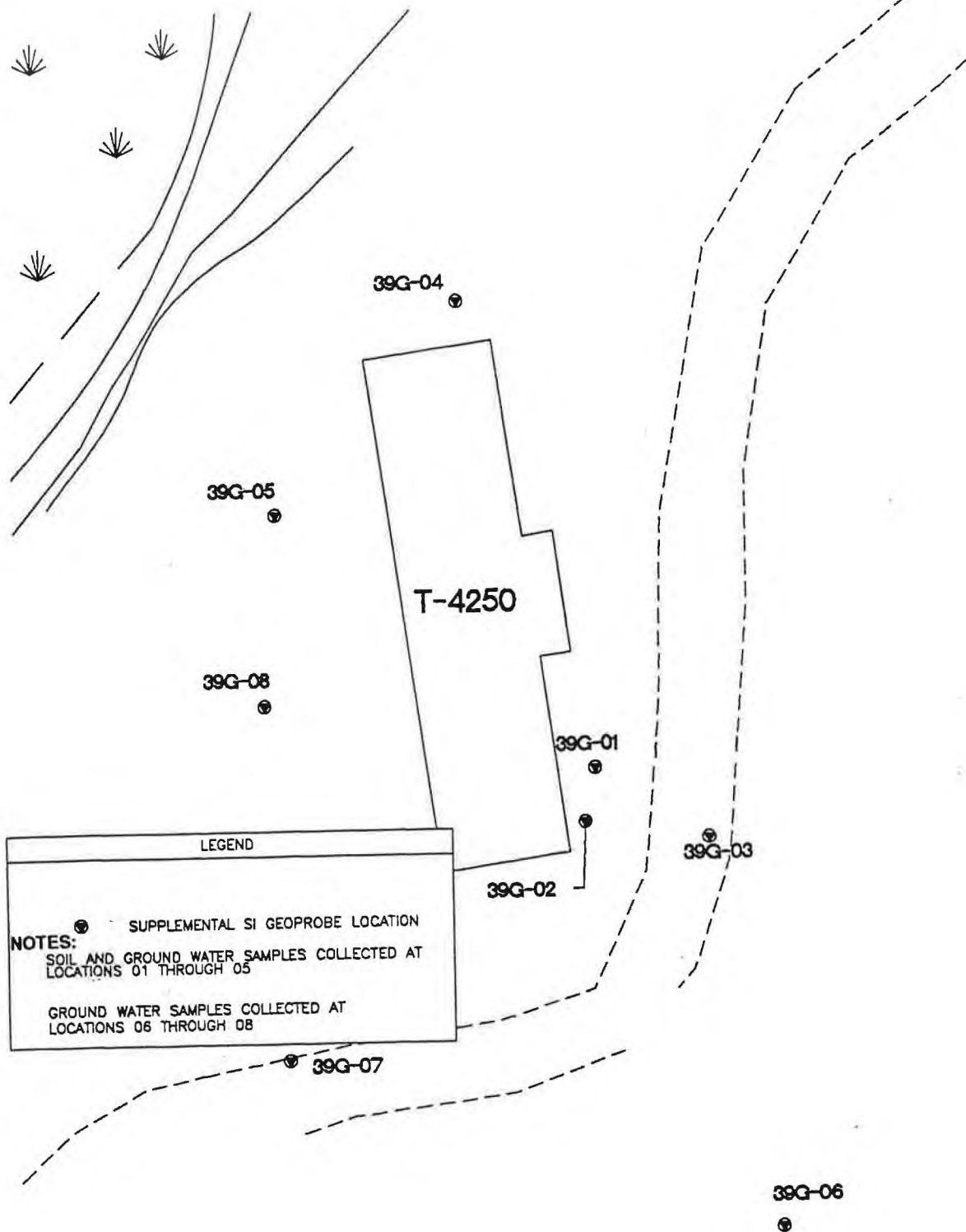



FIGURE 3-5
SUPPLEMENTAL SITE INVESTIGATION:
EXCAVATION LIMIT AND CONFIRMATION SAMPLE LOCATIONS
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS



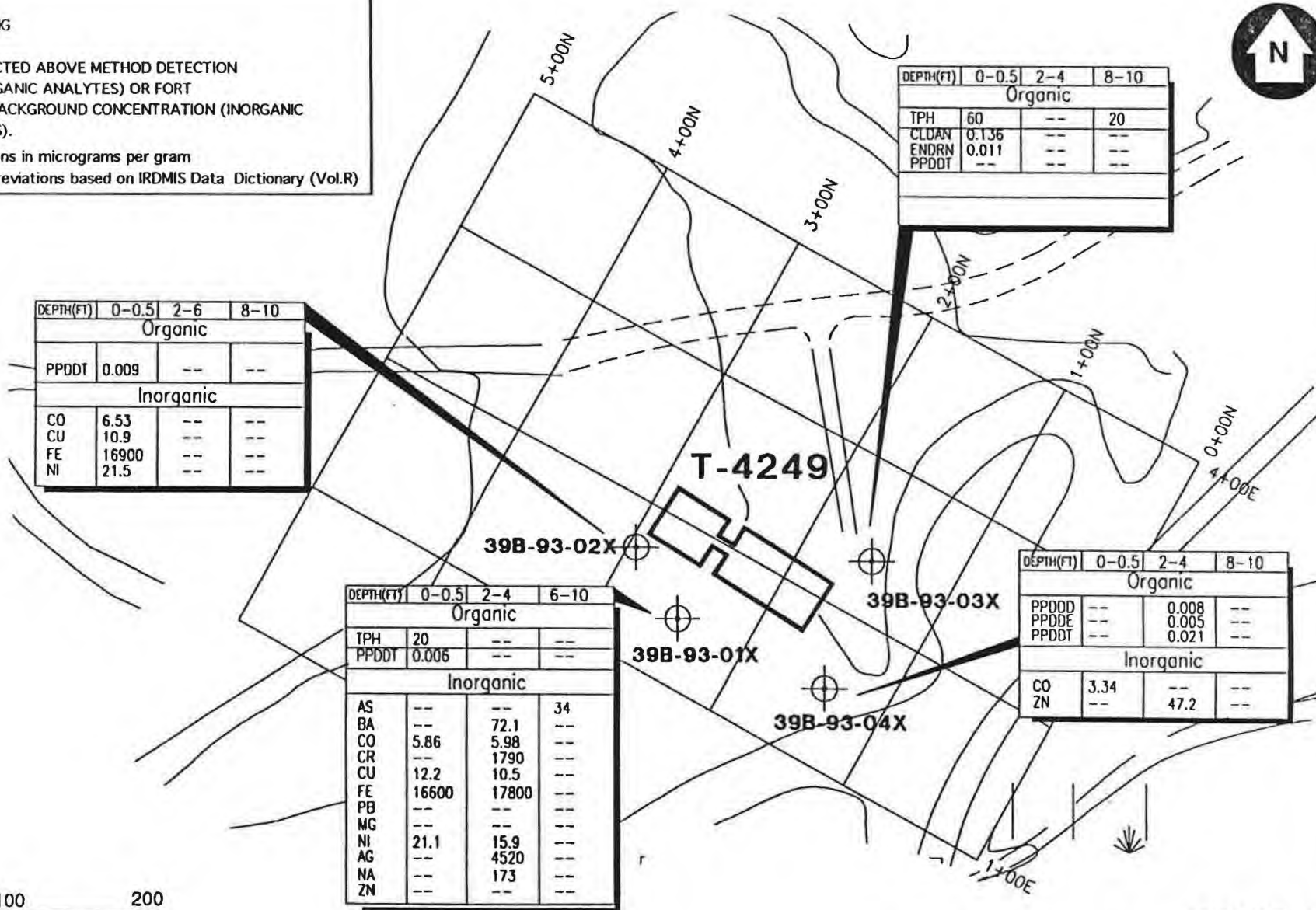
0 50 100
SCALE IN FEET

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

LEGEND

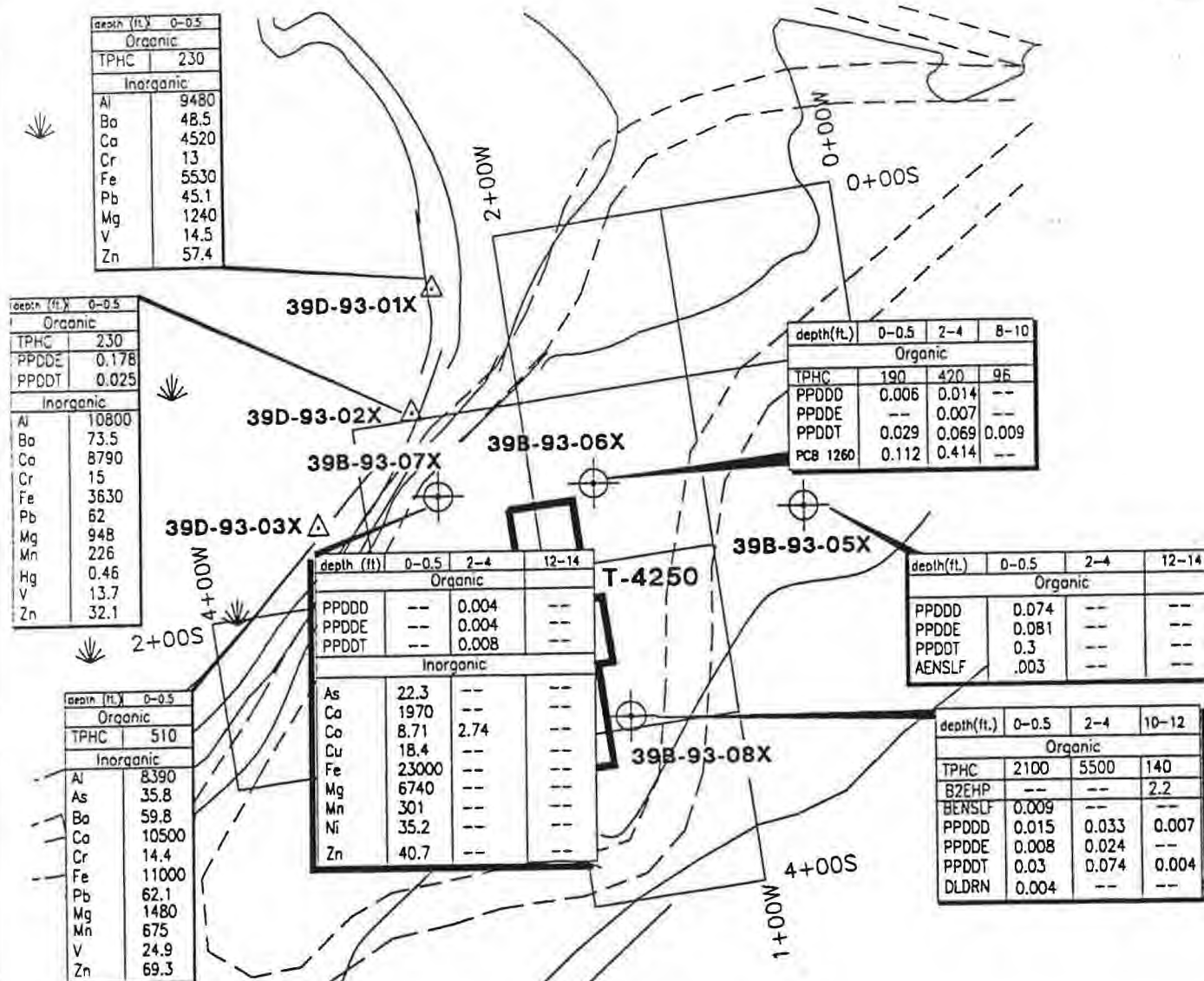
-  - SOIL BORING
- - NOT DETECTED ABOVE METHOD DETECTION LIMIT (ORGANIC ANALYTES) OR FORT DEVENS BACKGROUND CONCENTRATION (INORGANIC ANALYTES).

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



0 100 200
SCALE IN FEET

**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**



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).

0 100 200

SCALE IN FEET

AREA OF GEOPHYSICAL SURVEY

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

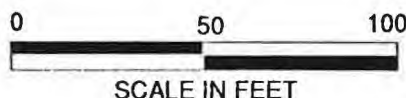


Area of Detail

T-4250

ROAD

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)	



PCB260	5.5
PCB260	2.8
PCB260	8.1

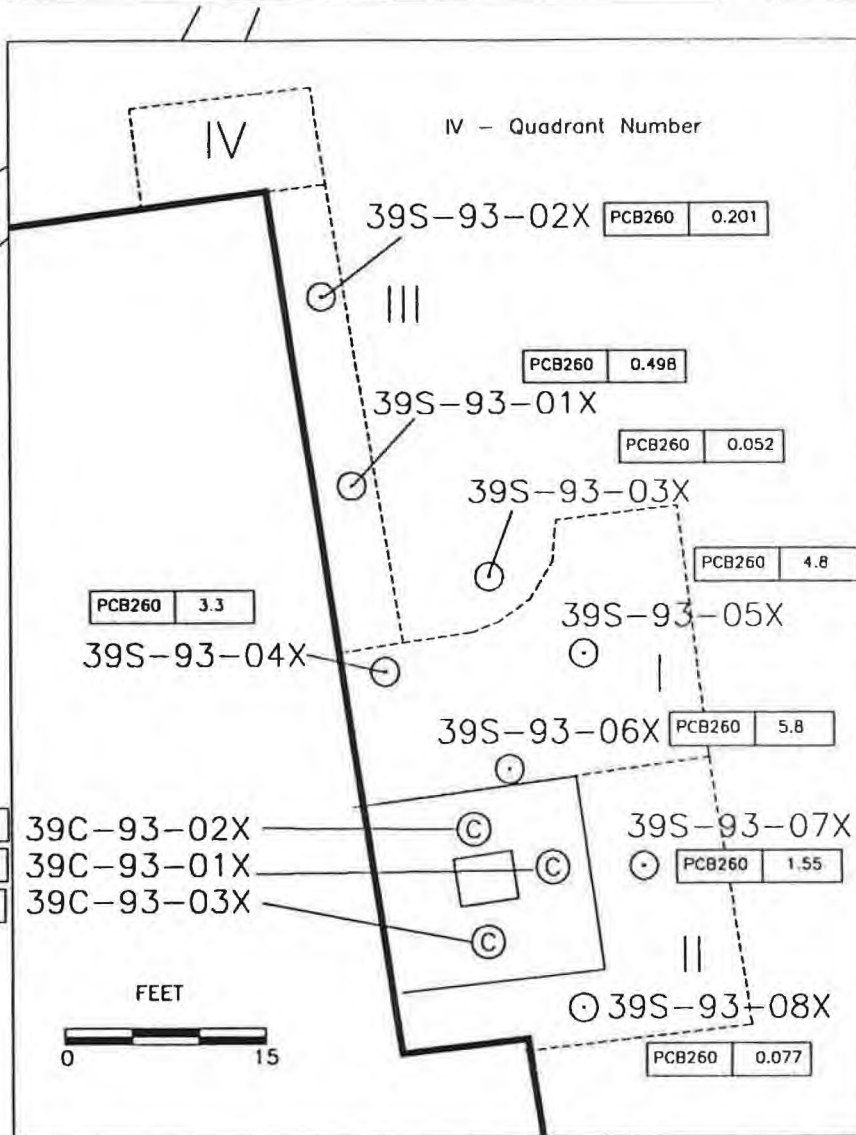
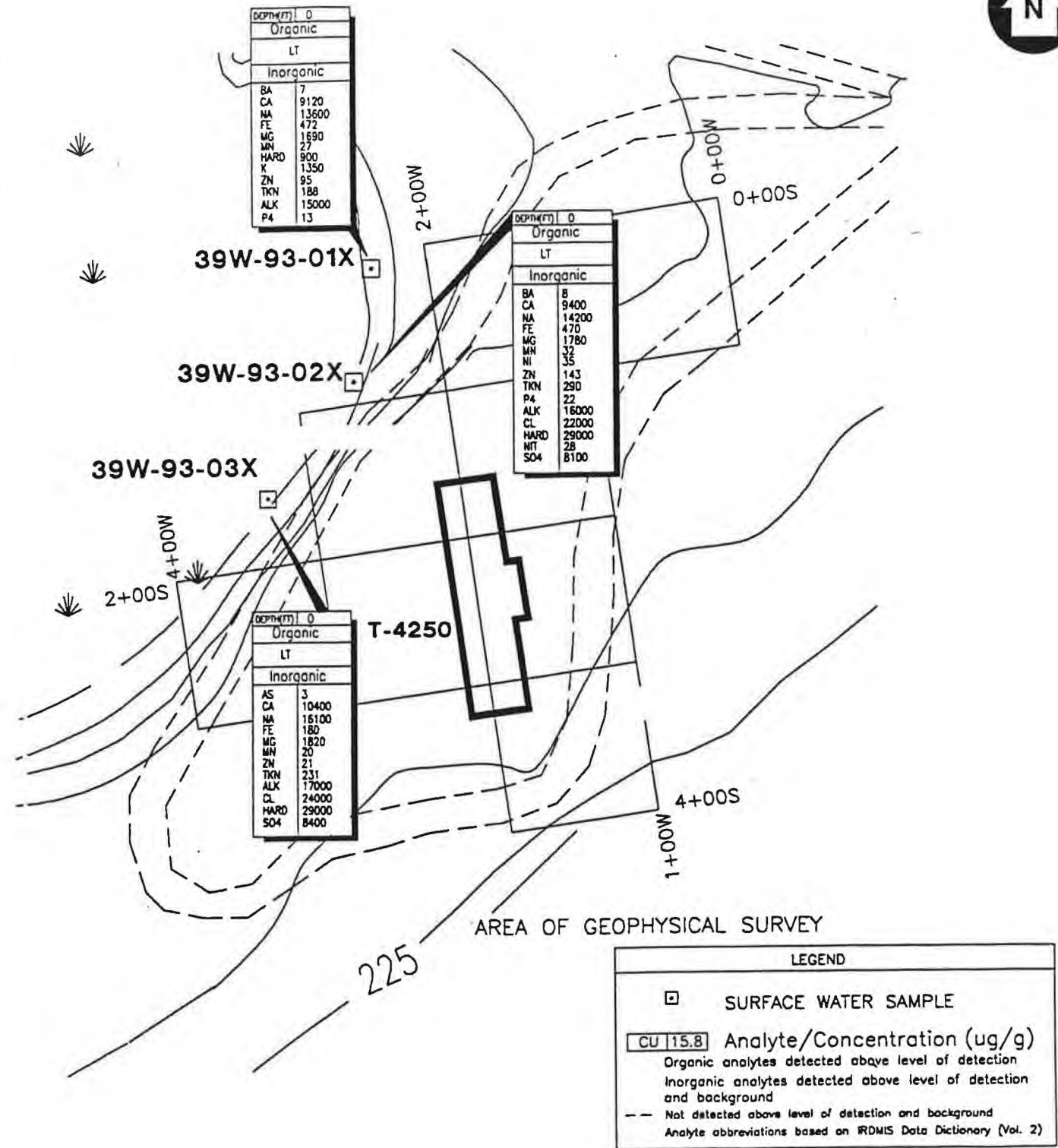


FIGURE 4-3
PCBs in Site Investigation Surface Soil
and Concrete Samples, 1993
NO FURTHER ACTION DECISION DOCUMENT
SA 39 Sylvania Building Site
Fort Devens, Massachusetts

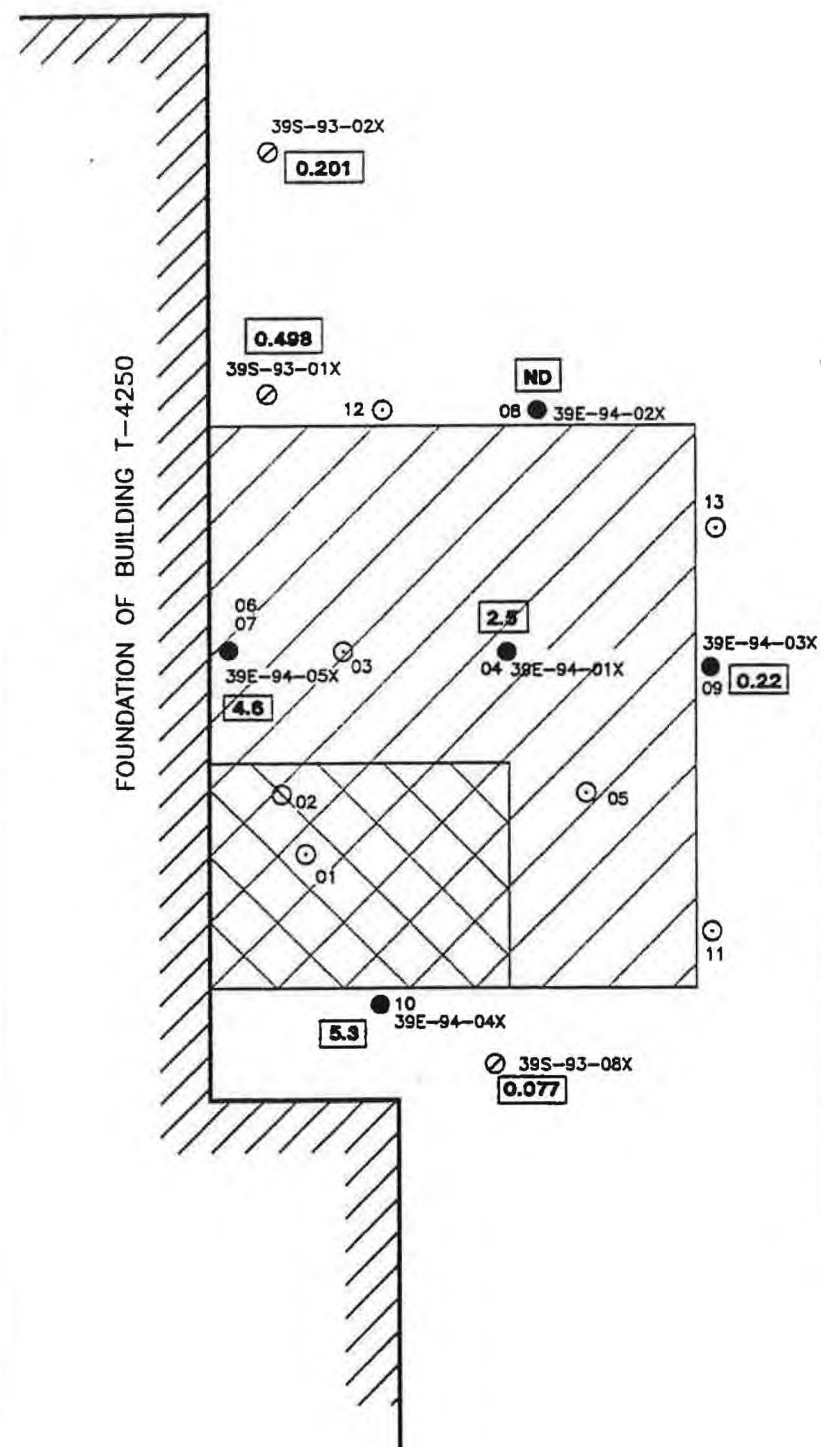


0 100 200
SCALE IN FEET

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

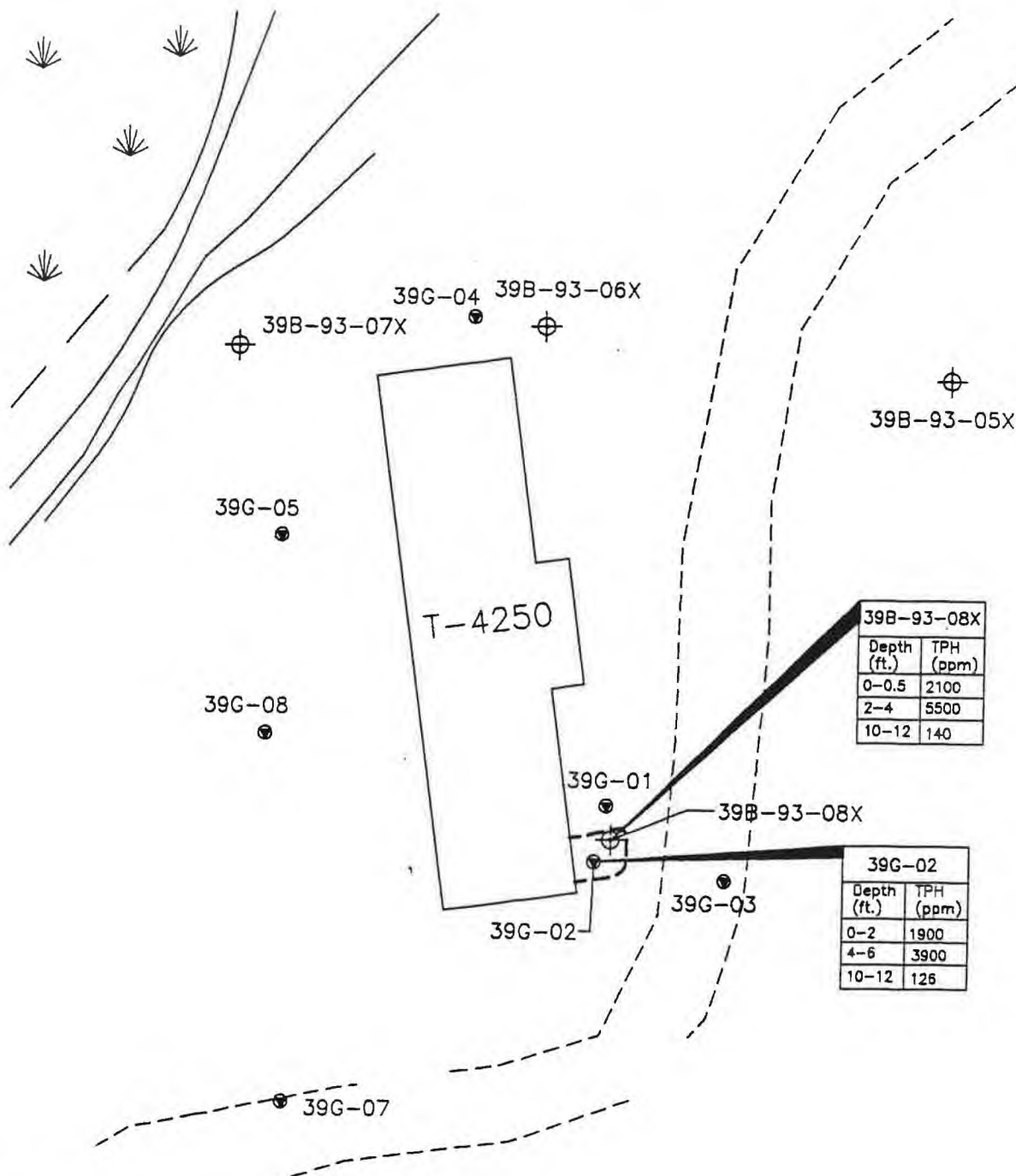
FIGURE 4-4
ANALYTES IN SITE INVESTIGATION
SURFACE WATER SAMPLES, 1993
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.



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
	FIELD SCREENING AND LABORATORY SPLIT SAMPLE LOCATION
	1993 SI SOIL SAMPLING LOCATION
	PCB-1260 (ppm) IN SOIL (LEVEL III DATA)
	PCBs NOT DETECTED

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:

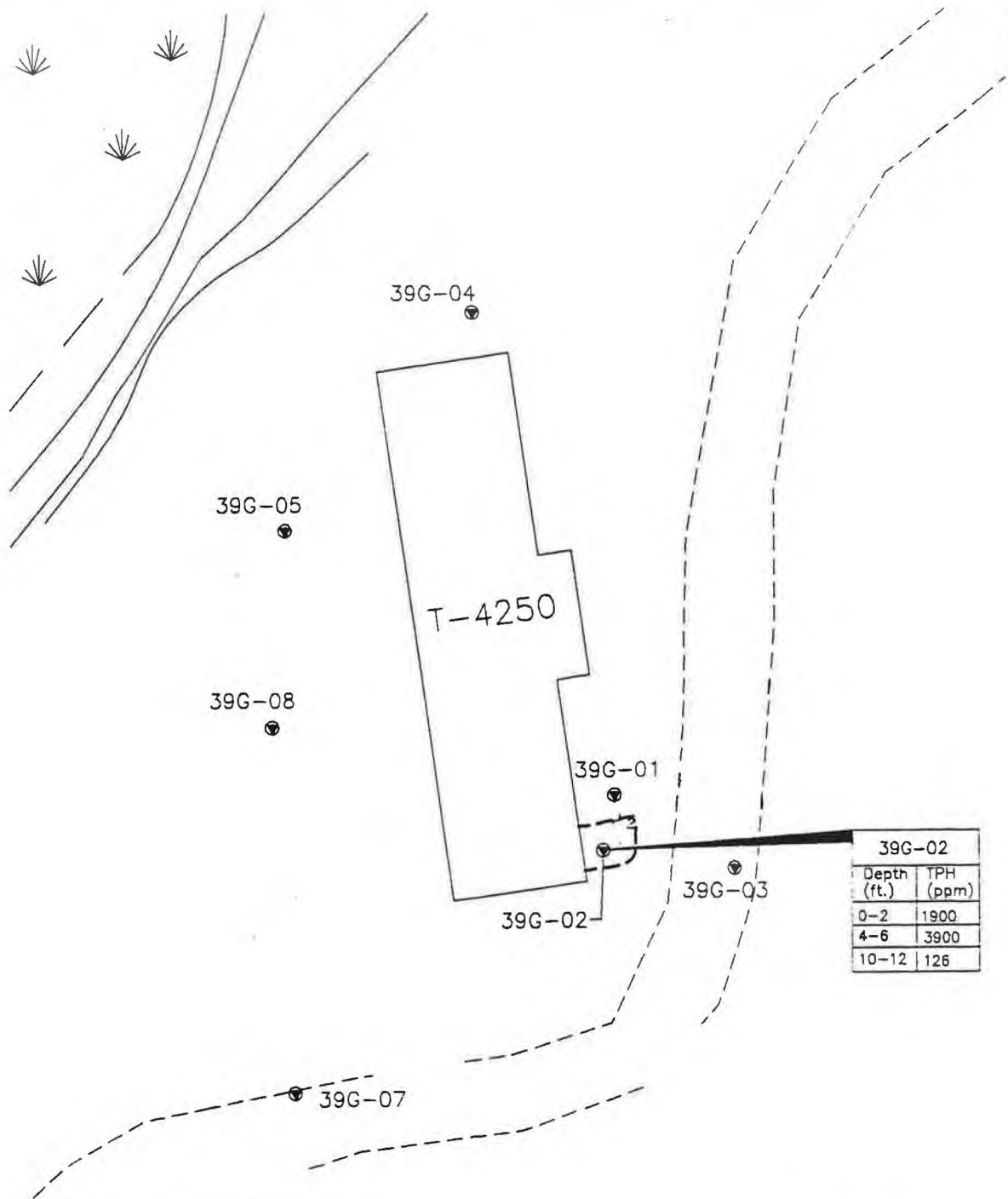
- SI SOIL BORING LOCATION
 - SUPPLEMENTAL SI GEOPROBE LOCATION
- ONLY DATA FROM LOCATIONS WHERE TPH CONCENTRATIONS EXCEEDED 500 PPM ARE SHOWN



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.



LEGEND:

● - SUPPLEMENTAL SI GEOPROBE LOCATION

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

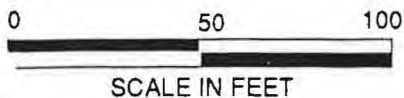


FIGURE 4-7
TPH IN SUPPLEMENTAL SITE INVESTIGATION
SOIL SAMPLES, 1994
NO FURTHER ACTION DECISION DOCUMENT
SA 39 SYLVANIA BUILDING SITE
FORT DEVENS, MASSACHUSETTS

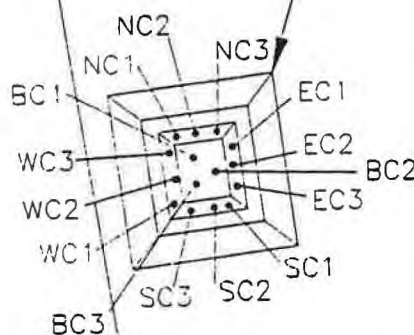
BASE MAP SOURCE: ARTHUR D. LITTLE, INC., 1995

ABB Environmental Services, Inc.

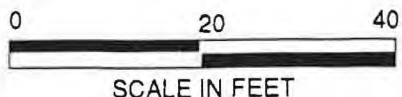


T-4250
(CONCRETE SLAB)

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



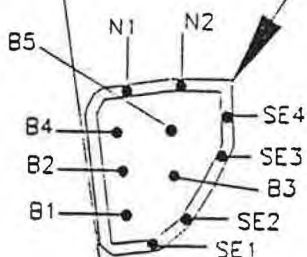
SCALE IN FEET

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



LIMIT OF EXCAVATION

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

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 DEPTH	39B-93-01X 0-0.5 FT	39B-93-01X 0-0.5 FT (DUP)	39B-93-01X 2-4 FT	39B-93-01X 6-10 FT	39B-93-02X 0-0.5 FT
TOTAL PETROLEUM HYDROCARBONS (ug/g)									
TPHC	500				20	10	< 10	< 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	< 0.068	< 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 2-6 FT	39B-93-02X 8-10 FT	39B-93-03X 0-0.5 FT	39B-93-03X 2-4 FT	39B-93-03X 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 0-0.5 FT	39B-93-04X 2-4 FT	39B-93-04X 8-10 FT	39B-93-05X 0-0.5 FT	39B-93-05X 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 12-14 FT	39B-93-06X 0-0.5 FT	39B-93-06X 2-4 FT	39B-93-06X 8-10 FT	39B-93-07X 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 2-4 FT	39B-93-07X 12-14 FT	39B-93-08X 0-0.5 FT	39B-93-08X 2-4 FT	39B-93-08X 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 BIPHENYLS IN SURFACE SOIL:
SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL CRITERION	ECOLOGICAL CRITERION	SAMPLE DEPTH	39S-93-01X 0-0.5 FT	39S-93-02X 0-0.5 FT	39S-93-03X 0-0.5 FT	39S-93-04X 0-0.5 FT	39S-93-05X 0-0.5 FT	39S-93-06X 0-0.5 FT	39S-93-07X 0-0.5 FT	39S-93-08X 0-0.5 FT
POLYCHLORINATED BIPHENYLS (ug/g)											
AROCLO 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 BIPHENYLS IN CONCRETE:
SITE INVESTIGATION
SA 39 SYLVANIA BUILDING SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	RESIDENTIAL	ECOLOGICAL	SAMPLE	39C-93-01X	39C-93-02X	39C-93-02X	39C-93-03X
	CRITERION	CRITERION	DEPTH	0-0.1 FT	0-0.1 FT	0-0.1 FT (DUP)	0-0.1 FT
POLYCHLORINATED BIPHENYLS (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 QUALITY CRITERION	SAMPLE DEPTH	39W-93-01X 0-0.5 FT	39W-93-02X 0-0.5 FT	39W-93-03X 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 DEPTH	39D-93-01X 0-0.5 FT	39D-93-02X 0-0.5 FT	39D-93-03X 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	ECOLOGICAL	SAMPLE	39E-94-01X	39E-94-01X	39E-94-02X	39E-94-03X	39E-94-04X	39E-94-05X
	CRITERION	CRITERION	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)									
AROCOR 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 0-2 FT	39G-01M 4-6 FT	39G-01L 10-12 FT	39G-02U 0-2 FT	39G-02M 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 DEPTH	39G-02L 10-12 FT	39G-03U 0-2 FT	39G-03M 4-6 FT	39G-03L 10-12 FT	39G-04U 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 CRITERION	ECOLOGICAL CRITERION	SAMPLE DEPTH	39G-04M 4-6 FT	39G-04L 10-12 FT	39G-05U 0-2 FT	39G-05M 4-6 FT	39G-05L 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

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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.

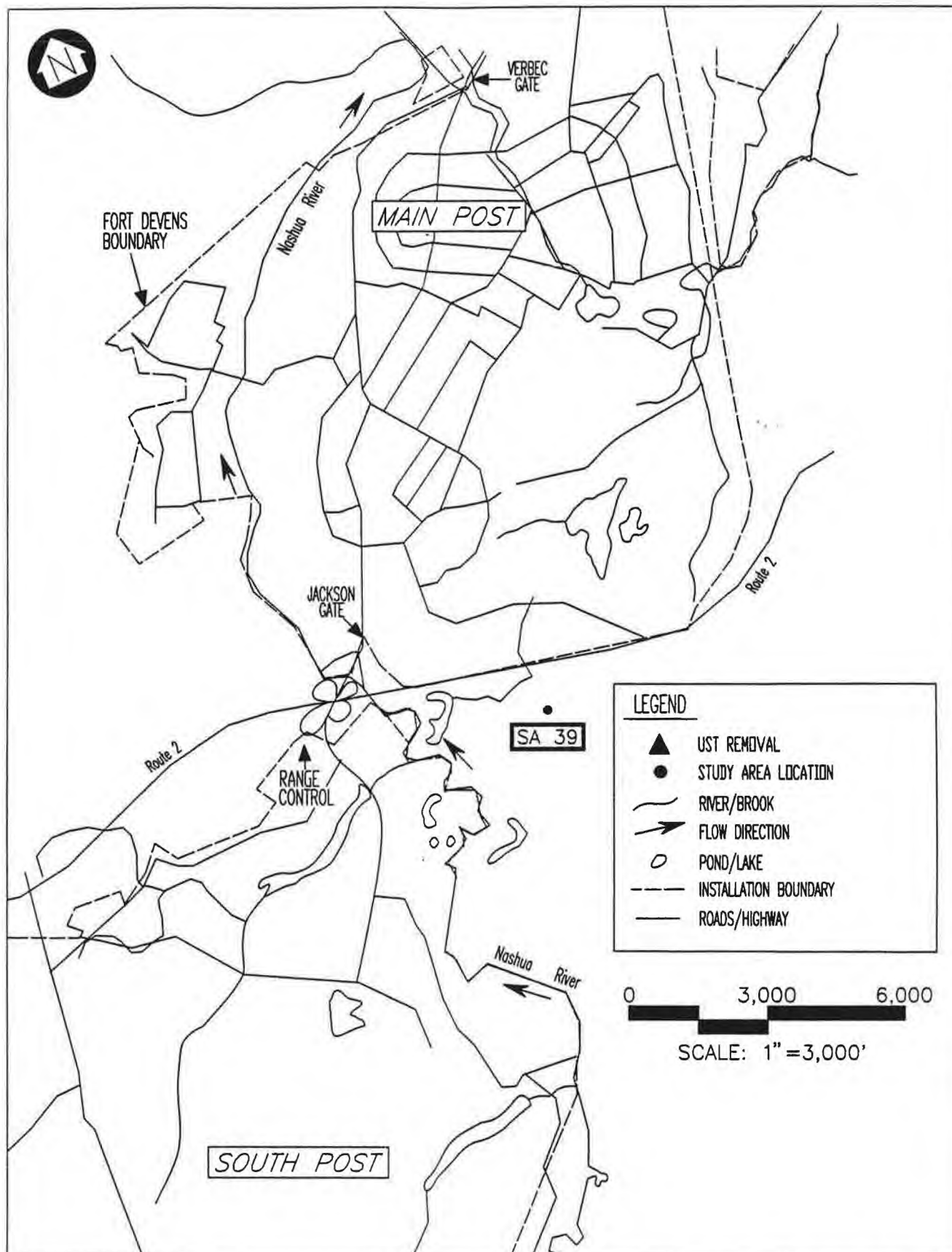
1.1 Site History and Background

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

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.

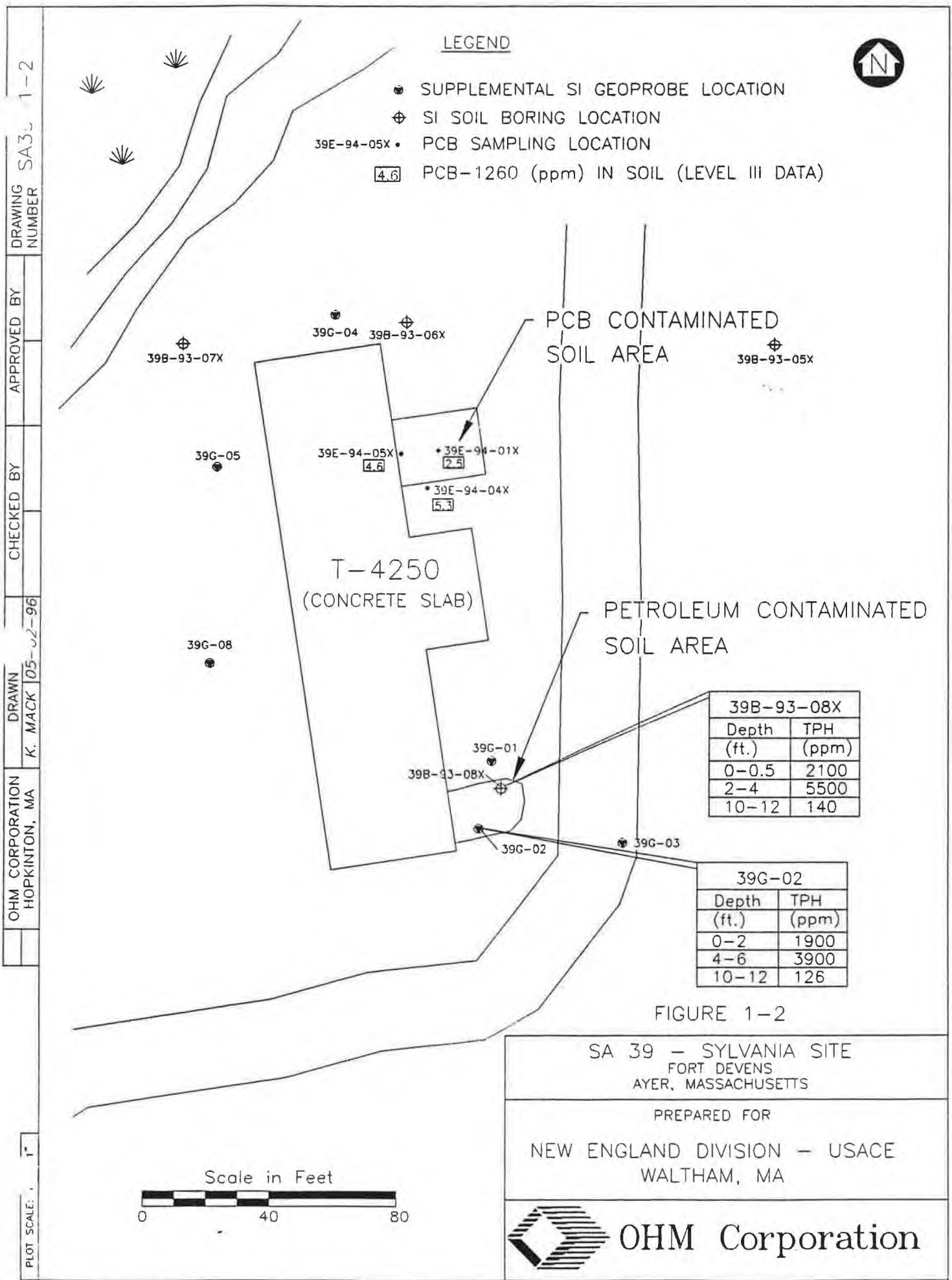
As part of the SI of SA 39, ADL collected 24 soil boring samples from eight locations around the two foundations, eight surface soil samples near the Building 4250 foundation, three concrete chip samples from the surface of a former concrete transformer pad located adjacent to the Building 4250 foundation, 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.



DRAWING NUMBER
SA39 1-2

APPROVED BY

CHECKED BY

DRAWN
K. MACK 05-02-96

OHM CORPORATION
HOPKINTON, MA

PLOT SCALE: 1"

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

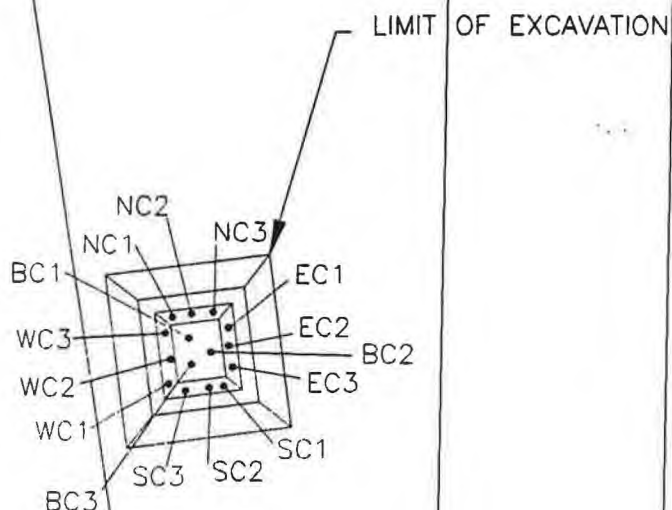
Confirmation composite samples were collected from the bottom and sidewalls of the petroleum-contaminated soil excavation on August 2, 1995. The samples were shipped to American Environmental Network, Inc. (AENI) laboratory located in Columbia, Maryland for TPH analysis by EPA Method 418.1 and BNA analysis 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)



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

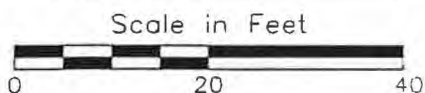


FIGURE 2-1

SA 39 - SYLVANIA SITE
FORT DEVENS
AYER, MASSACHUSETTS

PREPARED FOR
NEW ENGLAND DIVISION - USACE
WALTHAM, MA



OHM Corporation

DRAWING
NUMBER

APPROVED BY

CHECKED BY

DRAWN
K. MACK 05-02-96

OHM CORPORATION
HOPKINTON, MA

PLOT SCALE: 1" = 1'

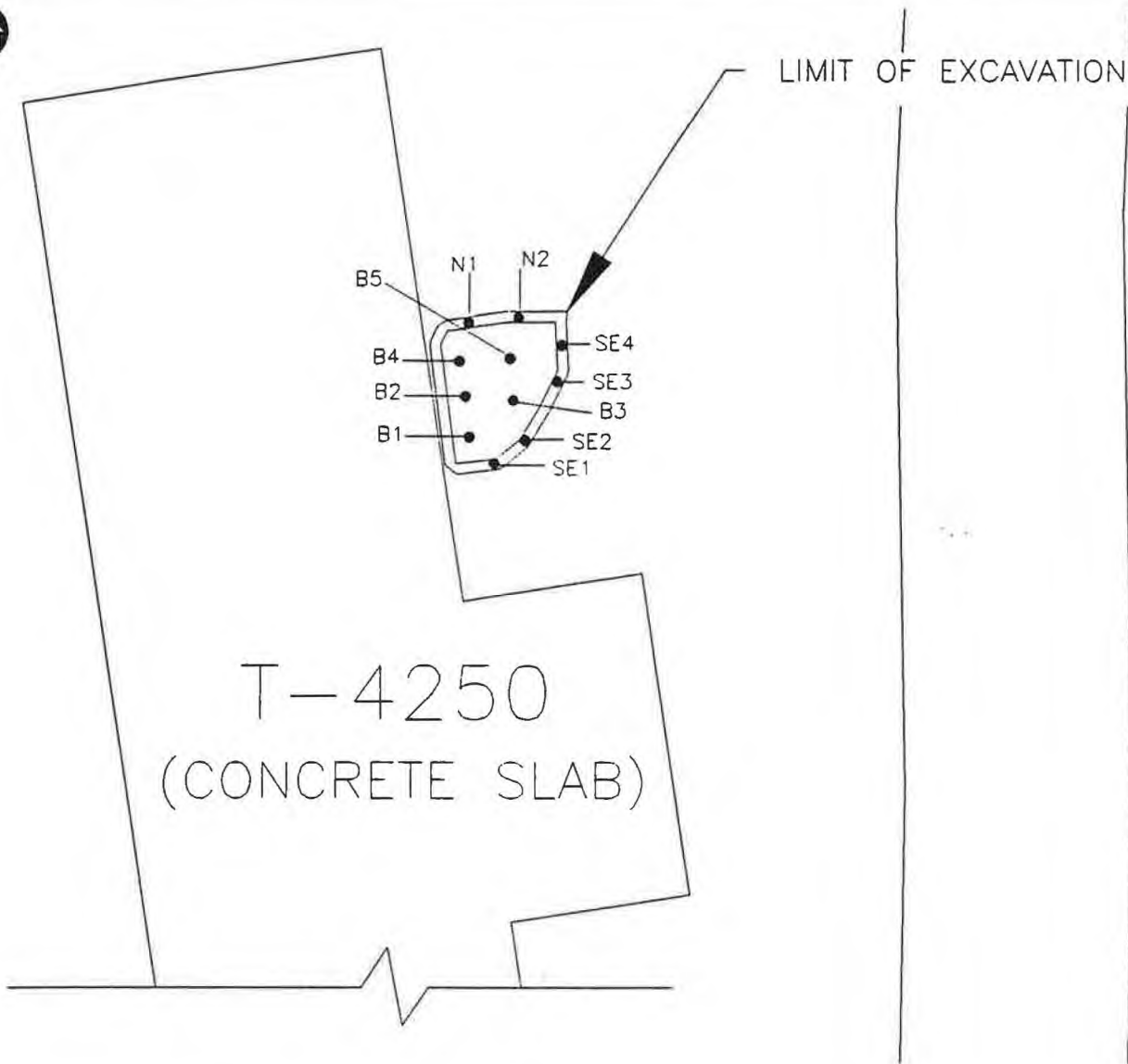
Table 2-2
TPH Confirmation Soil Sample Results
Closure Report - SA 39

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.



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

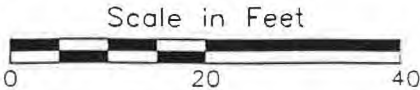



FIGURE 2-2

SA 39 – SYLVANIA SITE
FORT DEVENS
AYER, MASSACHUSETTS

PREPARED FOR
NEW ENGLAND DIVISION – USACE
WALTHAM, MA



OHM Corporation

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**

Pg. 1 of 3

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>		
<u>SGSA39W1</u>	<u>1133</u>	<u>G</u>	<u>5'6"</u>	<u>16'8"</u>	<u>15'10"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W2</u>	<u>1135</u>	<u>G</u>	<u>5'0"</u>	<u>14'11"</u>	<u>15'9"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W3</u>	<u>1137</u>	<u>G</u>	<u>3'11"</u>	<u>12'4"</u>	<u>14'4"</u>	<u>Brown organic soil</u>	<u>1x40-1</u> <u>VSA</u>
<u>W4</u>	<u>1140</u>	<u>G</u>	<u>5'1"</u>	<u>6'11"</u>	<u>9'8"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W5</u>	<u>1142</u>	<u>G</u>	<u>4'10"</u>	<u>6'5"</u>	<u>6'0"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W6</u>	<u>1145</u>	<u>G</u>	<u>4'8"</u>	<u>9'0"</u>	<u>6'11"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W7</u>	<u>1147</u>	<u>G</u>	<u>4'9"</u>	<u>14'1"</u>	<u>11'6"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>
<u>W8</u>	<u>1150</u>	<u>G</u>	<u>5'5"</u>	<u>17'4"</u>	<u>15'3"</u>	<u>Gold/Tan sand</u>	<u>1x40-1</u> <u>VSA</u>

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): William Dal 8-1-95 1215 Received by (dd/tt): _____

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

Soil Sample Collection Log
Fort Devens - Project #16208

Pg. 2 of 3

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>		
<u>S35A 39 B1</u>	<u>1153</u>	<u>G</u>	<u>6'11"</u>	<u>11'11"</u>	<u>10'2"</u>	<u>Gold/Tan sand</u>	<u>1x40 ~ 1 VOA</u>
<u>B2</u>	<u>1157</u>	<u>G</u>	<u>6'10"</u>	<u>14'2"</u>	<u>12'9"</u>	<u>Gold/Tan sand</u>	<u>1x40 ~ 1 VOA</u>
<u>B3</u>	<u>1200</u>	<u>G</u>	<u>7'6"</u>	<u>11'10"</u>	<u>12'10"</u>	<u>Gold/Tan sand</u>	<u>1x40 ~ 1 VOA</u>
<u>B4</u>	<u>1207</u>	<u>G</u>	<u>6'10"</u>	<u>8'5"</u>	<u>9'6"</u>	<u>Gold/Tan sand</u>	<u>1x40 ~ 1 VOA</u>

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. D.L. 8-1-95 1215 Received by (dd/tt): _____

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

Sample Location Map
Fort Devens - Project #16208

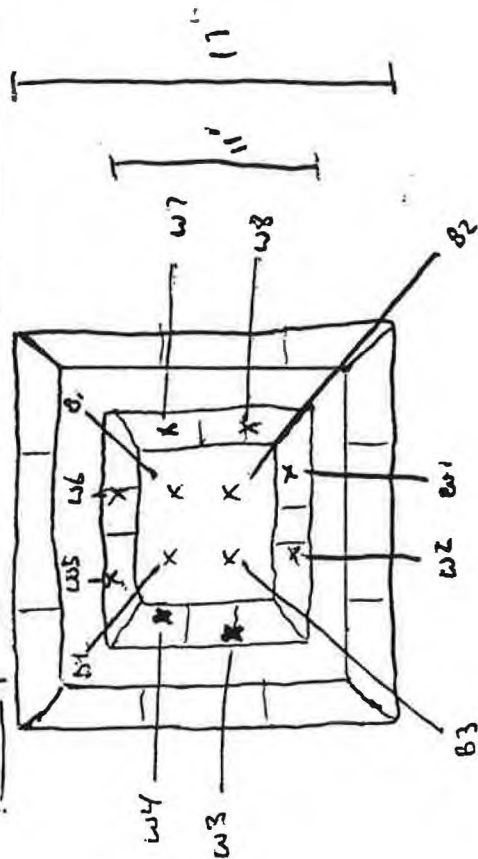
Pg. 3 of 3

Date: 8-1-95

Site Name: SA 39

25' 10'

Cement Pad



Comments/Observations:

- Not to Scale
- All sample ID's have the attached prefix 58SA39

Prepared by: G. D. Dole

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**

Pg. 1 of 3

Date: 8-2-95

Site Name: SA39

Weather: Sunny, Warm 85-90 Samplers: 3D, 66

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 (TCL)

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

Pg. 2 of 3

Date: 8-2-95

Site: SA34

Sampler: BD, CG

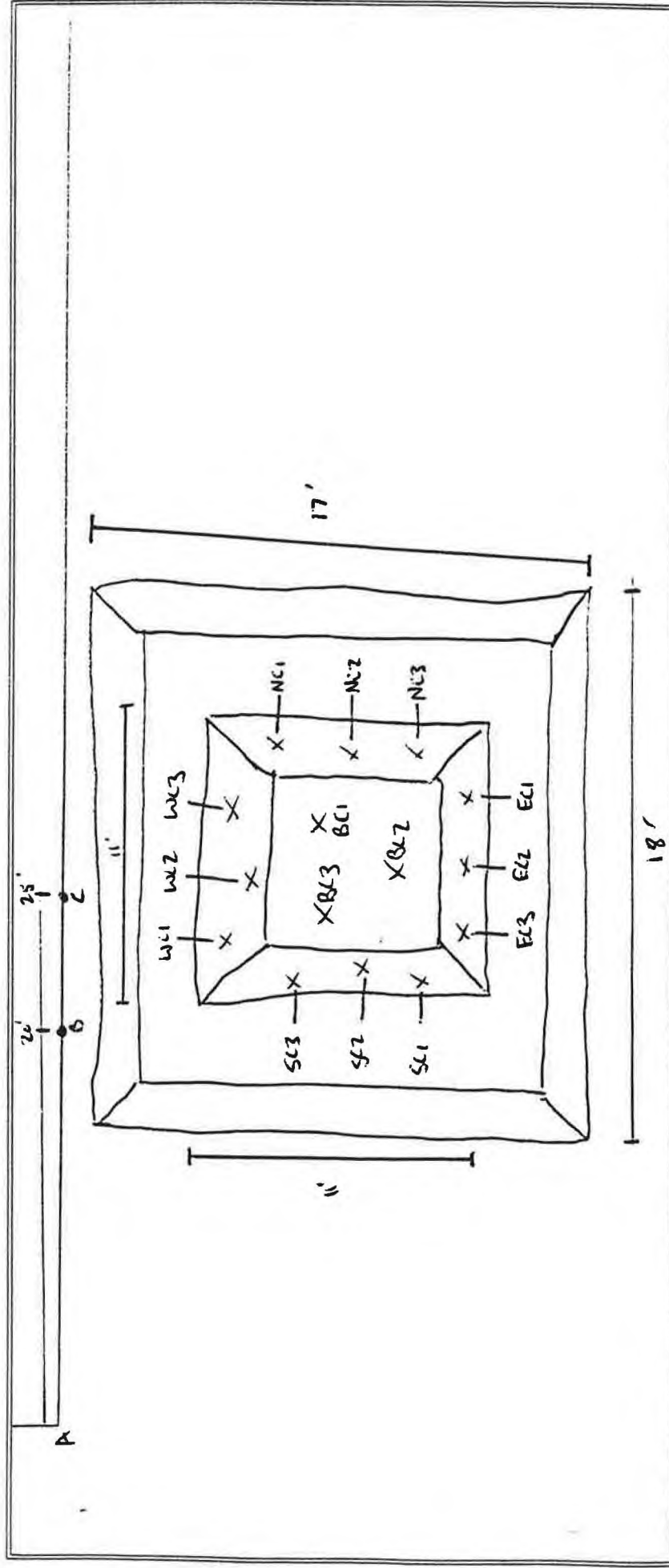
Composite Sample ID	Discrete Sample ID	Sample Depth (ft)	Coordinates		Sample Description
			Ref. Pt. B	Ref. Pt. C	
SBSA39AK	AK1	4'6"	13'9"	9'10"	
	AK2	4'9"	15'1"	12'10"	
	AK3	4'8"	15'11"	17'6"	
SBSA39SC	SC1	4'6"	12'1"	14'5"	
	SC2	4'8"	9'4"	11'6"	
	SC3	4'10"	6'8"	9'1"	
SBSA39EC	EC1	4'10"	17'4"	16'4"	
	EC2	5'3"	15'11"	15'11"	
	EC3	4'6"	15'3"	17'1"	
SBSA39LK	LK1	4'9"	5'9"	6'8"	
	LK2	5'6"	7'4"	6'0"	
	LK3	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

Pg. 3 of 3

Date: 8-2-95

Site Name: SA 39



Comments/Observations:

- all samples are composites of composites
- X sample location

Prepared by: Bill Dalk

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

Pg. 1 of 3

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

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

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

Pg. 2 of 3

ate: 8-25-95

Site: SA 39

Sampler: GG

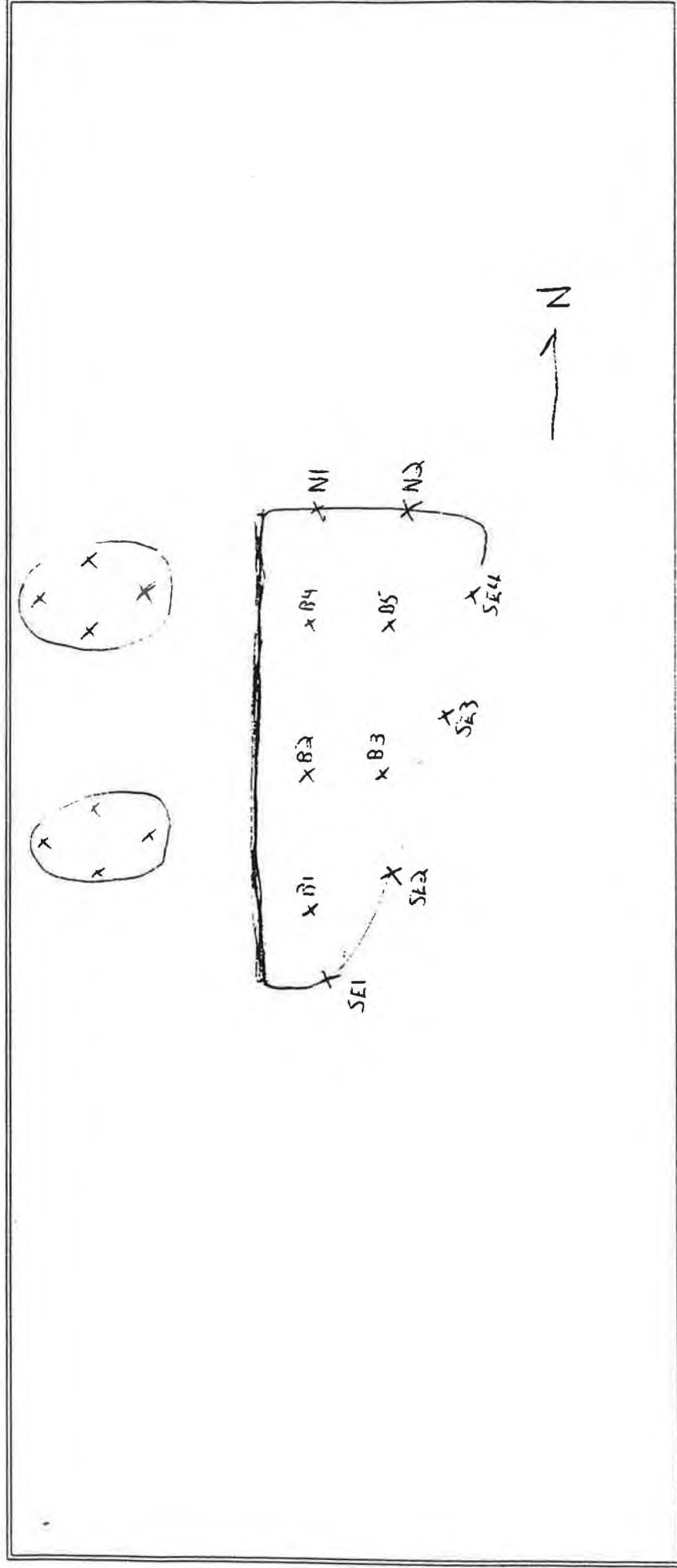
Composite Sample ID	Discrete Sample ID	Sample Depth (ft)	Coordinates		Sample Description
			Ref. Pt.	Ref. Pt.	
SBSA39BC DUPA. TRPA	B1				Gold Sand
	B2				
	B3				
	B4				
	B5				
SBSA39WC 44					
SBSA39NC	N1				Gold Sand
	N2				
SBSA39SEC	SE1				Gold Sand
	SE2				
	SE3				
	SE4				

Sample Location Map
Fort Devens - Project #16208

Pg. 3 of 3

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: Grey Guimond

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

Pg. 1 of 2

Date: 08/03/95

Site Name: SA 39 (Excavation Pile)

Weather: Cloudy

Samplers: BD/GG

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt.	Ref. Pt.		
EXSA39C1	1218	C	2'	N/A	N/A	Brown/Gold Sand	3x8oz 1x1L
DVP	1218	C	2'	↓	↓	↓	1x8oz 1x8L
TRP	1218	C	2'	↓	↓	↓	1x8oz 1x8L

Ref. Pt. ____: _____

Ref. Pt. ____: _____

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 99981 USACE - coc # 158201

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other Semi VOA (TCL), RCRA CHAR, PCB's, TCLP

Relinquished by(dd/tt): [Signature] 08/03/95 Received by (dd/tt): _____

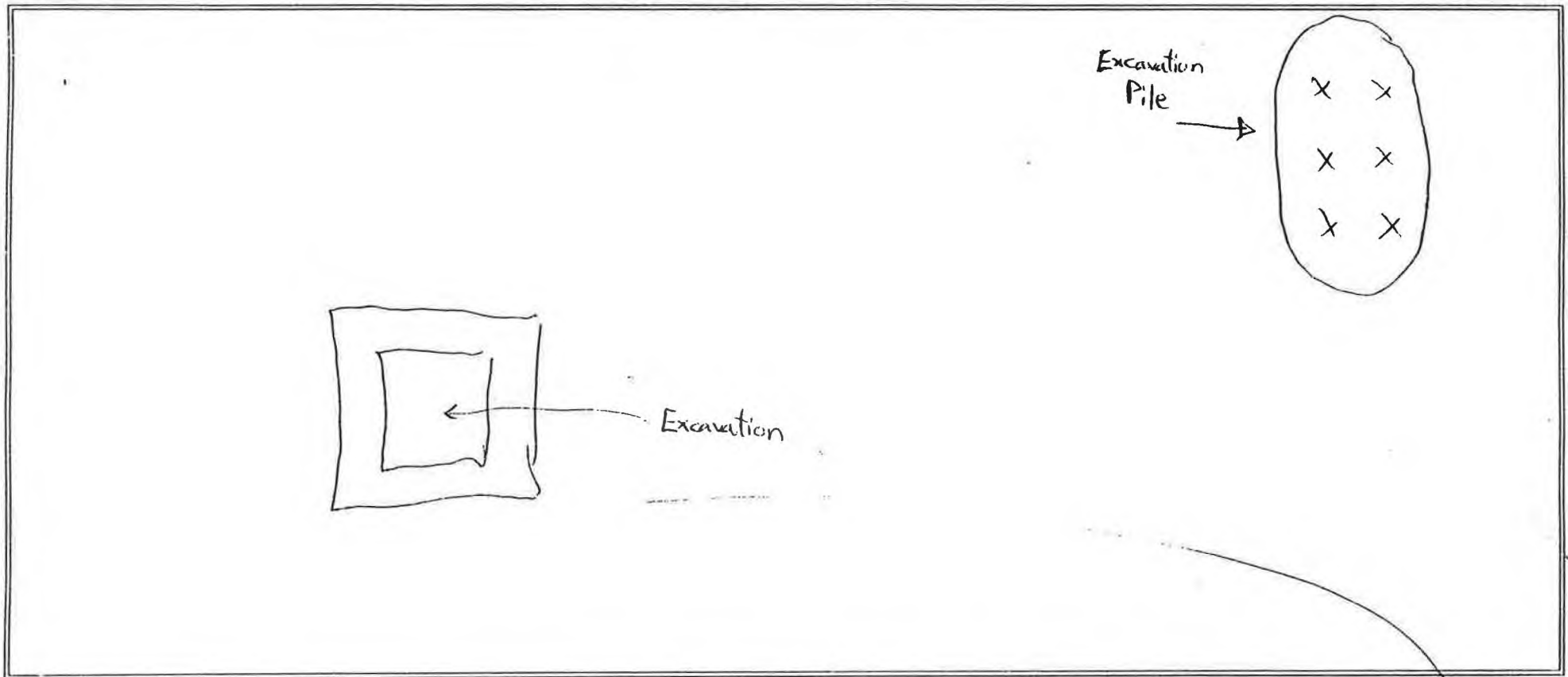
Relinquished by(dd/tt): _____ Received by (dd/tt): _____

Site Location Map
Fort Devens - Project #16208

Pg. 2 of 2

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

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

Pg. 1 of 2

Date 9/19/95

Site Name: SA 39

Weather: Sunny, 78°

Samplers: MJ/GG

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates		Sample Description	# of Bottles
				Ref. Pt.	Ref. Pt.		
EXSA39M	1155	C	N/A	N/A	N/A	Brown Sandy Soil	1x8oz
EXSA39DUPB	1155	C	↓	↓	↓	Brown Sandy Soil	1x8oz
EXSA39TRPB	1155	C	↓	↓	↓	Brown Sandy Soil	1x8oz
EXSA39V	1159	G	↓	↓	↓	↓	2x40ml
EXSA39DUPA	1159	G	↓	↓	↓	↓	2x40ml
EXSA39TRIA	1159	G	↓	↓	↓	↓	2x40ml

Ref. Pt. : N/A

Ref. Pt. : N/A

Map Attached: (Yes) No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 158349 USACE - coc # 158350

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Other Metals, tot. VOC's

Relinquished by (dd/tt): M. Newman 9-19-95 Received by (dd/tt):

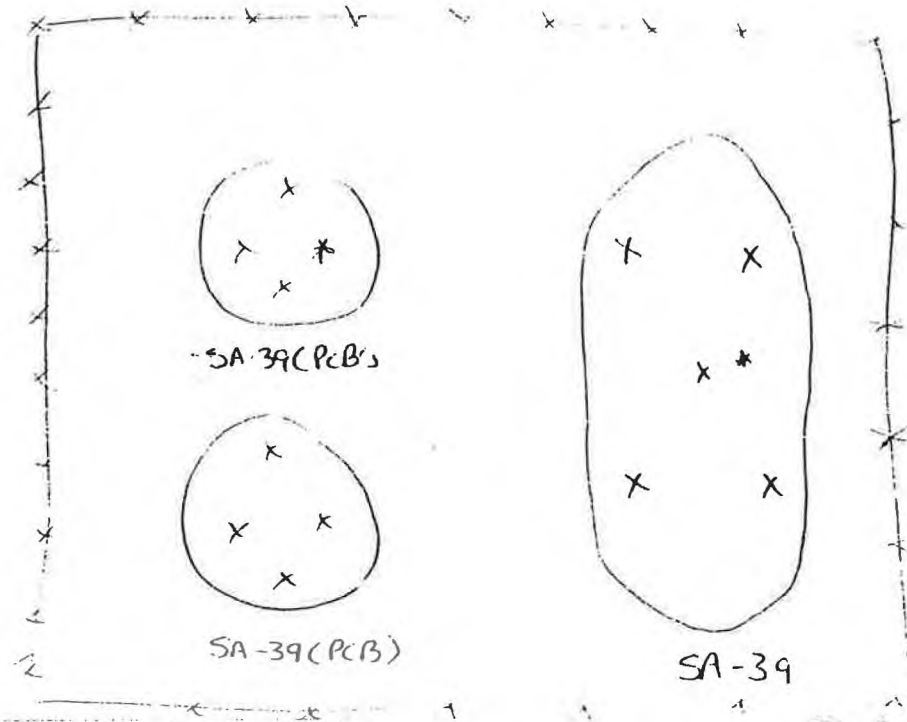
Relinquished by (dd/tt): Received by (dd/tt):

San. Site Location Map
Fort Devens - Project #16208

Pg 2 of 2

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**

Pg. 1 of 2

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.		
EXSA39PCB01	1158	C	N/A	N/A	N/A	Gold Sand	1x1L 3x8oz
EXSA39PCB02	1200	G	N/A	N/A	N/A	Gold Sand	2x40ml

Ref. Pt. : N/A

Ref. Pt. : N/A

Map Attached: ☒ Yes ☐ No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # 158359 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):

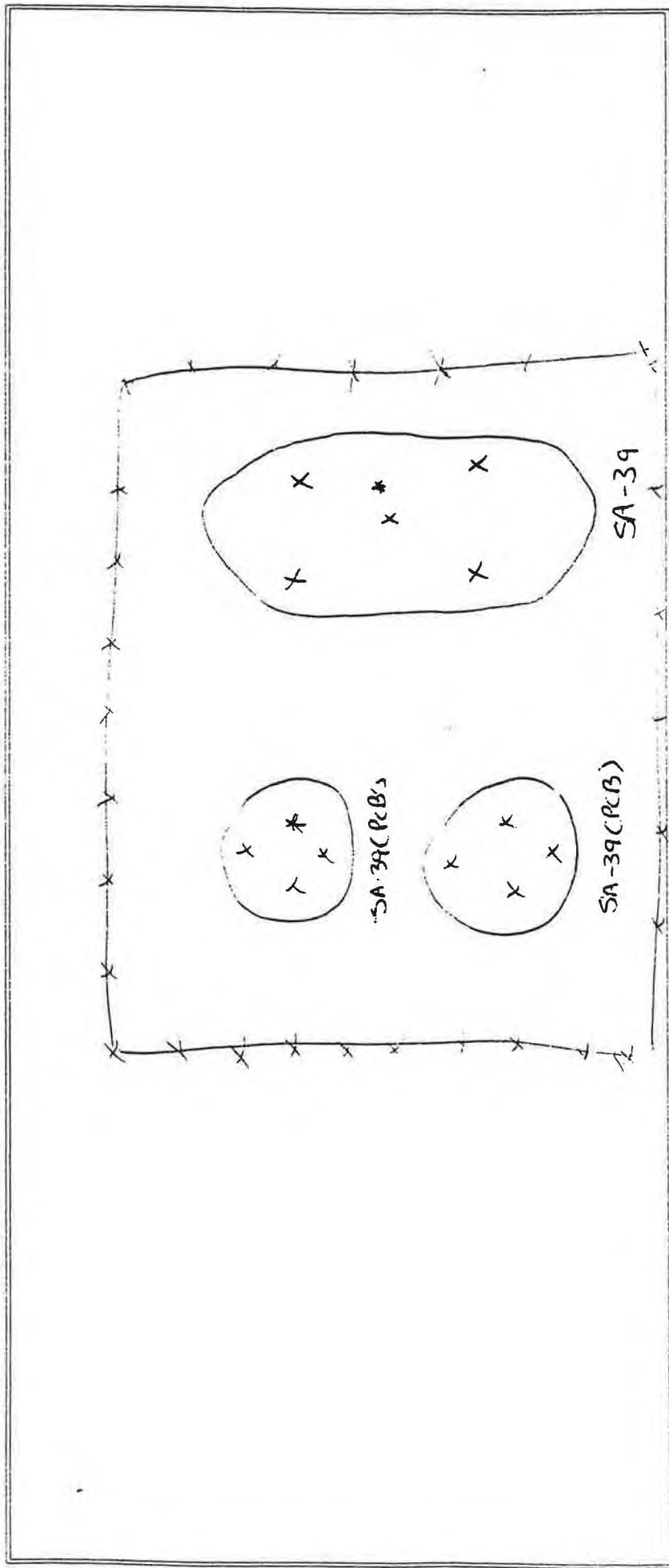
Relinquished by (dd/tt): Received by (dd/tt):

Sample Location Map
Fort Devens - Project #16208

Pg 2 of 2

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

Date: 9/19/95



Comments/Observations: x denotes unique sample point for composite
* denotes location of grab sample for test: 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

M. W. Dray (8/4/95)
for 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										
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14										
15										
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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 #	% RPD #	QC LIMITS 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: _____

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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
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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:

CAS No.	Compound	Concentration Units:	
		(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	U
132-64-9	Dibenzofuran	340	U	U
121-14-2	2,4-Dinitrotoluene	340	U	U
100-02-7	4-Nitrophenol	860	U	U
86-73-7	Fluorene	340	U	U
7005-72-3	4-Chlorophenyl-phenylether	340	U	U
84-66-2	Diethylphthalate	340	U	U
100-01-6	4-Nitroaniline	860	U	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U	U
86-30-6	n-Nitrosodiphenylamine	340	U	U
101-55-3	4-Bromophenyl-phenylether	340	U	U
118-74-1	Hexachlorobenzene	340	U	U
87-86-5	Pentachlorophenol	860	U	U
85-01-8	Phenanthrene	340	U	U
120-12-7	Anthracene	340	U	U
84-74-2	Di-n-butylphthalate	340	U	U
86-74-8	Carbazole	340	U	U
206-44-0	Fluoranthene	340	U	U
129-00-0	Pyrene	340	U	U
85-68-7	Butylbenzylphthalate	340	U	U
91-94-1	3,3'-Dichlorobenzidine	340	U	U
56-55-3	Benzo[a]anthracene	340	U	U
218-01-9	Chrysene	340	U	U
117-81-7	bis(2-Ethylhexyl)phthalate	350		
117-84-0	Di-n-octylphthalate	340	U	U
205-99-2	Benzo[b]fluoranthene	340	U	U
207-08-9	Benzo[k]fluoranthene	340	U	U
50-32-8	Benzo[a]pyrene	340	U	U
193-39-5	Indeno[1,2,3-cd]pyrene	340	U	U
53-70-3	Dibenz[a,h]anthracene	340	U	U
191-24-2	Benzo[g,h,i]perylene	340	U	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	U
108-95-2	Phenol	350	U	U
95-57-8	2-Chlorophenol	350	U	U
541-73-1	1,3-Dichlorobenzene	350	U	U
106-46-7	1,4-Dichlorobenzene	350	U	U
95-50-1	1,2-Dichlorobenzene	350	U	U
108-60-1	bis(2-chloroisopropyl)ether	350	U	U
95-48-7	2-Methylphenol	350	U	U
67-72-1	Hexachloroethane	350	U	U
621-64-7	N-Nitroso-di-n-propylamine	350	U	U
106-44-5	4-Methylphenol	350	U	U
98-95-3	Nitrobenzene	350	U	U
78-59-1	Isophorone	350	U	U
88-75-5	2-Nitrophenol	350	U	U
105-67-9	2,4-Dimethylphenol	350	U	U
111-91-1	bis(2-Chloroethoxy)methane	350	U	U
120-83-2	2,4-Dichlorophenol	350	U	U
120-82-1	1,2,4-Trichlorobenzene	350	U	U
91-20-3	Naphthalene	350	U	U
106-47-8	4-Chloroaniline	350	U	U
87-68-3	Hexachlorobutadiene	350	U	U
59-50-7	4-Chloro-3-methylphenol	350	U	U
91-57-6	2-Methylnaphthalene	350	U	U
77-47-4	Hexachlorocyclopentadiene	350	U	U
88-06-2	2,4,6-Trichlorophenol	350	U	U
95-95-4	2,4,5-Trichlorophenol	880	U	U
91-58-7	2-Chloronaphthalene	350	U	U
88-74-4	2-Nitroaniline	880	U	U
208-96-8	Acenaphthylene	350	U	U
131-11-3	Dimethylphthalate	350	U	U
606-20-2	2,6-Dinitrotoluene	350	U	U
83-32-9	Acenaphthene	350	U	U
99-09-2	3-Nitroaniline	880	U	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-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		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: DH131.0

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: _____

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		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: _____

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: _____

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

SBSA39BC

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	

SBSA39DUP

Lab Name: AENI MDContract: OHMProject No.: 9508032Site: Location: Group: Matrix: (soil/water) SOILLab Sample ID: #006Sample wt/vol: 30.3 (g/mL) GLab File ID: DH132.0Level: (low/med) LOWDate Received: 8/3/95% Moisture: 6 decanted: (Y/N): NDate Extracted: 8/8/95Concentrated Extract Volume: 1000 (uL)Date Analyzed: 8/11/95Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC 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		
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	(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



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		<div style="text-align: center;"> TRPH Semivolatiles (TCL) </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)	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 # 123 223 7027	08-02-95	1500	-Temp blank included = 2°C @ login (R) -Preserved at 4°C -3 Day TAT	
2			<i>[Signature]</i>	8/3	1000		
3							
4							

SAMPLER'S SIGNATURE: *With Del*

LAB COPY

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

CE77-
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: S8SA39SEC

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: S8SA39L1C

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

ORGANIC ANALYSIS DATA SHEET

AMERICAN ENVIRONMENTAL NETWORK, Inc.

Case Number:

9508301

Method:

PCB 8080

Matrix:

Soil

Analysis Date:

8/30/95

Units of AR 1254 in ug/kg

[illegible]



O. Remediation
Services Corp.

CHAIN-OF-CUSTODY RECORD

AE

LAB COPY

Form 0011
Field Technical Service
Rev. 08/81

158223

9508301

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.															
CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR																
Fort Devens		Ayer, MA															
16208		Mike Quinkan		(508) 772-2019													
USACE		Kevin Mack															
ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)											
1	SB5A39BCA	8-25-95	1449	X		Gold Sand										1x8oz X	
2	SB5A39SEC	8-25-95	1511	X		Gold Sand										1x8oz X	
3	SB5A39L1C	8-25-95	1518	X		Gold Sand										1x8oz X	
4	SB5A39L2C	8-25-95	1525	X		Gold Sand										1x8oz X	
5	SB5A39NCA	8-25-95	1454	X		Gold Sand										1x8oz X	
6	SB5A39DUPA	8-25-95	1447	X		Gold Sand										1x8oz X	
7																	
8																	
9																	
10																	
TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY		TRANSFERS ACCEPTED BY		DATE	TIME	REMARKS									
1	1-6	H. Hummon		247 3591046 Federal Express Airbill #		8-25-95	1800	- Samples preserved at 4°C - Temp blank included									
2				B. T. Miller		8/28	800	- 3 day TAT									
3								cooler rec'd @ lab Sat. 9/26									
4								SAMPLER'S SIGNATURE Gregory Hummon									

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

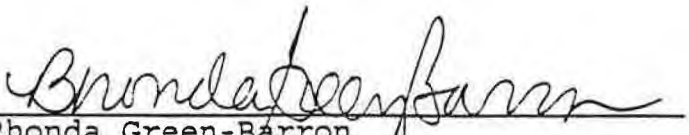
Three soil samples were received and analyzed for General Chemistry Parameters.

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

DATE: 10-Aug-95

AENI SAMPLE #: 9508050-002

CLIENT SAMPLE #: EXSA3901

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

DATE: 10-Aug-95

AENI SAMPLE #: 9508050-003

CLIENT SAMPLE #: EXSA390UP

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      % RECOVERY
                BLANK      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

DATE: 10-Aug-95

AENI SAMPLE #: 9508050-003

CLIENT SAMPLE #: EXSA39DUP

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

CE[Signature]
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

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No.:

9508050

Laboratory Name: American Environmental Network Inc.

[illegible]

CONTROL LIMITS = 50-150%

* - Values are outside of contract required QC limits.
M-Matrix interference. D-Surrogate diluted out.

2 out of 10
outside QC limits.

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
Siivex	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.

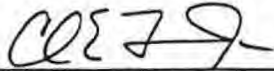
Form II (Surrogate Spike Recoveries)

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

Yes

X No

Seperatory 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

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

Yes

X No

Seperatory 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)		0.10	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) - 5

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.: 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

Seperatory 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

TCLP BLANK SPIKE

AENI # TCLP LCS 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

Seperatory 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)	0.33	0.20	
75-44-8	Heptachlor	0.30	0.10	
1024-57-3	Heptachlor epoxide		0.10	U
72-20-8	Endrin	0.84	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

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

2E

Contract: 9508050

SAS No.: NA

D: 0.53 mm

GC Column(2):

DB 608 ID: 0.53 mm

8/10/95

to

8/10/95

Method: 8080

[illegible]

ADVISORY QC LIMITS

(60-150)

(60-150)

COLUMN TO BE USED TO FLAG RECOVERY VALUES

• VALUES OUTSIDE OF QC LIMITS

D SURROGATE DILUTED OUT

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.

FORM III PEST-1

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)

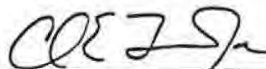
All recoveries are based on a single column analysis.

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: OHM 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.

V_i - Volume of extract injected (ul) - 1

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

W_s - Mass of soil extracted (g) - 30

V_t - Volume of total extract (ul) - 10000

M - Surrogate masked by interfering peaks

ORGANIC ANALYSIS DATA SHEET
AMERICAN ENVIRONMENTAL NETWORK, Inc.

Case Number:	9508050
Method:	PCB 8080
Matrix:	Soil
Analysis Date:	8/9/95

Units of AR 1254 in ug/kg

[illegible]

AMERICAN ENVIRONMENTAL NETWORK, INC.
9151 RUMSEY ROAD
COLUMBIA, MD. 21045
(410) 730-8525

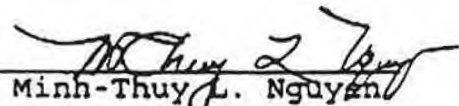
Project Number: 9508050
Client Name: O.H. Materials Corp.
Project Title: Fort Devens
Ayer, MA

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      AENI      Date      Date      Date TCLP  Date
  ID        ID      Matrix   Sampled   Received   Extracted   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

2A
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						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

SMC1 (DCE) - 1,2-Dichloroethane-d4
SMC2 (TOL) - Toluene-d8
SMC3 (BFB) - Bromofluorobenzene

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)
Trichloroethene	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: _____

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK02

Lab Name: AENI MD Contract: OHM

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

Lab File ID: EH107.D Lab Sample ID: 0809VBLK

Date Analyzed: 8/9/95 Time Analyzed: 1045

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	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				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

Lab Name: AENI MD

Contract: OHM

EXSA3901

Project No.: 9508050

Site: FT. DEVEN

Location: AYER,MA

Group:

Matrix: (soil/water)

SOIL

Lab Sample ID: #002

Sample wt/vol:

5.0

(g/mL)

ML

Lab File ID: EH109.D

Level: (low/med)

Date Received: 8/4/95

Moisture: not dec.

100

Date Analyzed: 8/9/95

GC Column: CAP

CAP

ID: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume:

(uL)

Soil Aliquot Volume:

(uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

SAMPLE NO.

EXSA39DUP

Contract: OHM

Group:

Lab Sample ID: #003

Lab File ID: EH110.D

Date Received: 8/4/95

Date Analyzed: 8/9/95

Dilution Factor: 10.0

Soil Aliquot Volume: (uL)

Q

of Leach

8240/TCLP

Lab Name: AENI MD

Contract: OHM

VBLK02

Project No.: 9508050

Site: FT. DEVEN

Location: AYER,MA

Group:

Matrix: (soil/water)

WATER

Lab Sample ID: 0809VBLK

Sample wt/vol:

5.0

(g/mL)

ML

Lab File ID: EH107.D

Level: (low/med)

Date Received:

% Moisture: not dec.

100

Date Analyzed: 8/9/95

GC Column: CAP

CAP

10: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume:

(uL)

Soil Aliquot Volume:

(uL)

Concentration Units

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

Lab Name: AENI MD

Contract OHM

TBLK

Project No.: 9508050

Site: FT. DEVEN

Location: AYER,MA

Group:

Matrix: (soil/water)

WATER

Lab Sample ID: 0808TBLK

Sample wt/vol:

5.0

(g/mL)

ML

Lab File ID: EH108.D

Level: (low/med)

Date Received:

% Moisture: not dec.

100

Date Analyzed: 8/9/95

GC Column: CAP

CAP

10: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume:

(uL)

Soil Aliquot Volume:

(uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

ug/L
of Leach

[illegible]

TCL BNA Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MDContract: OHMProject 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 0	95 0	89 0	100 0	68 0	77 0			
04	EXSA3901	67	80	82	91	98	76			
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
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22										
23										
24										
25										
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

0 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 % REC	% RPD	QC LIMITS 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
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
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25				
26				
27				
28				
29				
30				

COMMENTS:

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.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: _____

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	ug/Kg	
51-28-5	2,4-Dinitrophenol	860	U	U
132-64-9	Dibenzofuran	340	U	U
121-14-2	2,4-Dinitrotoluene	340	U	U
100-02-7	4-Nitrophenol	860	U	U
86-73-7	Fluorene	340	U	U
7005-72-3	4-Chlorophenyl-phenylether	340	U	U
84-66-2	Diethylphthalate	340	U	U
100-01-6	4-Nitroaniline	860	U	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U	U
86-30-6	n-Nitrosodiphenylamine	340	U	U
101-55-3	4-Bromophenyl-phenylether	340	U	U
118-74-1	Hexachlorobenzene	340	U	U
87-86-5	Pentachlorophenol	860	U	U
85-01-8	Phenanthrene	340	U	U
120-12-7	Anthracene	340	U	U
84-74-2	Di-n-butylphthalate	340	U	U
86-74-8	Carbazole	340	U	U
206-44-0	Fluoranthene	340	U	U
129-00-0	Pyrene	340	U	U
85-68-7	Butylbenzylphthalate	340	U	U
91-94-1	3,3'-Dichlorobenzidine	340	U	U
56-55-3	Benzo[a]anthracene	340	U	U
218-01-9	Chrysene	340	U	U
117-81-7	bis(2-Ethylhexyl)phthalate	510		
117-84-0	Di-n-octylphthalate	340	U	U
205-99-2	Benzo[b]fluoranthene	340	U	U
207-08-9	Benzo[k]fluoranthene	340	U	U
50-32-8	Benzo[a]pyrene	340	U	U
193-39-5	Indeno[1,2,3-cd]pyrene	340	U	U
53-70-3	Dibenz[a,h]anthracene	340	U	U
191-24-2	Benzo[g,h,i]perylene	340	U	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-J8

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	(ug/L or ug/Kg)	ug/Kg	Q
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

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: OH093.0

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: _____

CAS No.	Compound	Concentration Units:	
		(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

TCLP BNA Analysis

20
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MO Contract: OHM
 Project No.: 9508050 Site: _____ Location: _____ Group: _____

	SAMPLE NO.	S1 (2FP) #	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	EXSA39DUP	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			
05										
06										
07										
08										
09										
10										
11										
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27										
28										
29										
30										

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 MDContract: 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 #	% 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: _____

SEMIVOLATILE METHOD BLANK SUMMARY

TCLP BLK

Lab Name: AENI MDContract: OHMProject No.: 9508050

Site: _____

Location: _____

Group: _____

Lab File ID: CH108.DLab Sample ID: TBLKInstrument ID: MSD 1Date Extracted: 8/8/95Matrix: (soil/water) WATERDate 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				
05				
06				
07				
08				
09				
10				
11				
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23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name:	AENI MD		Contract:	OHM	
Project No.:	9508050		Site:	Location: Group:	
Matrix: (soil/water)	SOIL		Lab Sample ID: #002		
Sample wt/vol:	500.0 (g/mL) ML		Lab File ID: CH101.D		
Level: (low/med)			Date Received: 8/4/95		
% Moisture:	100		decanted: (Y/N):	N	
Concentrated Extract Volume:	1000 (uL)		Date Extracted: 8/8/95		
Injection Volume:	1.0 (uL)		Date Analyzed: 8/11/95		
GPC Cleanup: (Y/N)	N		Dilution Factor: 2.0		
			pH:	2	

Concentration Units:

[illegible]

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: AENI MD

Contract: OHM

EXSA39DUP

Project No.: 9508050

Site:

Location:

Group:

Matrix: (soil/water)

SOIL

Lab Sample ID: #003

Sample wt/vol:

500.0

(g/mL) ML

Lab File ID: CH102.D

Level: (low/med)

Date Received: 8/4/95

% Moisture: 100

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: 2.0

GPC Cleanup: (Y/N)

N

pH: 2

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

uqjL

Q

of Leach

[illegible]

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: AENI MD

Contract: OHM

TCLP BLK

Project No.: 9508050

Site: _____

Location: _____

Group: _____

Matrix: (soil/water) SOIL

Lab Sample ID: TBLK

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: CH108.D

Level: (low/med)

Date Received:

% Moisture: 100 **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: 2

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]



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		
PROJ NO	PROJECT CONTACT	PROJECT TELEPHONE NO	CLIENT'S REPRESENTATIVE			PROJECT MANAGER/SUPERVISOR	TRPH	Semivolatiles (TCL)	PCRA QAR	PCB's	TCLP							
ITEM NO	SAMPLE NUMBER	DATE	TIME			COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)										
Fort Devens		Ayer, MA																
16208	Mike Quinlan	(508) 772-2019		USACE		Kevin Mack												
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. Quinlan	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. T. ...	8/4	1000		
3							
4							

SAMPLER'S SIGNATURE: *Raymond Quinlan*

LAB COPY

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



OHM Corporation

CHAIN-OF-CL JDY RECORD

Form 001
Field Technical Service
Rev. 08/96

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>TRPH</div> <div>Semi-volatiles (TCL)</div> <div>PCBs</div> <div>TCDF</div> </div>																		
PROJ NO	PROJECT CONTACT	PROJECT TELEPHONE NO.																						
16208	Mike Quinkan	(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	✓	✓	✓	✓	✓					-002							
2	EXSA39 DUP	08-03-95	1218	✓		Brown/Gold Sand	1x8oz			✓	✓	✓					-003							
3																								
4																								
5																								
6																								
7																								
8																								
9																								
0																								

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-2	A. Quinkan	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. T. ...	8/4	1000	
3						
4						

SAMPLER'S SIGNATURE

LAB COPY

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 #: EXSA3901

% 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 #: EKSAJ9DUP % 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 #: EXSA3901/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 #: EXSA3901/AENI

DATE: 25-Sep-95

UNITS: mg/Kg DRY WEIGHT

ANALYTE	SAMPLE RESULT	SPIKED RESULTS	SPIKE ADDED	%RECOVERY
ARSENIC	9.5	18	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.

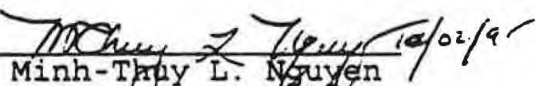
Three soil samples were analyzed for the polynuclear aromatic hydrocarbons by method 8270.

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
GC/MS Lab Manager

VOLATILES Section:

```
=====
Client      AENI      Date      Date      Date TCLP  Date
  ID        ID      Matrix  Sampled   Received   Leached   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

2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AEM 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	VBK01	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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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				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
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: F1522.0

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.

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)	ug/Kg
			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: OMN Corporation

DATE: 29-Sep-95

AGENCY ID #: 9509240-001

SAMPLE ID #: KESAJ39N

% 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 #: KISAJ9DUPS

% 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
AGENT ID #: 9509240-001(ICP)/9509275(Hg)
SAMPLE ID #: EKSAL39H/AGENT

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

AEN QC Summary - Off-site Analytical Data
Fort Devens - 16208

Pg. 1 of 1

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	9509240-MS-001	9509240-MS-001	9-19-95	9-26-95	9-21-95	N		
	EXSA39002	+ COF						

Laboratory QC Information

Analytical Parameter	Date Extracted	Date Analyzed	Method Blank	Method Spike % R	Matrix Spike % 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/PAH	9/23/95	9/23/95	ND	—	33-90	—	—	34-118	Y
TCDF/PAH	9/26/95	9/28/95	ND	81-90	—	—	—	70-130	Y
TCDF/PAH	9/25/95	9/23/95	ND	—	75-83	74-89	—	71-104	Y
TCDF/PAH	—	9/25-28/95	ND	—	75-87	72-83	—	—	Y
TCDF/PAH	—	9-25-28/95	ND	—	78-98	73-104	—	—	Y
TPH	9/25/95	9/28/95	ND	—	—	—	—	—	Y
PAH	9/28/95	—	ND	—	—	—	—	—	Y
PAH	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

AEN

LAB COPY

 Form 001
 Field Technical Service
 Rev 08/8

158352

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)				
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	TCLP TOTAL VOLATILES PCRA CHL TPH PCB'S PAH'S METALS PCRA -005/-006 -007 not analyze for PCBs
2	EXSA39PC802	9/19	1200	X		Gold SAND	2x40ml	
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	9/20/05	1200	- Preserved TO 4°C - Temp Blank included - 5 day TAT
2			Ally	9/21/05	1025	
3				9/25		
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
GC/MS Lab Manager

VOLATILES Section:

```
=====
Client      AENI      Date      Date      Date TCLP  Date
  ID        ID      Matrix   Sampled   Received   Leached   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      AENT      Matrix      Date      Date      Date Extracted      Date
ID          ID                               Sampl.  Recevd  TCLP      BNA      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

2B
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	EXSA39PC802	92	105	86		
05	EXSA42AV1	94	108	96		
06	EXSA42AVDUP	94	99	99		
07						
08						
09						
10						
11						
12						
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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: 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				
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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: FI524.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
			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	5.2	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
			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

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	VLK02	97	105	102		
02	TBLK	98	108	108		
03	EXSA39PCB01	94	103	104		
04	EXSA42A01	95	105	106		
05	EXSA42ADUPA	93	105	106		
06						
07						
08						
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29						
30						

SMC1 (DCE) = 1,2-Dichloroethane-d4

SMC2 (TOL) = Toluene-d8

SMC3 (BFB) = Bromofluorobenzene

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.: 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.

VBK02

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Lab File ID: E1383.D Lab Sample ID: 0928VBK

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				
06				
07				
08				
09				
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30				

COMMENTS:

Lab Name: AENI MD Contract: OHM

EXSA39PCB01

Project No.: 9509240 Site: FT. DEVEN Location: AYER, MA Group:

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

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EI389.D

Level: (low/med) Date Received: 9/21/95

% Moisture: not dec. 100 Date Analyzed: 9/28/95

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units:		Q
		(ug/L or ug/Kg)	$\frac{\text{ug/L}}{\text{of Leach}}$	

[illegible]

EXSA39PCB01

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site:

Location:

Group:

Matrix: (soil/water) SOIL

Lab Sample ID: #005

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: D1360.D

Level: (low/med) **LOW**

Date Received: 9/21/95

% Moisture: 6

decanted: (Y/N): N

Date Extracted: 9/25/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/26/95

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N)

N

pH:

Concentration Units:

[illegible]

Lab Name: AENI MD

Contract: OHM

VBLK02

Project No.: 9509240

Site: FT. DEVEN

Location: AYER, MA

Group:

Matrix: (soil/water) WATER

Lab Sample ID: 0928VBLK

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E1383.D

Level: (low/med)

Date Received:

% Moisture: not dec.

Date Analyzed: 9/28/95

GC Column: CAP

ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

Lab Name: AENI MD

Contract: OHM

TBLK

Project No.: 9509240

Site: FT. DEVEN

Location: **AYER, MA**

Group:

Matrix: (soil/water) WATER

Lab Sample ID: 0927TBLK

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E1384.D

Level: (low/med)

Date Received:

% Moisture: not dec.	100
----------------------	-----

Date Analyzed: 9/28/95

GC Column: CAP

10: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

PAH Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MDContract: 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										
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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: 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				
07				
08				
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10				
11				
12				
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30				

COMMENTS:

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EXSA39PCB01

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site: _____

Location: _____

Group: _____

Matrix: (soil/water) SOIL

Lab Sample ID: #005

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: D1360.0

Level: (low/med) **LOW**

Date Received: 9/21/95

% Moisture: 6 decanted: (Y/N): N

Date Extracted: 9/25/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/26/95

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N) N

pH: _____

Concentration Units:

[illegible]

SBLK01

Lab Name: AENI MD Contract: OHM

Project No.: 9509240 Site: Location: Group:

Matrix: (soil/water) SOIL Lab Sample ID: 0925-LA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DI356.D

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

% Moisture: 0 decanted: (Y/N): N Date Extracted: 9/25/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 9/26/95

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Concentration Units:

[illegible]

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			
07										
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14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

S1 (2FP) - 2-Fluorophenol
S2 (PHL) - Phenol-d5
S3 (NBZ) - Nitrobenzene-d5
S4 (FBP) - 2-Fluorobiphenyl
S5 (TBP) - 2,4,6-Tribromophenol
S6 (TPH) - Terphenyl-d14

QC LIMITS
(21-100)
(10-94)
(34-114)
(43-116)
(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 MDContract: OHMProject No.: 9509240Site: 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:

SEMIVOLATILE METHOD BLANK SUMMARY

SBLK02

Lab Name: AENI MDContract: OHMProject No.: 9509240

Site: _____

Location: _____

Group: _____

Lab File ID: CI209.DLab Sample ID: 0923-RAInstrument ID: MSD 2Date Extracted: 9/23/94Matrix: (soil/water) WATERDate 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	EXSA39PCB01	#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				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

SBLK02

Lab Name:	AENI MD		Contract:	OHM	
Project No.:	9509240		Site:	Location: Group:	
Matrix: (soil/water)	SOIL		Lab Sample ID: 0923-RA		
Sample wt/vol:	1000.0	(g/mL)	ML	Lab File ID: C1209.D	
Level: (low/med)			Date Received:		
% Moisture:	decanted: (Y/N):		N	Date Extracted: 9/23/94	
Concentrated Extract Volume:	1000	(uL)	Date Analyzed: 9/25/95		
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)	$\frac{\text{ug/L}}{\text{of Leach}}$	Q
---------	----------	-----------------	---------------------------------------	---

[illegible]

TCLPBLK

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site: _____

Location: _____

Group: _____

Matrix: (soil/water) SOIL

Lab Sample ID: TBLK

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: CI210.D

Level: (low/med) _____

Date Received: _____

% Moisture: _____ **decanted: (Y/N):** **N**

Date Extracted: 9/23/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/25/95

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/L

Q

of Leach

[illegible]

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.

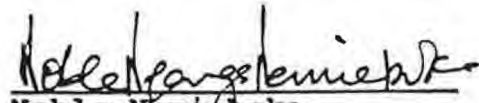
Form II (Surrogate Spike Recoveries)

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	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)		0.10	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

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:
 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 | 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)	0.33	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

Contract: 9509240

SAS No.: NA

Instrument ID: GC-F

GC Column(1): DB-5

D: 0.53 mm

GC Column(2):

DB 608 ID: 0.53 mm

Dates of Analyses:

9/28/95

b2

9/28/95

Method: 8080[illegible]

ADVISORY QC LIMITS

TCMX = Tetrachloro-m-xylene

(60-150)

DCB= Decachlorobiphenyl

(60-150)

- # COLUMN TO BE USED TO FLAG RECOVERY VALUES
 * VALUES OUTSIDE OF QC LIMITS
 D SURROGATE DILUTED OUT

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.

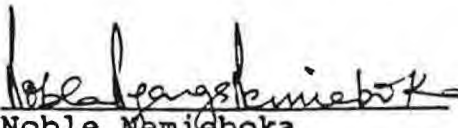
Form II (Surrogate Spike Recoveries)

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

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 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

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No.:

9509240

Laboratory Name:

American Environmental Network Inc.

[illegible]

CONTROL LIMITS = 50-150%

* - Values are outside of contract required QC limits.

M-Matrix interference. D-Surrogate diluted out.

0 out of 14
outside QC limits.

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

DATE: 28-Sep-95

AENI SAMPLE #: 9509240-006

CLIENT SAMPLE #: EKSA39PCB01

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

DATE: 28-Sep-95

AENI SAMPLE #: 9509236/9509223

CLIENT SAMPLE #: AENI

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 #: EXSA39PCB01

% 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 #: EXSA19M/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 #: EXSA39M

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

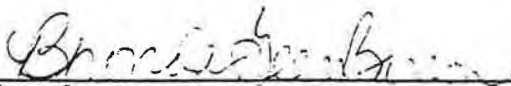
Three soil samples were received and analyzed for General Chemistry Parameters.

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
(0) 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	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 #: EXSA39M

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%



Rev. (1)8

158349

9509240

PROJECT NAME			PROJECT LOCATION			NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)										REMARKS
PROJECT CONTACT			PROJECT TELEPHONE NO.				<div style="text-align: center;"> <div> METALS (RCRA) TOTAL TOXICS VOC'S </div> </div>										
CLIENT'S REPRESENTATIVE			PROJECT MANAGER/SUPERVISOR														
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	1x502	X									-001
2	EXSA39DUPB	9/19	11:55	X		Brown Sandy Soil	1x502	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	Matthew Jones	FedEx Airbill # 925 2288606	9.24.15	11:25	- Preserved to 4°C - Temp Blank included - 5 day TAT
2			Alex K			
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
Minh-Thuy L. Nguyen
GC/MS Lab Manager

VOLATILES Section:

```
=====
Client          AENI          Date      Date      Date TCLP  Date
  ID            ID      Matrix  Sampled  Received  Leached   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          AENI      Matrix   Date    Date    Date Extracted  Date
ID             ID                               Sampl.  Recevd  TCLP      BNA     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 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		
07						
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09						
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11						
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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: 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	EXSA39PC802	#007	FI524.D	9/27/95
04	EXSA42AV1	#012	FI525.D	9/27/95
05	EXSA42AVDUP	#013	FI526.D	9/27/95
06				
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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: FI524.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:		Q
		(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)

CAS No.	Compound	Concentration Units:	
		(ug/L or ug/Kg)	ug/Kg
			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

TCLP VOA Analysis

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: AENI MDContract: OHMProject No.: 9509240Site: FT. DEVENSLocation: 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		
06						
07						
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30						

SMC1 (DCE) - 1,2-Dichloroethane-d4

SMC2 (TOL) - Toluene-d8

SMC3 (BFB) - Bromofluorobenzene

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.: 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.

VBK02

Lab Name: AENI MD Contract: QHM

Project No.: 9509240 Site: FT. DEVENS Location: AYER, MA Group: _____

Lab File ID: EI383.D Lab Sample ID: 0928VBK

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	EI384.D	9/28/95
02	EXSA39PCB01	#006	EI389.D	9/28/95
03	EXSA42A01	#010	EI390.D	9/28/95
04	EXSA42ADUPA	#011	EI391.D	9/28/95
05				
06				
07				
08				
09				
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11				
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30				

COMMENTS:

Lab Name: AENI MD

Contract: OHM

EXSA39PCB01

Project No.: 9509240

Site: FT. DEVEN

Location: **AYER, MA**

Group:

Matrix: (soil/water)

SOIL

Lab Sample ID: #006

Sample wt/vol:

5.0

(g/mL)

ML

Lab File ID: E1389.D

Level: (low/med)

Data Received: 9/21/95

% Moisture: not dec.

100

Date Analyzed: 9/28/95

GC Column: CAP

ID: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume:

(uL)

Soil Aliquot Volume:

(uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

Lab Name:	AENI MD		Contract:	OHM	
Project No.:	9509240		Site:		
			Location:		
Matrix: (soil/water)	SOIL		Lab Sample ID:	#005	
Sample wt/vol:	30.1 (g/mL) G		Lab File ID:	DI360.D	
Level: (low/med)	LOW		Date Received:	9/21/95	
% Moisture:	6		decanted: (Y/N):	N	
Concentrated Extract Volume:	1000 (uL)		Date Extracted:	9/25/94	
Injection Volume:	1.0 (uL)		Date Analyzed:	9/26/95	
GPC Cleanup: (Y/N)	N		Dilution Factor:	2.0	
			pH:		

[illegible]

Lab Name: AENI MD

Contract OHM

YBLK02

Project No.: 9509240

Site: FT. DEVEN

Location: AYER, MA

Group:

Matrix: (soil/water) WATER

Lab Sample ID: 0928VBLK

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: E1383.D

Level: (low/med)

Data Received:

% Moisture: not dec.

Date Analyzed: 9/28/95

GC Column: CAP

ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

SAMPLE NO.

TBLK

Contract: OHM

Site: FT. DEVEN

Location: **AYER, MA**

Group:

Lab Sample ID: 0927TBLK

Lab File ID: EI384.D

Date Received:

Date Analyzed: 9/28/95

Dilution Factor: 10.0

Soil Aliquot Volume: (uL)

Q

FORM I VOA

8240/TCLP

PAH Analysis

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: AENI MDContract: 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										
08										
09										
10										
11										
12										
13										
14										
15										
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26										
27										
28										
29										
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 MDContract: OHMProject No.: 9509240

Site: _____

Location: _____

Group: _____

Matrix Spike - Sample No.: _____

SBLK01Level: (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: _____

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				
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30				

COMMENTS:

EXSA39PCB01

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site:

Location:

Group:

Matrix: (soil/water) SOIL

Lab Sample ID: #005

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: D1360.D

Level: (low/med) LOW

Date Received: 9/21/95

% Moisture: 6

decanted: (Y/N): N

Date Extracted: 9/25/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/26/95

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N)

N

pH:

Concentration Units:

[illegible]

SBLK01

Lab Name:	AENI MD		Contract:	QHM	
Project No.:	9509240		Site:	Location: Group:	
Matrix: (soil/water)	SOIL		Lab Sample ID: 0925-LA		
Sample wt/vol:	30.0	(g/mL)	G	Lab File ID: 01356.D	
Level: (low/med)	LOW		Date Received:		
% Moisture:	0	decanted: (Y/N):		N Date Extracted: 9/25/94	
Concentrated Extract Volume:	1000	(uL)		Date Analyzed: 9/26/95	
Injection Volume:	1.0	(uL)		Dilution Factor: 1.0	
GPC Cleanup: (Y/N)	N		pH:		

Concentration Units:

[illegible]

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										
08										
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30										

S1 (2FP) - 2-Fluorophenol
 S2 (PHL) - Phenol-d5
 S3 (NBZ) - Nitrobenzene-d5
 S4 (FBP) - 2-Fluorobiphenyl
 S5 (TBP) - 2,4,6-Tribromophenol
 S6 (TPH) - Terphenyl-d14

QC LIMITS
 (21-100)
 (10-94)
 (34-114)
 (43-116)
 (10-123)
 (33-141)

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

Contract: OHM

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)

[illegible]

(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	EXSA39PCB01	#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				
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COMMENTS:

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: AENI MD

Contract: OHM

EXSA39PC801

Project No.: 9509240

Site:

Location:

Group:

Matrix: (soil/water) SOIL

Lab Sample ID: #006

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: D1368.D

Level: (low/med)

Date Received: 9/21/95

% Moisture:

decanted: (Y/N): N

Date Extracted: 9/23/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/27/95

Injection Volume: 1.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N)

N

pH:

Concentration Units:

CAS No.

Compound

(ug/L or ug/Kg)

ug/L

Q

of Leach

[illegible]

Lab Name:	AENI MD		Contract:	OHM	
Project No.:	9509240		Site:	Location: Group:	
Matrix: (soil/water)	SOIL		Lab Sample ID: 0923-RA		
Sample wt/vol:	1000.0	(g/mL)	ML	Lab File ID: C1209.D	
Level: (low/med)			Date Received:		
% Moisture:	decanted: (Y/N):		N	Date Extracted: 9/23/94	
Concentrated Extract Volume:	1000	(uL)	Date Analyzed: 9/25/95		
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)	$\frac{\text{ug/L}}{\text{of Leach}}$	

[illegible]

TCLPBLK

Lab Name: AENI MD

Contract: OHM

Project No.: 9509240

Site:

Location:

Group:

Matrix: (soil/water) SOIL

Lab Sample ID: TBLK

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: C1210.0

Level: (low/med)

Date Received:

% Moisture:

decanted: (Y/N): N

Date Extracted: 9/23/94

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 9/25/95

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/L

Q

ug/L
of Leach

[illegible]

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.

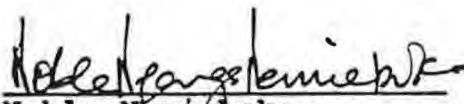
Form II (Surrogate Spike Recoveries)

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 Nemiboka
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

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

V_i - Volume of extract injected (ul) - 1V_s - Volume of Water extracted (ml) - 500W_s - Weight of sample extracted (g) - N/AV_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

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)		0.10	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) - 1V_s - Volume of Water extracted (ml) - 1000W_s - Weight of sample extracted (g) - N/AV_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

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
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 Yes X No
Soperatory Funnel Extraction X Yes
Continuous Liquid - Liquid Extration 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

25

Contract: 9509240

SAS No.: NA

GCF

DB-5

GC Column(2):

DB 608 ID: 0.53 mm

9/28/95

8

9/28/95

8080

[illegible]

ADVISORY QC LIMITS

(60-150)

(60-150)

COLUMN TO BE USED TO FLAG RECOVERY VALUES

* VALUES OUTSIDE OF QC LIMITS

D SURROGATE DILUTED OUT

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		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.

FORM III PEST-1

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.

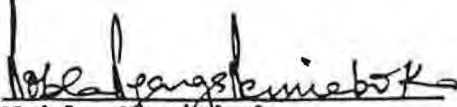
Form II (Surrogate Spike Recoveries)

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 0825LB

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

V_i - Volume of extract injected (ul) 1
V_s - Volume of water extracted (ml) 1000
W_s - Mass of soil extracted (g) N/A
V_t - 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

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No.:

9509240

Laboratory Name:

American Environmental Network Inc.

[illegible]

CONTROL LIMITS = 50-150%

* - Values are outside of contract required QC limits.

M-Matrix Interference. D-Surrogate diluted out.

0 out of 14
outside QC limits.

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

DATE: 28-Sep-95

AENI SAMPLE #: 9509240-006

CLIENT SAMPLE #: EXSA39PCB01

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 #: EXSA19M/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

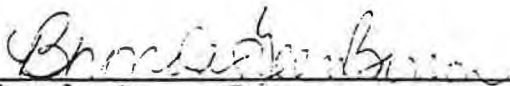
Three soil samples were received and analyzed for General Chemistry Parameters.

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

(10) 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

- (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 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

158352

9509240

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

PROJECT NAME FT DEVENS		PROJECT LOCATION AYER, MA		NUMBER OF CONTAINERS		ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)										REMARKS
PROJ NO. 16208	PROJECT CONTACT MIKE QUINLAN	PROJECT TELEPHONE NO. 508 772-2019	<div style="display: flex; justify-content: space-between;"> <div> XCLP TOTAL VOLATILES PCRA TCH PCRA-MAQ PAH'S METALS PCRA </div> </div>													
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	EXSA39PCB01	9/19	1158	X		GOLD SAND	1X1L 3xPOZ	X	X	X	X	X	X	X	X	Tol: not analyze for PCBs -005/-006
2	EXSA39PCB02	9/19	1200	X		GOLD SAND	2x40ml	X								-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 2233 606	9/20/95	1200	- Preserved To 4°C
2			Alley	9/21/95	1025	- Temp Blank included
3				95		- 5 day TAT
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

Fort Devens

Location aid

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

2-0669-SA39 451
Tracking Number

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>	<i>Hazardous waste license number (if applicable)</i>	<i>License state (if applicable)</i>
Mark Nikitas		
<i>Contact person</i>	<i>Title</i>	
998 Reservoir Road		
<i>Street</i>		
Lunenburg	MA	01462
<i>City/Town</i>	<i>State</i>	<i>Zip code</i>
(508) 582-9931		
<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>	<i>Title</i>	
AFZD-BEO-Box 1	Fort Devens, MA	01433
<i>Street</i>	<i>State</i>	<i>Zip code</i>
(508) 796-3114		
<i>Telephone number and extension</i>		

2. Type of facility:

- ☐ asphalt batch/cold mix ☐ landfill/disposal ☐ thermal processing
☐ asphalt batch/hot mix ☐ landfill/daily cover ☐ landfill/structural fill
☒ other: Temporary Storage Facility

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 Bermeister

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

7. Estimated volume of materials:

67 cubic yards

Cubic Yards

101 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:

RCRA Characterization

describe

8. Contaminant source (check one/specify):

- ☐ transportation accident ☐ spill ☐ other:

Former VST location

describe

6. Screening performed:

None

Type

Instrun ~ 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

(508) 435-3679

Title

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

Date

License number

Seal





Material Shipping Record & Log

17-0662-S1439451
Tracking Number

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
Signature

1/24/96

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 Val 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 C34867

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
w/ 151,060 lbs. / 75.53 tons

Total volume this page (cubic yards/tons)

Total carried forward (cubic yards/tons)

202,180 lbs. / 101.09 tons

Total carried forward and this page (cubic yards/tons)

Page 1 of 1



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:

Sylvania Site, SA-39 (PCB location)

Release name (optional)

south of Rte. 2 within Oxbow National Wildlife Refuge

Street

Fort Devens

Location aid

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

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.



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	P.J. Keating Company	Hazardous waste license number (if applicable)	N/A	Licensing state (if applicable)	N/A
Contract person	Mark Nikitas	Title			
Street	998 Reservoir Road				
City/Town	Lunenburg	State	MA	Zip code	01462
Telephone number and extension	(508) 582-9931				

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	James C. Chambers	Title	BRAC Environmental Officer		
Street	AFZD-BEO-Box 1	State	Fort Devens, MA	Zip code	01433
Telephone number and extension	(508) 796-3114				

2. Type of facility:

- ☐ asphalt batch/cold mix ☐ landfill/disposal ☐ thermal processing
☐ asphalt batch/hot mix ☐ landfill/daily cover ☐ landfill/structural fill
☒ other: Temporary Storage Facility

3. Permit number: N/A

F Description of Material

Check all that apply:

1. a. ☒ soil ☐ dredge material ☐ fill

b. Description:

1AN, FtC SAND -

TR. GRAV. (F.)

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:

PCBs

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

Instrum. ~ 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

(508) 435-3679

Title

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

10.10.95

Date

License number:

4076

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
Signature

1/24/96
Date



0667-SA-39 (PCB)

Tracking Number

SA-39 (PCB)

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

LOAD #: 086
Signature of transporter: *[Signature]*
Receiving facility: Cell B
Bldg 202- Soil Staging Area
Date received: 10/13/95
Time received: 1435
Date of shipment: 10/13/95
Time of shipment:
Truck/Tractor registration: MA E40038
Trailer registration: MA 12363
Load size (cubic yards/tons): 49780 LB / 24.89 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)
49780 LB / 24.89 tons
Total carried forward (cubic yards/tons)
Total carried forward and this page (cubic yards/tons)

Page 1 of 1

Note:
Make additional
copies of this
page as neces-
sary.

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 contractor'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 Volatiles TPH, BTEX	<5x difference for all matrices
---	---------------------------------

Pesticides Herbicides PCB's	<5x difference for liquids <10x difference for solids
-----------------------------------	--

Alkalinity Hardness, Ammonia (water quality, etc.)	<2x difference for all matrices
--	---------------------------------

- 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 < difference < 5x for waters, TCLP extracts 10x < difference < 20x for solids, oils 3x < difference < 5x for airs
--------	--

Semivolatiles, VOA, TPH, BTEX	5x < difference < 10x for all matrices
----------------------------------	--

Pesticide/PCB Herbicides	5x < difference < 10x for liquids 10x < difference < 20x for solids
-----------------------------	--

Alkalinity Hardness, Ammonia (water quality, etc.)	2x < difference < 5x for all matrices
--	---------------------------------------

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: EXSAJ9TRPA
 QA ANALYSIS DATE: 09/28/95
 QA LABORATORY: NED

CONTRACTOR'S SAMPLE NO.: 9509240-003
 CONTRACTOR'S FIELD ID: EXSAJ9V
 CONTRACTOR'S ANALYSIS DATE: 09/27/95
 CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: SOIL

DATE SAMPLED: 09/19/95

UNITS: ng/g

PARAMETER	QA LAB MDL	RESULTS		RESULTS		COMPARISON CODE
		QA LAB	CONTRACTOR	CONTRACTOR		
			CRQL			
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

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: FORT DEVENS - SA 39

PAGE 2 OF 2

QA SAMPLE NO.: 12803

CONTRACTOR'S SAMPLE NO.: 9509240-003

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR CRQL	RESULTS CONTRACTOR	COMPARISON CODE
1,1,2,2-Tetrachloroethane	< 5.0		< 5.2		2
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		2
1,4-Dichlorobenzene	< 1.5		< 5.2		2
n-Butylbenzene	< 1.5			NR	2
1,2-Dichlorobenzene	< 1.5		< 5.2		2
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	< 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)	105	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: EXSA19TRP
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: TOLU EXTRACT
DATE SAMPLED: 08/03/95
UNITS: ug/L

PARAMETER	QA LAB MDL	RESULTS	CONTRACTOR MDL	RESULTS	COMPARISON CODE
		QA LAB		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	64
2-Fluorobiphenyl (43-116)	53	64
2,4,6-Tribromophenol (10-123)	62	67
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 CRQL	RESULTS	CONTRACTOR MDL	RESULTS	COMPARISON CODE
		QA LAB		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.: 32132	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	QA LAB CRCL	RESULTS		DETECTION LIMIT	RESULTS CONTRACTOR	COMPARISON CODE
		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		5 0.057		< 1.0		0
Chlordane	< 0.11			< 0.10		0
Toxaphene	< 5.3			< 10		1

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
TCMX (35-113)	81	82
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	CONTRACTOR'S SAMPLE NO.: 9508050-002
QA FIELD ID: EXSA19TRP	CONTRACTOR'S FIELD ID: EXSA1901
QA ANALYSIS DATE: 08/23/95	CONTRACTOR'S ANALYSIS DATE: 08/09/95
QA LABORATORY: E3I	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.: 31130	CONTRACTOR'S SAMPLE NO.: 95908050-002
QA FIELD ID: EXSA39TRP	CONTRACTOR'S FIELD ID: EXSA3901
QA ANALYSIS DATE: 08/11/95	CONTRACTOR'S ANALYSIS DATE: 08/11/95
QA LABORATORY: GTEL	CONTRACTOR'S LABORATORY: AENI

MATERIAL DESCRIPTION: TCLP EXTRACT
DATE SAMPLED: 08/03/95
UNITS: ug/L

PARAMETER	QA LAB VOL	RESULTS		REPORTING LIMIT	RESULTS CONTRACTOR	COMPARISON CODE
		QA LAB				
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

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: FORT DEVENS - SA 39

PAGE 1 OF 2

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	QA LAB CRQL	RESULTS QA LAB	CONTRACTOR CRQL	RESULTS CONTRACTOR	COMPARISON CODE
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.: 10111

CONTRACTOR'S SAMPLE NO.: 9508032-003

PARAMETER	QA LAB CRQL	RESULTS	CONTRACTOR CRQL	RESULTS	COMPARISON CODE
		QA LAB		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	< 0.025		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 19

QA SAMPLE NO.: 32548 CONTRACTOR'S SAMPLE NO.: 9508301-001
QA FIELD ID: SBA19TRPA CONTRACTOR'S FIELD ID: SBSA19BCA
QA ANALYSIS DATE: 09/14/95 CONTRACTOR'S ANALYSIS DATE: 08/30/95
QA LABORATORY: EBI 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
TOMX (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	SAMPLE	CONTRACTOR	CONTRACTOR	ENV. LAB	QA FIELD	CONTRACTOR	QA LAB	C *
* DATE	MATRIX	SAMPLE NO.	FIELD ID	NO.	ID	RESULTS	RESULTS	
* 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 MDL	RESULTS	CONTRACTOR MDL	RESULTS	COMPARISON CODE
		QA LAB		CONTRACTOR	
Silver	< 0.66	5.3	< 1.1	4.9	3
Arsenic		11		11	3
Barium					3
Cadmium	< 0.17	5.3	< 0.44	4.8	3
Chromium					3
Mercury	< 0.10	5.3	< 0.11	4.6	3
Lead					3
Selenium	< 0.46		< 0.55		3

SEE APPENDIX B FOR KEY TO COMMENTS

CENED-ED-GL
SAMPLE CONTAINER RECEIPT FORM

REVISED 10

PROJECT: Fort Devens

Project #: ED 731
Work Order #: _____

Container received on 8-4-95 and inspected on 8-4-95 By: Phong Nguyen

1. Temperature 5.1 °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 Ltd, 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: _____

SIGNATURE _____
Margery Murray

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 DEEVENS		PROJECT LOCATION AYER		ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) METALS (RCRA) TOTAL VOC'S														
PROJ NO 16208	PROJECT CONTACT MIKE QUINLAN	PROJECT TELEPHONE NO 508-772-2019		NUMBER OF CONTAINERS														
CLIENT'S REPRESENTATIVE USACE		PROJECT MANAGER/SUPERVISOR KEVIN MACK		REMARKS														
ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	1X P01	2X 10mL	1	2	3	4	5	6	7	8	9	10
2	EXSA79TAPB	7/19	11:55	X		Brown Sandy Soil	X											
3	EXSA79TAPA	9/19	11:59		X	Brown Sandy Soil	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	7/20/18	1200	- Preserved to 4°C - Temp Blank included - 5 day TAT
2						
3		FEREX	Chad Horner	9/21/18	1200	
4						SAMPLE'S SIGNATURE Matthew Jones

3-7-52

Loc: Fort Newton

At the same time

Project #:
Work Order #:

Received on 9.21.8 and inspected on 9.21.95 by:

Temperature 4.8 °C. Temperature taken on 4.25.95 (date)

Shipper # 775 298423H
(USM, UPS, DEL, FEDEX, S/C, AIR EXC, HAND-DELIVERED)

1. Container type (Cooler, box, envelope, etc.)

4. Were custody seals on outside of container? N/A (Yes) No:
How many & where: 2 Around container, seal date: 9/19/98, seal name: [signature]

2. Have custody orders been filed in the instant controversy? N/A (Yes/No)

5. Country map properly filled out? (if, signed, etc.) Yes No

26

(S) No

Is the proposed supply of water for the town?

[illegible]

24 600 21/2
 25 600 21/2
 26 600 21/2
 27 600 21/2
 28 600 21/2
 29 600 21/2
 30 600 21/2
 31 600 21/2
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 97 600 21/2
 98 600 21/2
 99 600 21/2
 100 600 21/2

10. Will the applicant's salary be too low?

10. Outline Periods covered? (i. e. pre, analysis, summation, sign.) (100) 50

1. How Connected in the Connected World? (N/A) Yes No

[illegible]

16. Were Some found some found VOA vials bubble-free (H.O.) or no headspace (sell)? N/A Yes ☒ No

11. Are sufficient amounts of waste sent in each container? Yes No

10. What will happen to the people who are in custody there? (10) No

10. Have air volumes noted for air studies? ☒ (N/A) Yes ☐ No

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 10

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Appendix F
Site Photographs

