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NWS EARLE
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ROY F. WESTON, INC.

WESTON

INSTALLATION RESTORATION PROGRAM
SITE INVESTIGATION
FOR 16 SITES AT NWS EARLE, COLTS NECK, NJ

FINAL SI REPORT

Prepared for

NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
LESTER, PA

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TABLE OF CONTENTS

Section	Title	Page
1	**INTRODUCTION**	**1-1**
	1.1 Purpose of Report	1-1
	1.2 Program Organization	1-1
	1.3 Objectives Of The Current SI Effort	1-5
	1.4 Previous Investigations	1-11
	1.5 Site-Specific Background	1-12
	1.5.1 Site 1: Ordnance Demilitarization Site, Secured	1-12
	1.5.2 Site 6: Landfill West of Normandy Road	1-12
	1.5.3 Site 8: Landfill East of Building S-186	1-13
	1.5.4 Site 9: Landfill Southeast of "P" Barricades	1-14
	1.5.5 Site 12: Battery Storage and Handling Area, Waterfront Area	1-14
	1.5.6 Site 13: Defense Property Disposal Office Storage Yard	1-15
	1.5.7 Site 14: Defense Property Disposal Office Warehouse	1-15
	1.5.8 Site 15: Sludge Disposal Site Near Waterfront South Gate	1-16
	1.5.9 Site 16: Fuel Line Connecting Buildings C-19 and C-50	1-16
	1.5.10 Site 17: Disposal Area Behind Training Barge, Waterfront Area	1-17
	1.5.11 Site 23: Paint Chip Disposal Area Adjacent to Building D-5	1-17
	1.5.12 Site 24: Closed Pistol Range	1-18
	1.5.13 Site 25: Closed Pistol Range - Treated Rail Ties	1-18
	1.5.14 Site 27: Projectiles Refurbishing Area	1-19
	1.5.15 Site 28: Waste Oil Tank	1-19
	1.5.16 Site 29: PCB Spill Site, Building C-16	1-19
2	**ENVIRONMENTAL SETTING**	**2-1**
	2.1 Physical Environment	2-1
	2.1.1 Physical Geography	2-1
	2.1.2 Climate and Air Quality	2-2
	2.1.3 Surface Drainage	2-4
	2.1.4 Soils	2-6
	2.1.5 Surficial Geology	2-8

TABLE OF CONTENTS
(Continued)

Section	Title	Page
	2.1.6 Hydrogeology	2-12
	2.1.7 Ambient Groundwater and Surface Water Quality	2-14
3	**SITE INVESTIGATION FIELD ACTIVITIES**	**3-1**
	3.1 Field Investigation Overview	3-1
	3.1.1 Monitor Well Installation and Exploratory Drilling	3-2
	3.1.2 Test Pit Waste Characterization	3-10
	3.1.3 Ambient Air Monitoring and Sample Headspace Screening	3-11
	3.1.4 Elevation Survey	3-11
	3.1.5 Groundwater Sampling	3-13
	3.1.6 Surface Soil Sampling	3-13
	3.1.7 Surface Water and Sediment Sampling	3-17
	3.1.8 Sampling QA/QC Requirements	3-17
	3.1.9 Data Analysis	3-19
	3.2 Field Investigation by Site	3-19
	3.2.1 Site 1: Ordnance Demilitarization Site, Secured	3-19
	3.2.2 Site 6: Landfill West of Normandy Road	3-23
	3.2.3 Site 8: Landfill East of Building S-186	3-27
	3.2.4 Site 9: Landfill Southeast of "P" Barricade	3-27
	3.2.5 Site 12: Battery Storage and Handling Area, Waterfront Area	3-33
	3.2.6 Site 13: Defense Property Disposal Office Storage Yard	3-33
	3.2.7 Site 14: Defense Property Disposal Office Warehouse	3-34
	3.2.8 Site 15: Sludge Disposal Site Near Waterfront South Gate	3-34
	3.2.9 Site 16: Fuel Line Connecting Buildings C-19 and C-50	3-36
	3.2.10 Site 17: Disposal Area Behind Training Barge, Waterfront Area	3-38
	3.2.11 Site 23: Paint Chip Disposal Area Adjacent to Building D-5	3-40
	3.2.12 Site 24: Closed Pistol Range	3-43
	3.2.13 Site 25: Closed Pistol Range, Treated Rail Ties	3-43
	3.2.14 Site 27: Projectiles Refurbishing Area	3-46
	3.2.15 Site 28: Waste Oil Tank	3-48
	3.2.16 Site 29: PCB Spill Site, Building C-16	3-48

TABLE OF CONTENTS
(Continued)

Section	Title	Page
4	**RESULTS OF THE FIELD INVESTIGATION**	**4-1**
4.1	Site 1: Ordnance Demilitarization Site, Secured	4-1
4.1.1	Physical Characteristics	4-1
4.1.2	Chemical Results	4-4
4.1.3	Summary of Site 1 Characterization	4-10
4.2	Site 6: Landfill West of Normandy Road	4-10
4.2.1	Physical Characteristics	4-10
4.2.2	Chemical Results	4-13
4.2.3	Summary of Site 6 Characterization	4-17
4.3	Site 9: Landfill Southeast of "P" Barricades	4-19
4.3.1	Physical Characteristics	4-19
4.3.2	Chemical Results	4-20
4.3.3	Summary of the Site 9 Characterization	4-20
4.4	Site 12: Battery Storage and Handling Area, Waterfront Area	4-20
4.4.1	Physical Characteristics	4-20
4.4.2	Chemical Results	4-23
4.4.3	Summary of Site 12 Characterization	4-26
4.5	Site 13: Defense Property Disposal Office Yard	4-26
4.5.1	Physical Properties	4-26
4.5.2	Chemical Results	4-27
4.5.3	Summary of Site 13 Characterization	4-31
4.6	Site 15: Sludge Disposal Site Near Waterfront South Gate	4-31
4.6.1	Physical Characteristics	4-31
4.6.2	Analysis of Soils	4-32
4.6.3	Analysis of Sediments	4-32
4.6.4	Analysis of Groundwater	4-35
4.6.5	Summary of Results for Site 15	4-35

TABLE OF CONTENTS
(Continued)

Section	Title	Page
4.7	Site 16: Fuel Line Connecting Buildings C-19 and C-50	4-35
4.7.1	Physical Characteristics	4-35
4.7.2	Chemical Results	4-37
4.7.3	Summary of Site 16 Characterization	4-37
4.8	Site 17: Disposal Area Behind Training Barge, Waterfront Area	4-37
4.8.1	Physical Characteristics	4-37
4.8.2	Analysis of Soils	4-40
4.8.3	Analysis of Sediments	4-41
4.8.4	Analysis of Groundwater	4-41
4.8.5	Summary of Site 17 Characterization	4-45
4.9	Site 23: Paint Chip Disposal Area Adjacent to Building D-5	4-45
4.9.1	Physical Characteristics	4-45
4.9.2	Analysis of Soils	4-46
4.9.3	Analysis of Sediments	4-49
4.9.4	Analysis of Groundwater	4-49
4.9.5	Summary of Site 23 Characterization	4-52
4.10	Sites 24 and 25: Closed Pistol Ranges	4-52
4.10.1	Physical Characteristics	4-52
4.10.2	Chemical Results	4-54
4.10.3	Summary of Sites 24 and 25 Characterization	4-57
4.11	Site 27: Projectiles Refurbishing Area	4-57
4.11.1	Physical Characteristics	4-57
4.11.2	Analysis of Soils	4-59
4.11.3	Analysis of Sediments	4-62
4.11.4	Summary of Site 27 Characterization	4-62
4.12	Site 29: PCB Spill Site, Building C-16	4-64
4.12.1	Physical Characteristics	4-64
4.12.2	Analysis of Soils	4-64
4.12.3	Summary of Site 29 Characterization	4-64

TABLE OF CONTENTS
(Continued)

Section	Title	Page
5	**FINDINGS AND RECOMMENDATIONS**	**5-1**
5.1	Overview	5-1
5.1.1	Group A	5-1
5.1.2	Group B	5-1
5.1.3	Group C	5-2
5.1.4	Non Site-Specific Issues	5-2
5.2	Site-Specific Findings and Recommendations	5-5
5.2.1	Site 1, Ordnance Demilitarization Site, Secured	5-5
5.2.2	Site 6, Landfill West of Normandy Road	5-6
5.2.3	Site 9, Landfill Southeast of the "P" Barricades	5-7
5.2.4	Site 12, Battery Storage and Handling Area	5-7
5.2.5	Site 13, DPDO Yard	5-8
5.2.6	Site 15, Sludge Disposal Site Near Waterfront South Gate	5-9
5.2.7	Site 16, Fuel Line Connecting Buildings C-19 and C-50	5-10
5.2.8	Site 17, Disposal Area Behind Training Barge, Waterfront Area	5-10
5.2.9	Site 23, Paint Chip Disposal Site	5-11
5.2.10	Sites 24 and 25, Closed Pistol Ranges	5-12
5.2.11	Site 27, Projectiles Refurbishing Area	5-13
5.2.12	Site 29, PCB Spill Site, Building C-16	5-13

LIST OF APPENDICES

APPENDIX A - Technical Memoranda on Field Activities
APPENDIX B - Boring Logs and Well Construction Logs
APPENDIX C - Analytical Data and QA/QC Evaluation Results

LIST OF FIGURES

Figure No.	Title	Page
1-1	Regional Site Map	1-3
1-2	Index Map Showing Site Locations - Main Base Area	1-7
1-3	Index Map Showing Site Locations - Waterfront Area	1-9
2-1	Site Map Showing Drainage Basins, NWS Earle, NJ	2-5
2-2	Geologic and Hydrogeologic Units in the Coastal Plain of New Jersey, NWS Earle, NJ	2-9
3-1	Site 1: Ordnance Demilitarization Site, (Secured) Monitor Well and Sampling Locations, NWS Earle, NJ	3-24
3-2	Sites 6, 12, 15, and 17: Soil and Sediment Sampling Locations, NWS Earle, NJ	3-26
3-3	Site 8: Landfill East of Building S-186 Test Pit and Sampling Locations, NWS Earle, NJ	3-29
3-4	Site 9:Landfill Southeast of "P" Barricades Test Pit and Sampling Locations, NWS Earle, NJ	3-31
3-5	Site 13: Defense Property Disposal Office Yard Sampling Locations, NWS Earle, NJ	3-35
3-6	Site 16: Fuel Line Connecting Buildings C-19 and C-50 Sampling Location, NWS Earle, NJ	3-37
3-7	Site 23: Paint Chip Disposal Area Adjacent to Building D-5 Sampling Locations, NWS Earle, NJ	3-42
3-8	Sites 24 and 25: Closed Pistol Ranges, Site Locations, NWS Earle, NJ	3-44
3-9	Site 24 and 25: Closed Pistol Ranges, Sampling Locations, NWS Earle, NJ	3-45

LIST OF FIGURES
(Continued)

Figure No.	Title	Page
3-10	Site 27: Projectiles Refurbishing Area Sampling Locations, NWS Earle, NJ	3-47
3-11	Site 29: PCB Spill Site, Adjacent to Building C-16 Sampling Locations, NWS Earle, NJ	3-49
4-1	Site 1: Ordnance Demilitarization Site, (Secured) Groundwater Surface Contours, NWS Earle, NJ	4-3
4-2	Site 1: Ordnance Demilitarization Site, (Secured) Monitor Well and Sampling Locations, NWS Earle, NJ	4-8
4-3	Sites 6, 12, 15, and 17: Groundwater Surface Contours, NWS Earle, NJ	4-12
4-4	Sites 6, 12, 15, and 17: Soil and Sediment Sampling Locations, NWS Earle, NJ	4-15
4-5	Site 9: Landfill Southeast of "P" Barricades Test Pit and Sampling Locations, NWS Earle, NJ	4-22
4-6	Site 13: Defense Property Disposal Office Yard Sampling Locations, NWS Earle, NJ	4-29
4-7	Site 16: Fuel Line Connecting Buildings C-19 and C-50 Sampling Location, NWS Earle, NJ	4-39
4-8	Site 23: Paint Chip Disposal Area Adjacent to Building D-5 Sampling Locations, NWS Earle, NJ	4-48
4-9	Sites 24 and 25: Closed Pistol Ranges, Sampling Locations, NWS Earle, NJ	4-53
4-10	Site 27: Projectile Refurbishing Area Sampling Locations, NWS Earle, NJ	4-58
4-11	Site 29: PCB Spill Site, Adjacent to Building C-16 Sampling Locations, NWS Earle, NJ	4-66

LIST OF TABLES

Table No.	Title	Page
2-1	Representative Meteorological Data, NWS Earle Region	2-3
2-2	Summary of Surficial Geology at SI Sites, NWS Earle, Colts Neck, NJ	2-15
3-1	Summary of Monitor Well Completion, Site Investigation Stage, NWS Earle, Colts Neck, NJ	3-3
3-2	Field Tested Water Quality Parameters for Monitor Well Development, Site Investigation, NWS Earle, Colts Neck, NJ	3-6
3-3	Summary of Analytical Requirements for Subsurface Soils, NWS Earle, Colts Neck, NJ	3-8
3-4	Summary of Groundwater Elevation Data, Site Investigation, NWS Earle, Colts Neck, NJ	3-12
3-5	Summary of Analytical Requirements for Groundwater Samples, NWS Earle, Colts Neck, NJ	3-14
3-6	Field Tested Water Quality Parameters for Monitor Well Sampling, Site Investigation, NWS Earle, Colts Neck, NJ	3-15
3-7	Summary of Analytical Requirements for Sediment and Surface Water, NWS Earle, Colts Neck, NJ	3-18
3-8	Sample Identifiers by Site and Matrix	3-20
4-1	Summary of Analytical Results for Surface Soil Samples Collected During Round I -- Site 1: Ordnance Demilitarization Site (ODS), Secured	4-5
4-2	Summary of Analytical Results for Groundwater Samples Collected During Round I -- Site 1: Ordnance Demilitarization Site (ODS), Secured	4-9
4-3	Summary of Analytical Results for Surface Soil Samples Collected During Round I -- Site 6: Landfill West of Normandy Road	4-14

LIST OF TABLES
(Continued)

Table No.	Title	Page
4-4	Summary of Analytical Results for Sediment Samples Collected During Round I -- Site 6: Landfill West of Normandy Road	4-16
4-5	Summary of Analytical Results for Groundwater Samples Collected During Round I -- Site 6: Landfill West of Normandy Road	4-18
4-6	Summary of Soil (Test Pit) Sample Analytical Results Collected (June 1992); NWS Earle, Site 9: Landfill Southeast of "P" Barricades	4-21
4-7	Summary of Surface Water and for Sediment Samples Analytical Results (June 1992), NWS Earle, Site 12 (Battery Acid Spill Site)	4-24
4-8	Summary of Analytical Results for Surface Soil Samples Collected During Round I -- Site 13: Defense Property Disposal Office Yard	4-28
4-9	Summary of Analytical Results for Sediment and Surface Samples Collected During Round I -- Site 13: Defense Property Disposal Office Yard	4-30
4-10	Summary of Soil Sample Analytical Results (June 1992) NWS Earle, Sitae 15 (Bilge Water Disposal Site)	4-33
4-11	Summary of Analytical Results for Sediment Samples Collected During Round I -- Site 15: Bilge Water Disposal Site Near Waterfront South Gate	4-34
4-12	Summary of Analytical Results for (Hydro-Punch©) Sample (June 1992) NWS Earle, Site 15 (Bilge Water Disposal Site)	4-36
4-13	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 16: Fuel Line Connecting Buildings C-20 and C-50	4-38

LIST OF TABLES
(Continued)

Table No.	Title	Page
4-14	Summary of Soil Sample Analytical Results (June 1992; NWS Earle, Site 17 (Disposal Site Behind Training Barge)	4-42
4-15	Summary of Analytical Results for Sediment Samples Collected During Round I -- Site 17: Disposal Area Behind Training Barge, Waterfront Area	4-43
4-16	Summary of Analytical Results for Groundwater Samples Collected During Round I -- Site 17: Disposal Area Behind Training Barge, Waterfront Area	4-44
4-17	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 23: Paint Chip Disposal Area Adjacent to Building D-5	4-47
4-18	Summary of Analytical Results for Sediment Samples Collected During Round I -- Site 23: Paint Chip Disposal Area Adjacent to Building D-5	4-50
4-19	Summary of Groundwater (Hydro-Punch©) Sample Analytical Results (June 1992) NWS Earle, Site 23 (Paint Chip Disposal Area)	4-51
4-20	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 24 : Closed Pistol Range	4-55
4-21	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 25: Closed Pistol Range, Treated Railroad Ties	4-56
4-22	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 27: Projectiles Refurbishing Area	4-60
4-23	Summary of Analytical Results for Sediment Samples Collected During Round I -- Site 27: Projectiles Refurbishing Area	4-63
4-24	Summary of Analytical Results for Soil Samples Collected During Round I -- Site 29: PCBs Spill Area, Building C-16	4-65

LIST OF ACRONYMS AND ABBREVIATIONS

BNA	Base-neutral and acid extractable compounds
BOD	Biochemical oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund. Amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA).
CLP	Contract laboratory program
DCE	Dichloroethene
DNT	Dinitrotoluene
HMX	Cyclotetramethylenetetranitramine
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MSL	Mean sea level
MW	Monitoring well
NJDEPE	New Jersey Department of Environmental Protection and Energy
NPL	National Priorities List - a list of sites identified for remediation under CERCLA
NWS	Naval Weapons Station
PCBs	Polychlorinated biphenyls
ppb	Parts per billion
RDX	Cyclotrimethylenetrinitramine
RI	Remedial investigation
ROD	Record of decisions documents selection of cost-effective Superfund financed remedy

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SI	Site investigation
TAL	Target analyte list
TCE	Trichloroethene
TCL	Target compound list
TNT	Trinitrotoluene
TOC	Total organic carbon
TPH	Total petroleum hydrocarbon
ug/L	Micrograms per liter
U.S. EPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds

SECTION 1

INTRODUCTION

1.1 PURPOSE OF REPORT

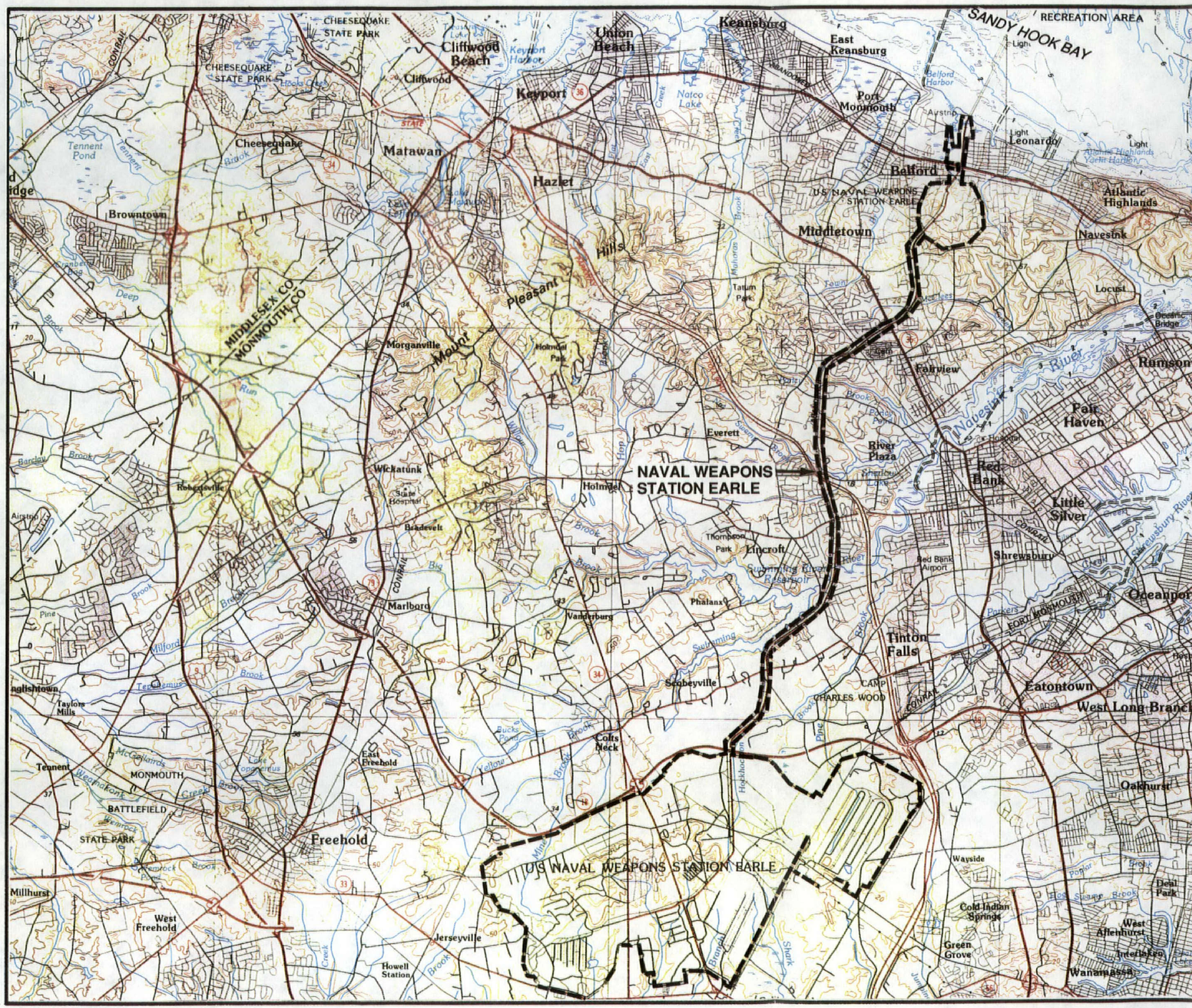
This Site Investigation (SI) report has been prepared by Roy F. Weston, Inc. (WESTON®) for the Naval Facilities Command (NAVFAC) to address the 16 sites identified in the Preliminary Assessment (PA) prepared by Fred C. Hart and Associates, Inc., 1982, at Naval Weapons Station (NWS) Earle, Colts Neck, New Jersey (see Figure 1-1). Under the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance, it is required that an SI be conducted as a confirmation study based on the findings of a PA of the installation. The PA and SI are the two initial elements of the Navy's Installation Restoration Program (IRP), which is described in further detail below. This work is also being conducted in accordance with a Federal Facility Agreement (FFA) between the EPA and the Navy.

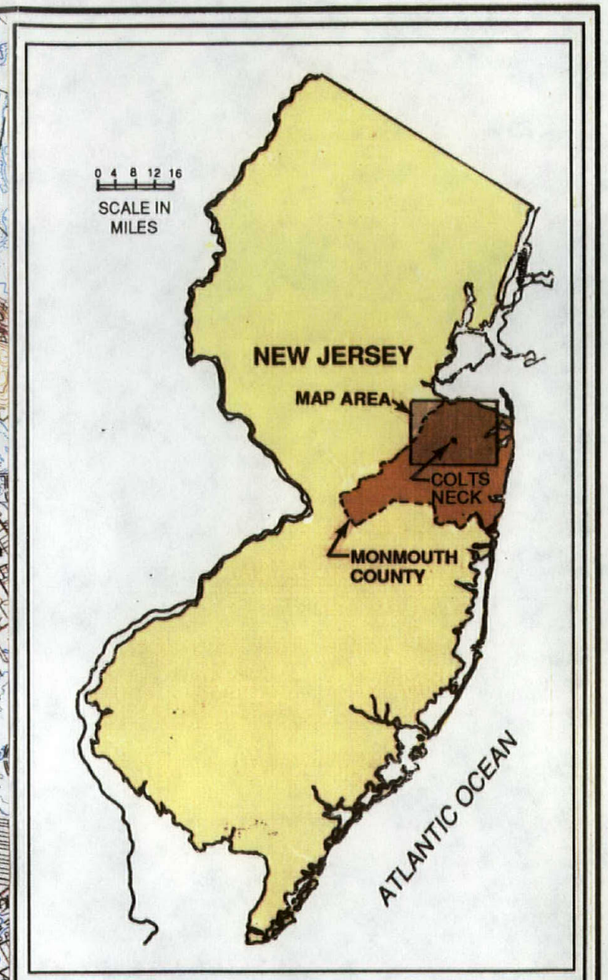
1.2 PROGRAM ORGANIZATION

The IRP has been developed as a four-phase program as follows:

- Phase I — Preliminary Assessment (PA), formerly known as the Initial Assessment Study (IAS), identifies possible contamination sources through records searches, personnel interviews, and site visits. The purpose of the PA is to evaluate the seriousness of the hazardous substance release, or threat of release, and to recommend additional response actions at the site. No action need be taken if available data indicate that there is no threat or potential threat to public health or the environment. Alternatively, the best response action may be an immediate removal of the threat or potential threat. The PA, therefore, establishes the priority for scheduling an SI by characterizing a site.

- Site Inspection (SI) - involves the collection or development of additional data that either eliminate from further consideration those releases that pose no threat to public health or the environment or determine the potential need for a comprehensive RI.





NORTH

5000 0 5000 10000 15000

SCALE IN FEET

1000 500 0 1000 2000 3000 5000

SCALE IN METERS

Source: Base map adapted from USGS 30x60 Minute Series maps (100,000), Trenton, NJ, PA - NY quadrangle, dated 1984.

NAVAL WEAPONS STATION EARLE
COLTS NECK, MONMOUTH COUNTY
NEW JERSEY

FIGURE 1-1
REGIONAL SITE MAP

NWSEAR1A-G:/DM-2/92

- Phase II, Remedial Investigation/Feasibility Study (RI/FS) - involves conducting comprehensive on-site investigations to quantify the extent of contamination and to determine risk to human health and environment, and developing alternatives for possible corrective measures. The studies conducted during this phase were previously called confirmation and quantification studies.

- Phase III - directed at research and development specifically related to waste treatment and remediation.

- Phase IV, Remedial Design/Remedial Action Plan (RD/RA) - within which remedial actions are evaluated and implemented to control and mitigate confirmed contamination.

1.3 OBJECTIVES OF THE CURRENT SI EFFORT

This report presents the results from the task performed under the scope of work specified in the Site Inspection Work Plan (April 1992) for the SI sites identified at NWS Earle. Two sites (Site 14, the Defense Property Disposal Office (DPDO) warehouse; and Site 28, the waste oil tank (Building C-16)), have been excluded from the current SI effort because both sites have been addressed under Resource Conservation and Recovery Act (RCRA). Cleanup efforts were conducted at Site 14 and Site 28 has undergone a state-approved closure which included removal of the tank and groundwater monitoring. The RCRA site inspection report recommends no further action at either site.

The sites that were identified during the previously conducted PA and that were addressed during the SI are shown in Figures 1-2 and 1-3 and include the following:

Site No.	Site Title
1	Ordnance Demilitarization Site (ODS), secured
6	Landfill west of Normandy Road
8	Landfill east of S-186
9	Landfill southeast of "P" Barricades
12	Battery Storage and Handling Area, Waterfront Area
13	Defense Property Disposal Office Yard (DPDO Yard)
14	Defense Property Disposal Office Warehouse (DPDO Warehouse)
15	Sludge Disposal Site near Waterfront South Gate
16	Fuel Line Connecting Buildings C-19 and C-50
17	Disposal Site behind Training Barge, Waterfront Area
23	Paint Chip Disposal Area near Building D-5
24	Closed Pistol Range
25	Closed Pistol Range — Treated Rail Ties

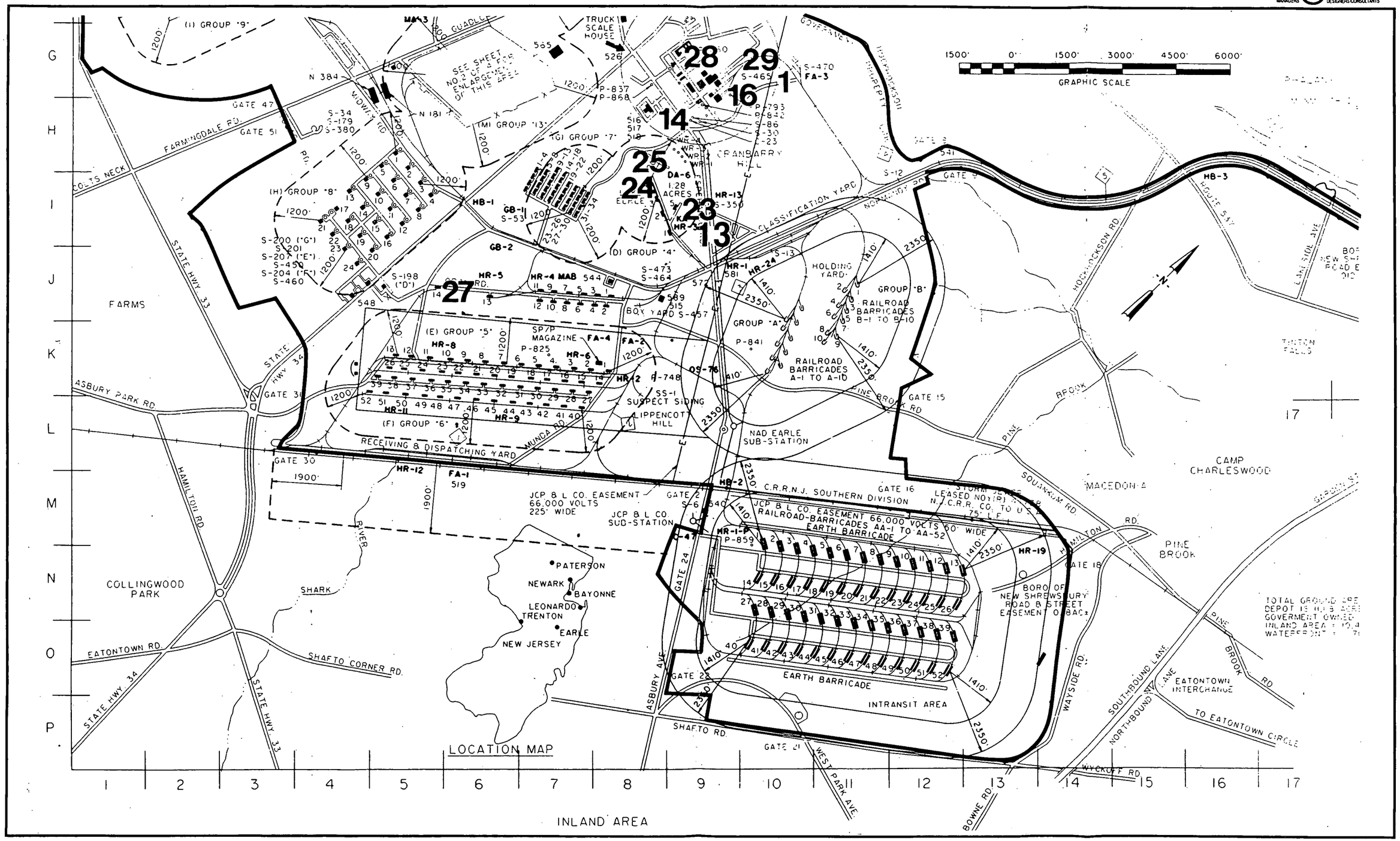


FIGURE 1-2 INDEX MAP SHOWING SITE LOCATIONS-MAIN BASE AREA, NWS EARLE, NJ

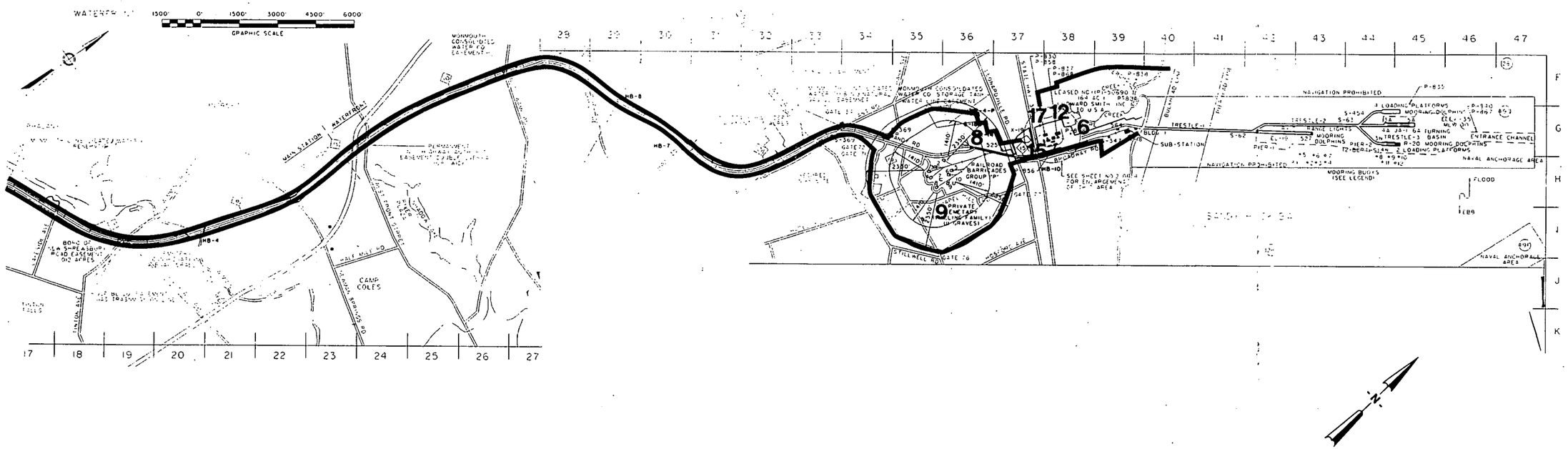


FIGURE 1-3 INDEX MAP SHOWING SITE LOCATIONS-WATERFRONT AREA, NWS EARLE, NJ

Site No.	Site Title
27	Projectiles Refurbishing Area
28	Waste Oil Tank
29	PCB Spill Site, Building C-16

The primary objectives of the SI effort, as described in the Work Plan, include the following:

- Confirm the absence or presence of contamination at sites identified by the Initial Assessment Study, Fred C. Hart and Associates, Inc., 1982.
- Classify the sites into two categories:
  - No Action — Sites that pose no threat to public health or the environment.
  - Potential Action — Sites where further investigation is necessary to determine the extent of contamination and the recommended action.

1.4 PREVIOUS INVESTIGATIONS

A Work Plan was developed to address the scope of work specifically related to the SI sites at NWS Earle. It was based on the information included in the IAS prepared by Fred C. Hart and Associates, Inc., in 1982. In addition, regional information and stationwide data were also obtained from the "Draft Report for Naval Weapons Station Earle, Colts Neck, New Jersey, Installation Restoration Program Phase II Confirmation Study," prepared by WESTON in September 1986 and the "Draft Report of Current Situation and Draft Plan of Action," prepared by WESTON in December 1988. These documents have been submitted to the Navy, the New Jersey Department of Environmental Protection and Energy (NJDEPE), and the EPA. A draft of the Work Plan was submitted to NJDEPE and the EPA Region II office in November 1989. EPA Region II's comments on the November 1989 draft were addressed under separate cover and were also incorporated into the September 1991 version of the SI Work Plan.

1.5 SITE-SPECIFIC BACKGROUND

1.5.1 Site 1: Ordnance Demilitarization Site, Secured

Site Description

This 6-acre site, located near Building S-465, was used for burning ordnance materials from 1943 to 1974. Operations at the site were discontinued in 1975. Demilitarization of the site involved plowing the area, spreading a layer of hay soaked with diesel fuel, and setting the hay ablaze to burn the site's surface. This operation was performed three times. It is currently used by the U.S. Army as a communications facility. The site is mostly open field, with a communications tower located in the approximate center.

1.5.2 Site 6: Landfill West of Normandy Road

Site Description

This 4-acre landfill in the waterfront area was used for the disposal of refuse from waterfront area operations from 1943 to 1965. Materials disposed of at this site were burned and covered. The IAS reasoned that, given the nature of the activities in the waterfront area, it is expected that the wastes disposed of at this site include dunnage lumber (typically untreated pine), glass, paper, packing material, and small amounts of paint and solvent wastes. Small amounts of preserved wood (e.g., impregnated pentachlorophenol) may also have been disposed of here, but such activity could not be verified. Transformers and oil filters may also have been disposed of at the site. Because no ships were homeported at NWS Earle during the lifetime of this landfill, general shipboard refuse would have been limited.

Data on the quantities of waste disposed of at this site are not available. However, on-site interviews conducted during the IAS indicate that the annual loading of this landfill totaled less than 2,500 tons of refuse.

This site is adjacent to a tidal marsh adjoining Sandy Hook Bay. Surface drainage from the site flows into the marsh and eventually into the bay.

This landfill site may have been a salt marsh before waste disposal activity began. After the landfill was closed, the waterfront recreation building was constructed on top of the filled land. The Station Public Works Department has no record of problems associated with the construction and use of this building.

Identification of Possible Site Contaminants

The IAS provided limited information concerning the landfill. Information provided includes the type of materials and approximate volumes disposed of at the site. The IAS report concluded that the bulk of wastes disposed of at the site were inert and their presence would not produce health effects or significant environmental impacts. Due to the varied nature of materials disposed of within the landfill and the lack of detailed documentation of disposal operations, specific contaminants cannot be identified.

1.5.3 Site 8: Landfill East of Building S-186

Site Description

Site 8 is located at the waterfront area, and is situated northeast of Normandy Road adjacent to Building S-186. Site 8 was used from 1943 to 1972 for dunnage lumber disposal. Dunnage is lumber that is used to segregate a ship's cargo in order to prevent damage to the cargo while in transit.

Site 8 is one of 16 sites identified in the Site Investigation Work Plan, September 1991, prepared by WESTON. Site 8 was investigated independently, under a separate work plan, which was approved by EPA Region II and NJDEPE in July 1991. The investigation at Site 8 was structured to expedite a decision on the remedial requirements of the site. The Navy plans to construct a paved long-term parking lot on the site for use by shipboard personnel during the year 1993.

The Site 8 report, prepared by WESTON in October 1991, discusses the site characteristics and documents the results of the field investigation, sampling, and analysis conducted in August 1991.

No significant environmental impact was identified and the Navy notified EPA and NJDEPE in a letter dated 13 December 1991 that they are proceeding with plans for the parking lot construction.

1.5.4 Site 9: Landfill Southeast of "P" Barricades

Site Description

This 3-acre site was used for disposal of dunnage lumber from 1967 to 1972. Lumber was stacked and burned and then covered. The IAS states that no records exist of dunnage quantities disposed of at this site. However, estimates of total dunnage generation of 900 to 1,500 cubic yards (yd^3) per year indicate that approximately 4,500 to 7,500 yd^3 of lumber were burned and disposed of at this site.

Identification of Possible Site Contaminants

Similar to Site 8, this landfill was used for the disposal of dunnage lumber; it has not been determined whether the lumber was treated or untreated. It is possible that pentachlorophenol and arsenic contaminants derived from treated wood may be present. Burning of lumber at the site was also reported. The use of an ignition source, such as fuel oils, suggests the possible presence of petroleum hydrocarbons.

1.5.5 Site 12: Battery Storage and Handling Area, Waterfront Area

Site Description

This site is an area located behind the new recreation building (Building R-14) at the waterfront area. This site was used as a transhipment staging area for forklift batteries being sent off-site for reclamation and recharge. During operations, it is possible that acid electrolyte spills occurred in small quantities. The period of activity and total quantity handled are unknown.

The concerns associated with this site focus on the possible presence of battery acid residue in the soil on and adjacent to this site. The IAS states that it was observed during visual inspection

that the site drains into a tidal marsh. Drainage on the pad leads to a storm sewer. Past storage areas for the batteries are not precisely known. No batteries are currently stored at this site.

Identification of Possible Site Contaminants

Contaminants associated with battery acid include acid electrolytes and lead. The IAS reasoned that any acidic liquids contaminating the site would be neutralized by the buffering capacity of the sea water in the marsh.

1.5.6 Site 13: Defense Property Disposal Office Storage Yard

Site Description

The Defense Property Disposal Office (DPDO) storage yard is located near the rail classification yards. The IAS states that activities conducted at this site included the storage of scrap metals and forklift batteries. Minor spills of battery acid (10 gallons/year or less) may have occurred at the site during the handling of batteries (e.g., batteries may have tipped over). In addition, PCB-containing transformers were stored at this site in open rail cars before being transported to the controlled storage area (QH-8). Transformer cases were periodically inspected for damage, and larger transformers were stored in empty torpedo barrels. Interviews conducted during the IAS indicate that no leakage occurred.

1.5.7 Site 14: Defense Property Disposal Office Warehouse

Site Description

The DPDO warehouse, Building C-33, is a 16,000-ft^2 building used to store items awaiting processing. On-site interviews conducted during the IAS and confirmed during the 12 June 1989 site visit indicate that a mercury spill of one to several ounces occurred inside this building in 1970. Cleanup operations were conducted. Interviews conducted during the 12 June 1989 site visit confirm that the spill was inside the building and that the mercury was cleaned up by vacuuming.

Identification of Possible Site Contaminants

A mercury spill of one to several ounces occurred inside this building. Cleanup occurred, and therefore, there was no release to the environment.

1.5.8 Site 15: Sludge Disposal Site Near Waterfront South Gate

Site Description

According to interviews conducted during the IAS, a site along the railroad tracks at the main entrance to the waterfront area was used for disposal of an unknown quantity (possibly over 5,000 gallons) of oily bilge water, ranging from 1 to 25% oil, from ships homeported at the base during the early 1970s. However, the location of this disposal was not apparent from close inspection of the suspected area. A parking lot constructed in 1978 covers a portion of this area.

Identification of Possible Site Contaminants

The contaminants associated with the oily bilge water are petroleum hydrocarbons.

1.5.9 Site 16: Fuel Line Connecting Buildings C-19 and C-50

Site Description

This underground fuel line was used to transport diesel fuel from an underground fuel storage tank located adjacent to Building C-20 to a dispensing station (pump) located behind Building C-19 or C-20, a distance of approximately 400 ft. A leak in the fuel line was discovered in June 1977 when soil residues were discovered in the locomotive fuels; use of the pipeline was discontinued. Subsequent excavation uncovered the location of the leak, and it was determined that the amount of diesel fuel lost was minimal (less than 50 gallons) because the leak was discovered quickly.

1.5.10 Site 17: Disposal Area Behind Training Barge, Waterfront Area

Site Description

This site borders the salt marsh and was used as a disposal area for construction debris and other bulk material, possibly including forklifts; empty paint cans; construction debris such as wood, concrete, and asphalt; waste equipment such as old valves; and similar relatively inert materials. Most of the area is covered by paving for parking and equipment storage. During physical inspection of the site conducted during the IAS, an empty drum (55-gallon capacity) was observed along the edge of the fill area.

Identification of Possible Site Contaminants

Due to the lack of documentation and the wide variety of materials thought to be disposed of at the site, specific contaminants cannot be determined.

1.5.11 Site 23: Paint Chip Disposal Area Adjacent to Building D-5

Site Description

Building D-5 has been used at least since the early 1970s for reworking (i.e., repainting and stenciling) major items of ordnance, such as torpedoes and aerial bombs. The IAS concluded that, based upon the appearance of the site, the amount of paint dumped in this area was not large enough to constitute a significant environmental or public health hazard. The inspection conducted by WESTON revealed small amounts of hardened paint on the ground surface.

Identification of Possible Site Contaminants

According to the IAS, materials used in the reworking process included zinc chromate primer, "Witegard" (corrosive alkaline material), and paint thinner. Although most of these materials were hauled off-site by a private contractor, all of these materials may be present within the paint spill. Contaminants resulting from these materials include the following:

- Metals (Pb, Zn, Cu, and Cr) derived from the paints.
- Volatiles — paint thinner.
- Naphthenates — paint dryer.
- Toluene — paint thinner.
- Xylenes — paint thinner/paint remover.
- Methylene chloride — paint thinner.

1.5.12 Site 24: Closed Pistol Range

Site Description

This closed small arms practice range contains lead- and copper-jacketed bullets in the impact berm. Estimating that approximately 200 rounds of 180-grain, 0.45-caliber ammunition are required per person to maintain annual pistol qualification and that no more than 50 persons would maintain qualification per year, the annual loss of lead would be approximately 250 pounds in the form of bullets.

Identification of Possible Site Contaminants

Possible site contaminants are primarily lead and other metals, including copper and zinc.

1.5.13 Site 25: Closed Pistol Range - Treated Rail Ties

Site Description

This site is a former small arms range, located near Site 24, and is similar in nature to Site 24. Fred C. Hart and Associates, Inc., estimated that approximately 200 rounds of 180-grain, 0.45-caliber ammunition are required per person to maintain annual pistol qualification and that no more than 50 persons would maintain qualification per year. The annual loss of lead at this site was estimated to be approximately 250 pounds in the form of bullets.

Identification of Possible Site Contaminants

The possible site contaminants are the metals derived from the spent cartridge cases and bullets, including lead, copper, and zinc.

1.5.14 Site 27: Projectiles Refurbishing Area

Site Description

At this location, projectiles were refurbished by shot-blasting, repainting, and restenciling. Waste materials resulting from this process include oil-contaminated rags, paint chips, blasting shot, and toluene. Currently, these materials are transported off-site by private contractors. However, prior to 1978, they were retained on-site in dumpsters.

Identification of Possible Site Contaminants

The observation of paint chips and spent blasting shot along with evidence of on-site disposal practices suggest the possibility that residues from these site operations are present. The contaminants identified resulting from the waste materials include the following:

- Metals (Pb, Zn, Cu, and Cr) originating in blasting shot and paint.
- Toluene occurring in paint thinner.
- Volatiles derived from paint thinner.

1.5.15 Site 28: Waste Oil Tank

Site Description

The underground waste oil storage tank located behind Building C-14 has since undergone a RCRA closure monitored by NJDEPE, which included groundwater monitoring. The RCRA site inspection report recommended no further action at this site.

1.5.16 Site 29: PCB Spill Site, Building C-16

Site Description

This site, in the storage yard north of Building C-16, was the location of a 1981 PCB spill from a vandalized transformer; the date of the spill was incorrectly cited in the IAS as 1977. Within 5 days of the occurrence of the spill, over 120 ft^3 of contaminated soil was excavated and transported for off-site disposal. All visible evidence of the oil spill (e.g., discolored soil) was

removed during this cleanup operation as documented in the technical memoranda (Appendix A). No confirmation sampling was performed after the removal.

Identification of Possible Site Contaminants

Contaminants resulting from the spill include PCBs and petroleum hydrocarbons.

SECTION 2

ENVIRONMENTAL SETTING

2.1 PHYSICAL ENVIRONMENT

2.1.1 Physical Geography

NWS Earle is located in the Coastal Lowlands of Monmouth County in eastern New Jersey. This area falls within the Atlantic Coastal Plains Physiographic Province, approximately 6 miles inland from the Atlantic Ocean.

The station is divided into three physically separate areas; the largest is the Main Base (10,428 acres) and the remaining, smaller areas consist of the waterfront area and the Chapel Hill area (706 acres combined).

The Main Base lies within the Outer Coastal Plain, a relatively flat area with little topographic relief, except for the Hominy Hills. The Hominy Hills are a northeast-trending set of low hills near the center of the Main Base, where elevations range from approximately 100 to 300 ft above mean sea level (MSL). Ten of the sites addressed in this report are located in the Main Base area. The remaining six sites are located at the Waterfront Area.

The waterfront area is on the southern coast of Sandy Hook Bay — an inlet on New Jersey's Atlantic coastline. This area is known as the Bayshore Lowlands. The waterfront property occupies a long strip of land perpendicular to the shore. Much of the area is swamp or tidal marsh, and there are also areas of made land (fill). The average elevation of the waterfront area is approximately 10 ft above MSL.

The Chapel Hill area is approximately 1 mile inland and is connected to the waterfront area by private road and rail line. It occupies a polygonal, somewhat circular-shaped plot of land. The Chapel Hill area falls within the Highland-Mt. Pleasant Hills area and has the most topographic

relief of the three physiographic areas of NWS Earle. The Highland-Mt. Pleasant Hills form the drainage divide between the Inner and Outer Coastal Plains. Average elevation is approximately 100 ft above MSL. The Chapel Hill area contains the topographic high point in the vicinity, at the High Point Chapel, approximately 200 ft above MSL. Site 7 landfill is located in the Chapel Hill area.

2.1.2 Climate and Air Quality

The Main Base area is characterized by a predominantly continental climate with significant seasonal and daily temperature fluctuations. High humidity occurs frequently along the coast and less frequently inland. Freezing temperatures occur intermittently from October to April. The average first frost occurs on 17 October, and the average last frost occurs on 24 April, allowing for an average growing season of 198 days. The average annual precipitation is 44.67 inches at Long Branch (a town approximately 12 miles east of NWS Earle) and 41.82 inches at Newark (a town approximately 30 miles north of NWS Earle). The annual peak daily rainfall (1-year, 24-hour) is greater than 2.5 inches. The mean annual temperatures of Long Branch and Newark are 56.2°F and 45.2°F, respectively (see Table 2-1).

Because of its location near the coastline, Monmouth County is subject to easterly storms throughout late summer and early autumn, causing high tides and flooding. Intense tropical hurricanes occasionally sweep the coast. The winter is characterized by storms that move along the eastern seaboard. The storms from the north are associated with high winds and precipitation in the form of snow, ice pellets, or rain; however, the snow is seldom prolonged and generally results in little accumulation.

Spring provides a period of contrasting weather, particularly during April. Spring and autumn bring periods of intermittent frost. Summer is warm and humid, with occasional rain showers and thunderstorms. Ground fog is a frequent weather occurrence in the summer, particularly during the early morning hours. Autumn is a season of comfortable temperatures (average temperature 50° to 60°F) and generally pleasant weather. Weather during the period of the SI

Table 2-1

Representative Meteorological Data, NWS Earle Region

Month	Temperature (°F)		
	Daily Maximum	Daily Minimum	Monthly Average
January	38	24	31
February	40	25	33
March	49	33	41
April	61	43	52
May	72	53	62
June	81	62	72
July	86	68	77
August	84	67	76
September	77	59	68
October	66	48	57
November	54	39	47
December	42	29	36

Reference: Local Climatological Data, 1989 Annual Summary with Comparative Data, NOAA, National Climatic Data Center.

was marked by mild spring months and moderate precipitation. Site groundwater levels rose significantly between the well installation at the start of the RI to the end of the SI. Winds are highly variable in the area of NWS Earle. The dominant winds are from the northwest during the winter and early spring. Onshore winds predominate during the spring and summer.

While the climate of a large area in and around NWS Earle can be described generally, the microclimates, or climates in small areas, may differ from the general climate of the area. For example, temperature, wind velocity, light, and humidity on the Main Base are quite different from the conditions at the waterfront due to the influence of the bay. Therefore, plants and animals that may not seem suited for the general climate may indeed be present but are restricted to the microclimate created by the unusual environmental conditions of a specific location.

NJDEPE maintains and operates air quality monitoring instrumentation at Freehold and Asbury Park in Monmouth County. NJDEPE also samples for particulates at Asbury Park, Brielle, Millstone Township, and Red Bank in Monmouth County. All of New Jersey is classified as a nonattainment area for ozone. Carbon monoxide (CO) concentrations in Freehold exceeded the 9-ppm, 8-hour average primary standard (National and New Jersey Ambient Air Quality Standards) twice in 1980 (10.8 and 9.4 ppm CO). Monmouth County air quality complies with all other Ambient Air Quality Standards (NJDEPE, 1980).

2.1.3 Surface Drainage

Because NWS Earle is located just a few miles inland, all rivers and streams draining NWS Earle ultimately discharge to the Atlantic Ocean.

The headwaters and portions of the drainage basins of three major Coastal Plain rivers, the Swimming, the Manasquan, and the Shark, are present on the Main Base (see Figure 2-1). The northern half of the Main Base is in the drainage basin of the Swimming River, and tributaries include Mine Brook, Hockhockson Brook, and Pine Brook. The southwestern portion of the Main Base drains to the Manasquan River via either Marsh Bog Brook or Mingamahone Brook. The southeastern corner of the Main Base drains to the Shark River. Both the Swimming River

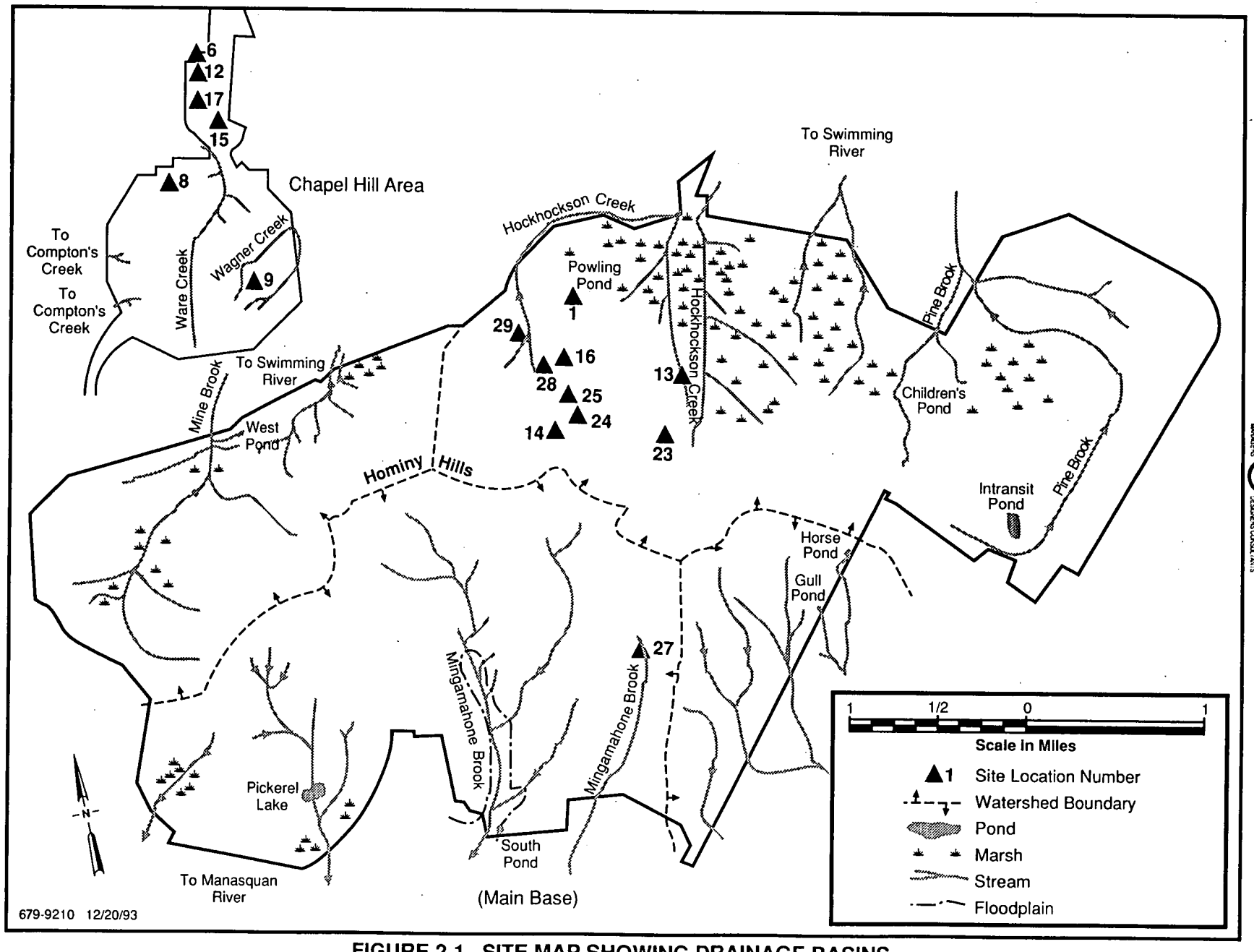


FIGURE 2-1 SITE MAP SHOWING DRAINAGE BASINS, NWS EARLE, NJ

and the Shark River supply water to reservoirs used for public water supplies. Surface water drainage from the waterfront area enters Sandy Hook Bay. Much of this area is tidally influenced.

Most of the surface drainage from the Reservation in the Chapel Hill area flows north to Sandy Hook Bay via Ware Creek (located northwest of sites 6, 12, and 17), and Wagner Creek (located east of site 9). A very small area at the topographically high southern end of the Chapel Hill area drains south through McClees Creek to the Navesink River.

2.1.4 Soils

The soils at NWS Earle are generally distributed in northeast/southwest-trending belts that parallel the outcrop patterns of the underlying geologic units. More than half of the identified soil types in Monmouth County are found on the NWS Earle facility; the dominant soil in this area is sandy and well drained.

The soils typically have high iron and sulfur contents and many are acidic. Acidic soils form as a result of the weathering of pyrite (sulfur ore) or lignite (low-grade coal) contained in the sedimentary deposits. When exposed to air and water these materials form corrosive sulfuric acid. Extremely acid soils with pH values as low as 3.5 can be developed naturally in some of the soils found at NWS Earle.

Poorly drained soils are typically organic-rich and occur in low-lying areas such as swamps, marshes, and floodplains. These poorly drained unconsolidated sediments are prone to settlement and are subject to flooding and tides.

- Atsion Series [At]: The Atsion Series consists of poorly drained soils on upland flats. These soils formed in acid, sandy Coastal Plain sediments. Slope ranges from 0 to 2%.

- Humaquepts [HV]: Humaquepts consist of somewhat poorly drained to very poorly drained soils on floodplains. These soils are subject to flooding several times each year. They formed in stratified, sandy or loamy sediments of fluvial origin. Slope ranges from 0 to 2%.

- Keyport Series [KeB]: The Keyport Series consists of moderately well-drained soils on uplands. These soils formed in acid, clayey Coastal Plain sediments. Slope ranges from 0 to 15%.

- Lakehurst Series [LaA]: The Lakehurst Series consists of moderately well-drained and somewhat poorly drained soils on uplands. These soils formed in acid, sandy Coastal Plain sediments. Slope ranges from 0 to 2%.

- Lakewood Series [LeB]: The Lakewood Series consists of excessively drained soils on uplands. These soils formed in acid, sandy Coastal Plain sediments. Slope ranges from 0 to 10%. Lakehurst soils are mottled in the subsoil.

- Udorthents [UA]: Udorthents consist of well-drained to somewhat poorly drained soils that have no horizonation. These soils formed in stratified or graded, sandy or loamy fill material that has as much as 35% gravel, by volume. Slope ranges from 0 to 3%. These soils have been altered in some way. In some areas the altering was filling over or excavating excessively drained to very poorly drained areas. They are strongly acid to extremely acid.

Soils in the Chapel Hill area include the Psamments and Tinton Series, which are generally well-drained sandy to loamy sand soils. Few streams and floodplains occur in the area. No black acid soils have been uncovered in the Chapel Hill area. The two soil associations found at Chapel Hill (waterfront area) are described in the Soil Survey of Monmouth County, New Jersey (USDA, 1990), as follows:

- Psamments [PN]: Psamments consist of excessively drained to somewhat poorly drained soils that have no horizonation. These soils formed in stratified or graded sandy fill material. Slope ranges from 0 to 2%.

These soils differ greatly from area to area. Thus, a typical pedon is not given. Typically, the soils are 20 to 60 inches deep or more to the original soil material or to waste fill. They are extremely acid or very strongly acid.

- Tinton Series [ToA]: The Tinton Series consists of well-drained soils on uplands and terraces. These soils formed in acid, loamy, Coastal Plain sediments that are 10 to 40% glauconite, by volume. Slope ranges from 0 to 25%.

2.1.5 Surficial Geology

The geologic setting at NWS Earle consists of a thick wedge of layered unconsolidated sediments that dip seaward (southeast). The sedimentary formations of the Coastal Plain are exposed at the surface in a banded outcrop pattern roughly parallel to the shore (see Figure 2-2).

These sedimentary units are composed of interbedded sands, gravel, silt, and clay. They tend to thicken downdip (in the seaward direction) because they were deposited on the edge of the ocean basin. The coarser, more permeable deposits form aquifers, while the interbedded fine sediments form confining beds that restrict the vertical flow of water.

The total thickness of the sediments over the crystalline bedrock basement is approximately 1,300 ft inland to more than 6,000 ft near the shore.

The sedimentary formations range in age from late Cretaceous to post-glacial. Rocks of intermediate age (post-Precambrian but pre-Cretaceous) were presumably removed by erosion prior to the deposition of the present strata. The depositional environment of the Coastal Plain sediments represents alternating periods of marine transgressions and regressions. Finer-textured sediments represent quiet water conditions (i.e., deeper marine, swamp, marshes, or backshore lagoons), while coarser textures represent higher energy zones (i.e., beachfront stream or deltaic deposits). The last major depositional event resulted from the Pleistocene glaciation.

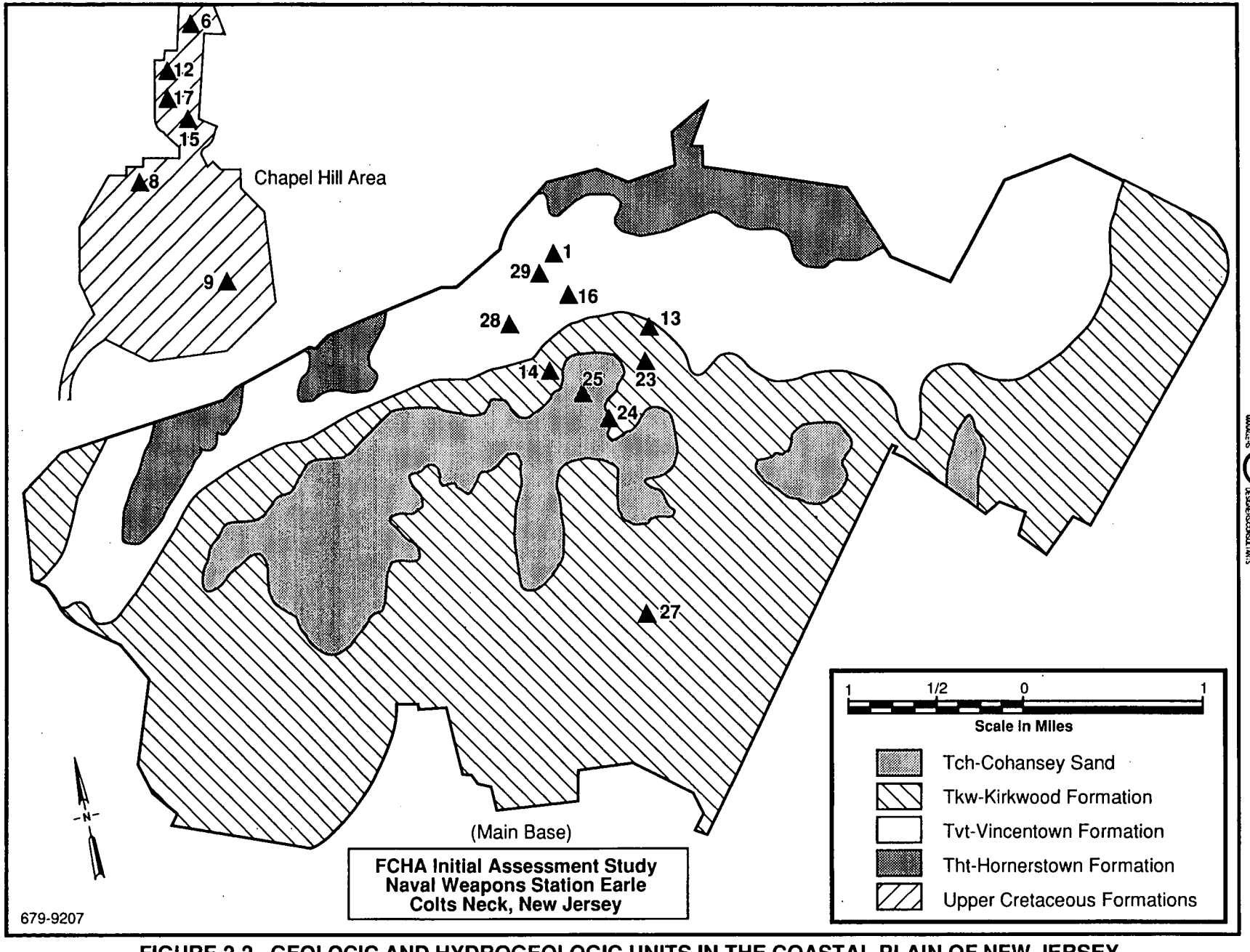


FIGURE 2-2 GEOLOGIC AND HYDROGEOLOGIC UNITS IN THE COASTAL PLAIN OF NEW JERSEY, NWS EARLE, NJ

NWS Earle falls outside the southern limit of the Wisconsin terminal moraine. Minor transgressions of the sea due to glacial melting resulted in some Pleistocene deposits at lower elevations.

The oldest formation, located at the bottom of the sedimentary sequence, is the Raritan Formation, a medium- to coarse-grained arkosic sand unit up to 400 ft thick. Despite the presence of minor interbedded kaolinitic clay layers, it is a very important regional aquifer and supplies water for many municipal wells. Due to their similarity in composition, the Raritan is commonly considered with the next-youngest unit, the Magothy Formation. The Magothy is also predominantly sand (fine-grained, micaceous, and lignitic) and up to 175 ft thick, but the sands tend to be discontinuous and the clay interbeds more common than in the Raritan Formation. The Magothy and Raritan are both Cretaceous Age formations. Combined, they are typically described in drillers' logs as a series of alternating sand and silt beds. Together, these two units form a deep, thick, and important regional aquifer.

The next five younger units, the Merchantville Formation up through the Wenonah Formation, are part of the upper Cretaceous Matawan Group. The Merchantville Formation, a 60-ft-thick, dark, micaceous, glauconitic silty clay, is often considered in combination with the overlying Woodbury Clay, also a gray to black micaceous clay 60 or more ft thick. Together, these two clays range in thickness from 120 ft inland to 250 ft near the shore. They are generally nonwater-bearing and act as a single aquitard.

The Englishtown Formation has a variable lithology that changes from a fine- to medium-grained sand inland to a clay-rich texture downdip, where it resembles the underlying Woodbury Formation and the overlying Marshalltown Formation. The Englishtown aquifer is an important source of water in Monmouth County.

The overlying Marshalltown is a relatively thin formation that consists of up to 50 ft of clayey, glauconitic quartz sand and clay.

The Wenonah Formation, at the top of the Matawan Group, is another micaceous, glauconitic sand. It tends to be fine to very fine grained and is up to 85 ft thick.

The Mount Laurel Sand is at the base of the next sedimentary sequence (the Monmouth Group), although it is sometimes grouped with the Wenonah because the two units tend to function as a single aquifer, 60 to 100 ft thick. The Mount Laurel is a very fine- to coarse-grained, glauconitic quartz sand.

The Navesink Formation is a sandy marl composed mostly of glauconite, quartz grains, and clay. It is an important source of water for home wells, yielding an average of 10 gallons per minute (gpm) or less.

The top of the Monmouth Group is represented by the Red Bank Sand, including the Tinton Sand, composed of up to 140 ft of medium to coarse micaceous sand plus partly pyritized lignite (important in groundwater geochemistry because pyritized lignite decreases the pH and EH of the water). The unit contains a lower clay member of dark, fossiliferous, micaceous, glauconitic sandy clay.

The Hornerstown Sand is the basal Tertiary formation in Monmouth County, and the oldest unit in the Rancocas Group. It is a massive, green, glauconitic sand with interbedded clay. The lithology is homogeneous, and the thickness is fairly constant downdip, with an average thickness of 30 to 50 ft. The Hornerstown Sand crops out along the northwestern boundary of the Main Base.

The Vincentown Formation is a fossiliferous quartz sand, up to 130 ft thick, that contains some coarse-grained glauconite and some clay. An upper member is a lime sand with abundant fossil fragments. The Vincentown Formation is an important source of water for low-yield home wells, with an average range of 10 to 50 gpm. The Vincentown Formation crops out at the surface at the Main Base, covering approximately 25% of the station in a band along the northern border of the facility.

The Manasquan Formation at the top of the Rancocas Group (plus the overlying Shark River Marl) is clayey, glauconitic sand that varies in thickness from a few feet at the outcrop area to more than 200 ft in the subsurface along the shore. Neither formation crops out at the Main Base but may be locally present at depth.

The Kirkwood Formation of the Miocene age is an important aquifer both regionally and locally. It crops out at the surface over two-thirds of the Main Base (the central and southern portions) and across the southern tier of Monmouth County.

The overlying Cohansey Sand is a light-colored, medium- to coarse-grained quartz sand, occasionally pebbly, with local clay beds. In combination with the Kirkwood it forms a major unconfined aquifer throughout the New Jersey Coastal Plain. It produces brackish or salty water in some coastal areas. The Cohansey Sand crops out at the Main Base, forming the topographically prominent Hominy Hills area. No wells are known to tap the Cohansey on the station. Due to its position at the top of the sedimentary sequence, the Cohansey provides recharge to the underlying aquifers, particularly the Kirkwood.

Very young Quaternary sediments consist of highly organic silt plus clay in marshy or swampy areas, beach sands along the shore, and very recent stream sands and gravels.

2.1.6 Hydrogeology

2.1.6.1 Regional Hydrogeology

The Atlantic Coastal Plain sediments are the most important source of potable water in the region. More than 75% of the fresh water supply in the New Jersey Coastal Plain is from groundwater.

The Coastal Plain province is composed of a wedge-shaped deposit of alternating layers of sand and clay that thicken to the southeast and overlie a crystalline basement. These deposits store and transmit water through interconnected pore spaces.

Recharge to the groundwater system is derived from precipitation, which averages 44 inches/year. Approximately 15 to 39 inches of this precipitation recharges the groundwater reservoir annually. In addition to precipitation in the outcrop areas, recharge is also provided by vertical leakage through confining beds and by seepage from surface water bodies.

The five principal Coastal Plain aquifers are as follows:

- Kirkwood-Cohansey aquifer system.
- Atlantic City "800-ft sand."
- Wenonah-Mount Laurel aquifer.
- Englishtown aquifer.
- Potomac-Raritan-Magothy aquifer system.

All but the Kirkwood-Cohansey are confined or semiconfined, except where they crop out or are overlain by permeable surficial deposits. NWS Earle is situated over the recharge area of many of these formations.

Water quality is generally satisfactory for drinking. Minor problems, due to locally high iron concentrations, occur in several aquifers, including the Potomac-Raritan-Magothy. Intrusion of saline water is a problem in some coastal areas with unconfined aquifers and in deep portions of some confined aquifers.

In general, in the New Jersey Coastal Plain, the deeper aquifers are used for public water supplies, while near-surface aquifers are used for shallow domestic wells.

2.1.6.2 Local Hydrogeology

Four sedimentary formations of the Coastal Plain crop out at the Main Base:

- The Hornerstown Sand.
- The Vincentown Formation.
- The Kirkwood Formation.
- The Cohansey Sand.

The lithologic properties of these units are described in Subsection 2.1.5 and their hydrologic significance is described in detail in Subsection 2.1.6.1. All these units are recharged by direct precipitation at the surface. Of particular importance are the Vincentown and Kirkwood Formations because they are used extensively for residential wells in the nearby area. None of the aquifers is used for municipal wells in the area immediate to NWS Earle. High iron content is a problem in these aquifers.

Groundwater flow across the Main Base is generally to the east/southeast. Two deep water supply wells (currently out of service) located on the Main Base tap the Raritan-Magothy aquifer system at depths of approximately 800 ft bgs. The recharge area of this aquifer system is located several miles north and west of the Main Base; therefore, water quality in these aquifers is not anticipated to be affected by activities at NWS Earle.

At the waterfront and Chapel Hill areas, surface outcrops consist of the Navesink Formation and the Mt. Laurel and Wenonah Sands. These units are used for domestic wells, but not in the vicinity of NWS Earle. Residences adjacent to the waterfront and Chapel Hill areas are supplied by municipal water systems that use both deep wells and surface reservoirs.

Groundwater flow directions are shown in the site map in Section 4. Table 2-2 lists the geologic formations underlying the study sites based on descriptions from shallow boring logs at each site.

2.1.7 Ambient Groundwater and Surface Water Quality

New Jersey classifies its surface waterways according to potential uses based on water quality. The streams and brooks found on the main section of NWS Earle are classified as FW2. The surface waterways in the Chapel Hill area are poorly defined. In the waterfront area, the tidal reaches are brackish, and the water supply is not potable. However, estuaries are highly productive areas for development of aquatic communities, and food chains in these communities are potentially sensitive to manmade contaminants.

Table 2-2

Summary of Surficial Geology at SI Sites, NWS Earle, Colts Neck, New Jersey

Site No.	Location	Stratigraphic Unit	Depth to First Saturated Zone (ft bgs*)
1	Main Base	Vincentown	6 - 20
6	Chapel Hill	Red Bank Sand	5 - 10
9	Main Base	Red Bank Sand	5 - 10
12	Chapel Hill	Red Bank Sand	NA
13	Main Base	Kirkwood	NA
15	Chapel Hill	Red Bank Sand	5 - 10
16	Main Base	Vincentown	6 - 20
17	Chapel Hill	Red Bank Sand	5 - 10
23	Main Base	Kirkwood	4 - 9
24&25	Main Base	Kirkwood/Cohansey	NA
27	Main Base	Hornerstown	NA
29	Main Base	Vincentown	NA

*bgs - below ground surface

The most important groundwater aquifers in the area of NWS Earle occur in the Englishtown, Vincentown, and Kirkwood-Cohansey Formations. Natural groundwater quality in these formations is good and is generally suitable for drinking water purposes. Local high concentrations of nitrate/nitrite occur and are generally associated with fertilizers used in agriculture and wastewater treatment effluents associated with higher population densities.

SECTION 3

SITE INVESTIGATION FIELD ACTIVITIES

3.1 FIELD INVESTIGATION OVERVIEW

The purpose of the field investigation was to obtain data to confirm or discount the presence of contamination at each site and provide additional data for the completion of a Confirmation Investigation. The scope of work that was performed at the 16 SI sites at NWS Earle is summarized below. It includes both general activities (stationwide activities or activities that were conducted at all sites) and site-specific activities. Site histories and waste disposal practices are discussed in Section 1. The field investigation methods employed during the SI study can be divided into the following categories:

- Exploratory drilling and monitor well installation.
- Hydro-Punch© sampling.
- Test pit investigation of landfill 9.
- Ambient air monitoring and headspace vapor screening of samples. (An independent OVA scan was conducted at Site 6 to address the findings of a previous screening conducted by EPA.)
- Well elevation survey.
- Soil and surficial waste sampling.
- Groundwater sampling.
- Surface water and sediment sampling in streams adjacent to sites.

On-site sampling was performed at 13 of the 16 sites; available information only was used to evaluate the remaining three sites (8, 14, and 29). Site-specific requirements for subsurface soil samples that were collected and analyzed are presented in Subsection 3.1.6. Site-specific requirements for surface water and sediment samples that were collected and analyzed are presented in Subsection 3.1.7.

All sampling and analytical work was performed according to the Quality Assurance Project Plan (QAPP) (June 1990) and to the satisfaction of EPA auditors. Sample collection, handling, preservation, numbering, custody documentation, and quality control protocol are discussed in detail in the QAPP. All target compound laboratory work was conducted and reported according to EPA contract laboratory program (CLP) protocols; full quality control protocol and reporting were also provided for the explosive compounds that are not under CLP protocol. All data were validated by an independent reviewer.

3.1.1 Monitor Well Installation and Exploratory Drilling

A total of 11 new permanent monitoring wells were installed (at Sites 1, 6, and 17) as part of the SI in May 1992. The monitor wells were installed following NJDEPE monitor well construction and grouting specifications for unconsolidated formations, as outlined in the QAPP. This monitor well design conforms with NJAC 7:9-7, 8, and 9. The drilling and well construction methods used are described in the following subsections (boring logs and well construction diagrams are provided in Appendix B). A summary of the monitoring well completion data is provided in Table 3-1.

The location identifier for drilling activities is comprised of three parts: a site key, a function key, and an alphanumeric tag.

The site key consists of one or two characters that denote location. One or two numbers denote a site number, while the characters "BG" denote a non-site background location.

The function key consists of two letters denoting the primary purpose of the drilling activity:

- "MW" denotes a borehole drilled to install a groundwater monitoring well.
- "HP" denotes a borehole drilled for Hydro-Punch© groundwater sampling.
- "SB" denotes a soil boring drilled for soil sampling and lithologic description only.

Table 3-1
Summary of Monitor Well Completion
Site Investigation Stage
NWS Earle, Colts Neck, NJ

Monitor Well	Date Completed	NJDEPE Permit #	Well Total Depth (Ft)	Casing Diameter (In)	Screen Interval From	Screen Interval To	Static WL at Development	Comments	Survey Information Northing	Survey Information Easting	Survey Information El. TOC	Survey Information El. GS
MW1-1	4/29/92	29-27901	16.00	4.00	3	16	6.47	Bentonite to GS w/concrete form	525529.82	2143136.38	94.76	93.01
MW1-2	4/29/92	29-27902	16.00	4.00	3	16	5.05	Bentonite to GS w/concrete form	525382.38	2142963.35	93.57	91.81
MW1-3	4/28/92	29-27903	16.00	4.00	3	16	9.43	Bentonite to GS w/concrete form	525194.31	2143081.89	94.78	91.94
MW6-1	5/04/92	29-27893	20.00	4.00	5	20	6.47	----------	176257.591	186452.903	18.99	17.71
MW6-2	5/06/92	29-27894	16.00	4.00	4	16	8.67	----------	176291.515	186350.031	13.87	12.19
MW6-3	5/06/92	29-27896	22.00	4.00	12	22	9.67	----------	176334.230	185386.816	14.82	12.61
MW6-4	5/05/92	29-27895	18.00	4.00	3	18	9.66	Concrete form	176354.681	186448.124	15.77	14.01
MW17-1	5/13/92	29-27900	19.00	4.00	9	19	11.62	----------	176068.642	186279.599	19.80	17.95
MW17-2	5/11/92	29-27897	16.00	4.00	11	16	4.93	Flush casing construction	176049.993	186236.096	12.77	12.77
MW17-3	5/12/92	29-27898	16.00	4.00	11	16	7.73	----------	176098.779	185244.124	15.31	13.08
MW17-4	5/12/92	29-27899	15.80	4.00	3.8	15.8	6.51	----------	176136.602	186223.463	16.19	14.08

The alphanumeric tag after the site and function keys completes the unique location identifier for the location of each drilling activity. It consists of two numbers and an optional letter suffix. The suffix is only used to differentiate groundwater monitoring well locations within a well cluster.

The following general procedures were followed during all drilling and well installations:

- Continuous split spoon samples were taken for lithologic description at both soil and Hydro-Punch© boreholes.
- All soil and Hydro-Punch© borings not completed as wells were abandoned by tremie grouting to the surface with a cement/bentonite slurry.
- On the basis of soil vapor readings, and odor and visual observation, no drill cuttings were identified as potentially hazardous. Cuttings were spread on the ground around the wells in accordance with the QAPP.
- All drilling, sampling, and other related equipment was decontaminated as detailed in the QAPP.
- Development water and purge water from the first sampling round of the new wells were containerized pending analysis. The analysis showed no significant contamination; the water will be discharged to the ground pending approval from the agencies.

All drilling was conducted according to standard hollow-stem auger drilling techniques. The wells were designed to monitor the shallow water table aquifer and were installed by placing 4-inch-diameter threaded PVC casing, and 15-ft-length, 0.020-inch slot well screen (conditions permitting) into the borehole so that the screen intercepted the groundwater table. The well screen was generally placed so that approximately 5 ft of screen was above the groundwater table. In some instances, screen length was shortened or adjusted based on hydrogeologic conditions encountered during drilling.

Typical well construction began with the annulus around the well screen filled with Morie No. 1 sand, or equivalent, to a point 2 ft above the top of the screen. The sand pack was then overlain with 2 ft of bentonite pellets. The remainder of the annulus was filled to grade with a 6:1 cement:bentonite grout slurry using tremie methods. Wells were constructed through hollow-

stem augers and the augers were withdrawn as the backfilling proceeded. The top of each monitor well was completed with a locking steel security casing. This casing was then immobilized with a mounded concrete seal to protect the well and to divert stormwater runoff from around the well casing. The typical well construction used in shallow water conditions where the water table was less than 5 ft below ground surface (bgs) is described in detail in the April 1992 Work Plan.

The protective casing was set partially into the bentonite seal and then anchored into an 18-inch-high steel form that was filled with a cement and bentonite grout. The annulus inside the protective casing was filled with a pure bentonite seal to the height of the form, effectively isolating any movement of the PVC or protective steel casing. Once completed, monitor wells were developed using a submersible pump. During the purge process the groundwater was monitored for temperature, pH, and conductivity. All purged water from development was containerized in 55-gallon drums. Well development was deemed complete based on three criteria: clearing of turbidity, stabilization of consecutive groundwater monitoring parameters, and 1 hour of pumping time. A summary of development data, as logged, is presented in Table 3-2. All water used during drilling was potable; water was obtained from the fire hydrant across from Building C-23 along Esperance Road. The results from the groundwater monitoring sampling are presented in Section 4.

Soil borings were performed at Sites 15, 16, and 17. Borings below 2 ft bgs were completed using hollow-stem drilling augers and split spoon sampling. Split spoon samples were taken continuously from ground surface to the first water encountered. Representative soil samples were collected above the water table for chemical analyses presented in Table 3-3. The results of the soil boring sampling are presented in Section 4.

Hydro-Punch© sampling was conducted at Sites 15 and 23. The Hydro-Punch© sampler provided a rapid means of collecting representative groundwater samples without the installation, development, and materials cost of a monitoring well. Before using the Hydro-Punch© sampler, a hollow-stem auger was advanced to the top of the water table. A standard 2-inch split spoon sampler was then driven to determine the subsurface stratigraphy and verify the presence of water

Table 3-2
Field Tested Water Quality Parameters for Monitor Well Development
Site Investigation
N.W.S. Earle
Colts Neck, NJ

Monitor Well I.D. No.	Date	Purge Time	Depth To Water	Temperature C.	pH	Specific Conductance mmh0s/m	Odor	Turbidity	Color	Calculated Well Volume (gallon)	Estimated Water Volume Purged (gallon)	Comments
MW1-1	27/5/92	1500	6.47	16.7	6.9	30	N	Slight	LtYellow	7.30		1st purge volume
	27/5/92	1510		16.5	5.9	40	N	Slight	LtYellow			2nd purge volume
	27/5/92	1520	8.00	16.3	5.8	30	N	Slight	LtYellow		150.0	Total including 3rd purge volume
MW1-2	27/5/92	1356	5.05	21.8	7.8	50	N	Slight	Cloudy	8.16		Prepurge
	27/5/92	1357		21.8	7.8	50	N	Slight	Cloudy			1st purge volume
	27/5/92	1509		21.7	6.3	50	N	Slight	Cloudy			2nd purge volume
	27/5/92	1520	5.20	21.5	6.4	40	N	Slight	Cloudy		166.0	Total including 3rd purge volume
MW1-3	27/5/92	1243p	9.43	18.0	7.3	460	N	Slight	Cloudy	4.63		Prepurge
	27/5/92	1330		18.0	7.3	460	N	Slight	Cloudy			1st purge volume
	27/5/92	1332		18.0	6.0	450	N	Slight	Cloudy			2nd purge volume
	27/5/92	1335	7.25	18.0	5.0	440	N	Slight	Cloudy		78.0	Total including 3rd purge volume
MW6-1	28/5/92	1325	11.67	29.4	7.0	20	N	High	Dk. Brown	5.60		Prepurge
	28/5/92	1430		29.4	7.0	20	N	High	Same			1st purge volume
	28/5/92	1435		29.6	7.2	20	N	High	Same			2nd purge volume
	28/5/92	1440	19.85	29.5	7.1	40	N	High	Same		55.0	Total including 3rd purge volume
MW6-2	28/5/92	1730	8.67	13.60	9.0	10	N	Slight	Lt. Yellow	5.50		Prepurge
	28/5/92	1830		13.60	9.0	10	N	Slight	Same			1st purge volume
	28/5/92	1835		12.80	9.0	20	N	Slight	Same			2nd purge volume
	28/5/92	1840	11.20	12.7	9.0	10	N	Slight	Same		55.0	Total including 3rd purge volume

Table 3-2
Field Tested Water Quality Parameters for Monitor Well Development
Site Investigation
N.W.S. Earle
Colts Neck, NJ

Monitor Well I.D. No.	Date	Purge Time	Depth To Water	Temperature C	pH	Specific Conductance mmhOs/m	Odor	Turbidity	Color	Calculated Well Volume (gallon)	Estimated Water Volume Purged (gallon)	Comments
MW6-3	28/5/92	1545	9.67	15.5	8.6	50	N	Slight	Cloudy	9.40		Prepurge
	28/5/92	1715		15.5	8.6	50	N	Slight	Cloudy			1st purge volume
	28/5/92	1720		15.3	8.3	50	N	Slight	Cloudy			2nd purge volume
	28/5/92	1725	10.34	15.2	8.2	50	N	Slight	Cloudy		110.0	Total including 3rd purge volume
MW6-4	28/5/92	1535	9.66	18.8	8.9	10	N	High	Brown			Prepurge
	28/5/92	1645		18.8	8.9	10	N	High	Same			1st purge volume
	28/5/92	1650		18.8	8.9	20	N	High	Same			2nd purge volume
	28/5/92	1655	16.25	18.7	8.7	30	N	High	Same		110.0	Total including 3rd purge volume
MW17-1	28/5/92	1450	11.62	18.5	8.3	200	N	None	Cloudy	5.70		Prepurge
	28/5/92	1455		18.5	8.3	200	N	None	Cloudy			1st purge volume
	28/5/92	1500		18.4	7.2	200	N	None	Cloudy			2nd purge volume
	28/5/92	1505		18.5	6.7	200	N	None	Cloudy		55.0	Total including 3rd purge volume
MW17-2	28/5/92	755a	4.93	21.2	8.2	300	N	High	Grayish Brown	5.80		Prepurge
	28/5/92	1030		21.2	8.2	300	N	High	Same			1st purge volume
	28/5/92	1035		21.2	7.7	270	N	High	Same			2nd purge volume
	28/5/92	1040		21.2	7.2	300	N	High	Same		55.0	Total including 3rd purge volume
MW17-3	28/5/92	1150	7.73	23.6	8.7	400	N	Slight	Cloudy	6.30		Prepurge
	28/5/92	1250		23.6	8.7	400	N	Slight	Cloudy			1st purge volume
	28/5/92	1255		23.6	9.2	340	N	Slight	Cloudy			2nd purge volume
	28/5/92	1300	9.71	23.5	9.2	310	N	Slight	Cloudy		55.0	Total including 3rd purge volume
MW17-4	28/5/92	815a	6.51	28.7	8.1	100	N	High	Redish Brown	6.80		Prepurge
	28/5/92	1050		28.7	8.1	100	N	High	Same			1st purge volume
	28/5/92	1054		29.0	6.4	100	N	High	Same			2nd purge volume
	28/5/92	1058	13.40	29.0	5.6	100	N	High	Same		110.0	Total including 3rd purge volume

NOTE: a – Static water level
b – pH meter not functioning

Table 3-3

Summary of Analytical Requirements for Subsurface Soils, NWS Earle, Colts Neck, New Jersey

Site Number	Site Name	Number of Soil Samples	Depth Interval (ft)	Soil Analytes
1	Ordnance Demilitarization Site (ODS), secured	8 4 8 4	0 - 0.5 0 - 0.5 0.5 - 1.5 0.5 - 1.5	Explosives[a], TPH TAL metals Explosives[a], TPH TAL metals
6	Landfill west of Normandy Road	4	-	TCL full scan, TAL metals + Cn
8[b]	Landfill east of S-186	-	-	-
9	Landfill southeast of "P" Barricades	6 Test pits	Fill material	TCL full scan, TAL metals + Cn, TPH
13	Defense Property Disposal Office Yard (DPDO Yard)	6	0 - 3	SVOCs, PCBs, TAL metals + Cn, TPH
15	Bilge Water Disposal Site near Waterfront South Gate	2 (RR siding)	To water table	SVOCs
16	Fuel Line Connecting Buildings C-19 and C-50	6	From pipe depth to water table[c]	SVOCs, TPH
17	Disposal Site Behind Training Barge, Waterfront	8	Fill Material Base of Fill	TAL metals + Cn
23	Paint Chip Disposal Area (near Building D-5)	2 6	0 - 3 0 - 3	TCL full scan, Pb, Zn, Cu, Cr, Cd
24/25	Closed Pistol Range	4 per site	In berm, 1 - 4	Pb, Zn, Cu, Cr, Cd

Table 3-3

Summary of Analytical Requirements for Subsurface Soils, NWS Earle, Colts Neck, New Jersey (Continued)

Site Number	Site Name	Number of Soil Samples	Depth Interval (ft)	Soil Analytes
27	Projectiles Refurbishing Area	5 5	0 -0.5 0.5 - 1.5	TCL full scan, TAL metals + Cn,
29	PCB Spill Site	5	0.5 - 1.5	PCB, TPH

[a]Explosives compounds include nitrate/nitrite; picric acid; nitrocellulose; nitroglycerin; 2,4,6-trinitrotoluene; 2,4-dinitrotoluene; 2,6-dinitrotoluene; tetryl; 1,3,5-trinitrobenzene; 1,3-dinitrobenzene; HMX; and RDX.

[b]Site 8 has been addressed separately from the SI. Soil samples of impacted soils were taken during an earlier stage investigation and analyzed for full scan TCL organics, TAL metals, arsenic, and TPH.

Note: QC samples (matrix spikes and duplicates) were taken at a rate of 10% minimum per sampling event. Field blanks were taken daily for each event.

in the sampled zone.

Hydro-Punch© sampling at Sites 15 and 23 was performed using the Hydro-Carbon method. This method was chosen due to the volume of groundwater needed for the analytical parameters. The Hydro-Carbon method employs a 5-ft PVC screen attached to the leading steel point of the Hydro-Punch© sampling device. The Hydro-Punch© was driven 4 to 5 ft into the first water zone. The Hydro-Punch© was then retracted by pulling the drill rods up, at least 4 ft but no more than 5 ft, the length of the screen. This opened the screen to the surrounding groundwater. A three-quarter-inch Teflon bailer was then lowered down inside of the rods into the screened zone. Groundwater was then extracted for the sample parameters, VOC, metals, and TPH. Prior to sampling, the Teflon bailer was decontaminated using the standard methods for sampling equipment, outlined in the FINAL QAPP, revised May 1992. After sampling, the rods and the Hydro-Punch© sampler were extracted from the borehole, dedicating the steel tip and PVC screen to the ground. The borehole was then grouted using conventional methods. The groundwater results from the Hydro-Punch© sampling are presented in Section 4.

3.1.2 Test Pit Waste Characterization

A test pit investigation was conducted at Site 9 (Landfill southeast of "P" Barricades). The objective of this task was to obtain a physical description of landfill cover and waste material and to obtain samples for chemical analyses. A backhoe was used to excavate five test pits at the landfill to a maximum depth of 10 ft bgs. Cover material was stockpiled separately from underlying waste. The test pits allowed visual observations of subsurface conditions. The test pits were described and logged in the field notebook for color descriptions, texture, moisture, depth to water, and odor or staining, if present.

All samples were taken from the backhoe bucket. Samples were collected at Site 9 for full TCL and TAL analyses. These grab samples were taken at specified horizons considered to be representative of potentially impacted soils that were in contact with the waste and leachate, where observed. Upon completion, excavated materials were sequentially backfilled into the test

pit and compacted with the backhoe bucket. The backhoe bucket was steam cleaned before excavation of the first pit, between sampling locations, and following completion of the last pit.

Sample handling, documentation, analytical, and QA/QC procedures were consistent with procedures for soil and water sampling specified in the QAPP. Test pit logs are presented in Appendix A.

3.1.3 Ambient Air Monitoring and Sample Headspace Screening

WESTON monitored on-site air quality during intrusive activities such as drilling and excavation of test pits at Site 9. Select soil and sediment samples were also screened in the field, using an HNu photoionization meter, by drawing air samples from the headspace in the sample containers. These readings provided noncompound-specific readings of VOCs and other compounds. The specific monitoring protocols are contained in the QAPP and HASP.

3.1.4 Elevation Survey

Upon completion, all monitor wells were surveyed for elevation and horizontal control by a surveyor, licensed in the state of New Jersey. The surveyor established all well locations, and ground surface and top-of-casing elevations. Table 3-1 contains this survey information along with the NJDEPE permit numbers issued for each monitoring well. The survey information provided a "baseline" control used to establish relative piezometric (water level) surface data. Water levels were measured at Sites 1, 6, and 17 to the nearest 0.01 ft at each monitoring well at a fixed (static) surveyed reference point. Water levels were monitored during two rounds; on 27 May and 18 June 1992. These data, summarized in Table 3-4, were used to establish groundwater elevations and construct groundwater contour maps. The contour maps for Sites 1, 6, and 17 are presented in Section 4.

TABLE 3-4

SUMMARY OF GROUNDWATER ELEVATION DATA
SITE INVESTIGATION
N.W.S EARLE, COLTS NECK, NJ

WELL NUMBER	ELEVATION T.O.C.	ELEVATION G.S.	SCREENED INTERVAL FROM	SCREENED INTERVAL TO	DEPTH TO WATER 5/27/92	DEPTH TO WATER 6/18/92	GW ELEV. 5/27/92	GW ELEV. 6/18/92
MW 1-1	94.76	93.01	3.0	16.0	6.47	6.61	88.29	88.15
MW 1-2	93.57	91.81	3.0	16.0	5.05	5.08	88.52	88.49
MW 1-3	94.78	91.94	3.0	16.0	9.43	6.71	85.35	88.07
MW 6-1	18.99	17.71	5.0	20.0	11.61	12.50	7.38	6.49
MW 6-2	13.87	12.19	4.0	16.0	8.67	8.69	5.20	5.18
MW 6-3	14.82	12.61	12.0	22.0	9.67	9.63	5.15	5.19
MW 6-4	15.77	14.01	3.0	18.0	9.66	10.50	6.11	5.27
MW 17-1	19.80	17.95	9.0	19.0	11.61	11.73	8.19	8.07
MW 17-2	12.77	13.26	11.0	16.0	4.93	4.92	7.84	7.85
MW 17-3	15.31	13.08	11.0	16.0	7.73	7.94	7.58	7.37
MW 17-4	16.19	14.08	3.8	15.8	6.51	9.71	9.68	6.48

Note: (*) Elevations Surveyed (6/92)

3.1.5 Groundwater Sampling

Groundwater sampling was conducted during the SI in June 1992. All 11 new monitor wells were included in the sampling rounds. As specified in Table 3-5, the samples were analyzed for the full target list of organic compounds (TCL) and target analyte list of inorganics (TAL). Site 1, associated with explosives destruction, was also sampled for analysis of explosive compounds. Prior to sampling, all wells were purged of at least three well volumes using a submersible stainless steel pump with dedicated polypropylene tubing. Field tested water quality parameters (including temperature, pH, and specific conductance) were monitored and recorded at the beginning and after each well volume purged. These data are presented in Table 3-6. When readings were consistent (temperature within 1°C, pH within .05, and specific conductance within 10%) the well was sampled.

Samples were collected using a Teflon bailer which was decontaminated using the procedures outlined in the QAPP. All samples were collected in laboratory prepared sample bottles and placed in a cooler on ice. Sample containers that contained preservative were checked for proper pH. Samples were taken to WESTON Analytics Laboratory daily, using the proper chain-of-custody protocol outlined in the QAPP.

3.1.6 Surface Soil Sampling

Surface soil samples were collected at Sites 1, 13, 23, 24, 25, 27, and 29. Samples were obtained at depths of between 0 and 4 ft using a stainless steel trowel or hand auger. A summary of the sampling sites, analytes, and respective sampling depths is presented in Table 3-3. Samples at Sites 1, 27, and 29 were collected using a stainless steel trowel; samples at sites 13, 23, 24, and 25 were sampled using a stainless steel hand auger. Upon retrieval, soil samples were placed in a stainless steel bowl, VOA samples were taken, and the soil sample was homogenized to a uniform consistency. The remaining sample jars for additional required analytes (i.e., BNA and inorganics explosives) were then filled using the stainless steel trowel. Surface soil sampling conformed with the methods outlined in the QAPP and was performed to the satisfaction of the EPA field auditors.

Table 3-5

Summary of Analytical Requirements for Groundwater Samples, NWS Earle, Colts Neck, New Jersey

Site Number	Site Name	Number of Wells Sampled	Initial Round of Analytes
1	Ordnance Demilitarization Site (ODS), secured	MW01,MW02, MW03	TCL organics TAL metals Explosives[a]
6	Landfill west of Normandy Road	MW01,MW02, MW03,MW04	TCL organics TAL metals
15	Bilge Water Disposal Site near Waterfront South Gate	Hydro-Punch©	TCL full scan TAL metals
17	Disposal Site Behind Training Barge, Waterfront	MW01,MW02 MW03,MW04	TCL organics TAL metals
23	Paint Chip Disposal Area (near Building F-5)	Hydro-Punch©	TCL full scan TAL metals

[a]Explosives compounds include nitrate/nitrite; picric acid; nitrocellulose; nitroglycerin; 2,4,6-trinitrotoluene; 2,4-dinitrotoluene; tetryl; 1,3,5-trinitrobenzene; 1,3-dinitrobenzene; HMX; and RDX.
Note: QC samples (matrix spikes and duplicates) were taken at a rate of 10% minimum per sampling event. Field blanks were taken daily for each event.

Table 3-6
Field Tested Water Quality Parameters for Monitor Well Sampling
Site Investigation
N.W.S. Earle
Colts Neck, NJ

Monitor Well I.D. No.	Date	Purge Time	Depth To Water	Temperature C	pH	Specific Conductance mmhOs/m	Odor	Turbidity	Color	Calculated Well Volume (gallon)	Estimated Water Volume Purged (gallon)	Comments
MW1-001	6/18/92	0925	6.61	14.5	6.7	35	N	Clear	Clear	7.41		Prepurge
	6/18/92	0930		15.0	6.7	40	N	Clear	Clear			1st purge volume
	6/18/92	0935		15.0	6.9	45	N	Clear	Clear			2nd purge volume
	6/18/92	0940		15.0	6.7	45	N	Clear	Clear		@22(total)	3rd purge volume
MW1-002	6/16/92	0920	5.08	16.0	6.8	50	N	Slight	Cloudy	8.00		Prepurge
	6/16/92	0928		14.0	6.8	40	N	Clear	Clear			1st purge volume
	6/16/92	0931		15.0	6.8	40	N	Clear	Clear			2nd purge volume
	6/16/92	0937		14.0	6.8	40	N	Clear	Clear		@24(total)	3rd purge volume.
MW1-003	6/18/92	1035	6.71	14.0	6.9	30	N	Clear	Clear	7.50		1st purge volume
	6/18/92	1040		14.0	6.8	40	N	Slight	Cloudy			2nd purge volume
	6/18/92	1045		14.0	7.0	40	N	Slight	Cloudy		@23(total)	3rd purge volume
MW6-001	6/18/92											
	6/18/92	0950	12.50	17.0	7.0	320	N	High	Brown	5.26		Prepurge
	6/18/92	0953		15.0	6.9	320	N	Slight	Lt. Brown			1st purge volume
	6/18/92	0957		15.0	6.9	330	N	Slight	Lt. Brown			2nd purge volume
	6/18/92	1000		14.5	6.9	350	N	Slight	Lt. Brown		@16(total)	3rd purge volume
MW6-002	6/18/92											
	6/18/92	1021	8.69	15.0	8.1	120	N	Slight	Pale Yellow	5.46		Prepurge
	6/18/92	1024		15.0	8.2	120	N	Slight	Pale Yellow			1st purge volume
	6/18/92	1027		15.0	8.0	125	N	Clear	Pale Yellow			2nd purge volume
	6/18/92	1030		15.0	8.0	120	N	Clear	Pale Yellow		@16(total)	3rd purge volume
MW6-003	6/18/92	1208	9.63	16.0	7.1	400	N	Slight	Cloudy	6.20		Prepurge
	6/18/92	1212		15.0	7.7	250	N	Clear	Clear			1st purge volume
	6/18/92	1216		15.0	7.3	255	N	Clear	Clear			2nd purge volume
	6/18/92	1220		15.0	7.3	255	N	Clear	Clear		19(total)	3rd purge volume

Table 3-6
Field Tested Water Quality Parameters for Monitor Well Sampling
Site Investigation
N.W.S. Earle
Colts Neck, NJ

Monitor Well I.D. No.	Date	Purge Time	Depth To Water	Temperature C	pH	Specific Conductance mmhOs/m	Odor	Turbidity	Color	Calculated Well Volume (gallon)	Estimated Water Volume Purged (gallon)	Comments
MW6-004												
	6/18/92	1047	10.5	15.5	6.9	180	N	Slight	Cloudy	6.20		Prepurge
	6/18/92	1050		15.0	7.3	180	N	Slight	Cloudy			1st purge volume
	6/18/92	1053		14.0	7.5	190	N	Slight	Cloudy			2nd purge volume
	6/18/92	1057		14.0	7.6	190	N	Slight	Cloudy			3rd purge volume
MW17-001												
	6/18/92	1109	11.73	17.0	9.0	190	N	Slight	Cloudy	6.30		Prepurge
	6/18/92	1113		15.5	8.5	195	N	Slight	Cloudy			1st purge volume
	6/18/92	1116		14.5	8.4	225	N	Clear	Clear			2nd purge volume
	6/18/92	1120		14.5	8.4	225	N	Clear	Clear		19(total)	3rd purge volume
MW17-002												
	6/18/92	1205	4.92	15.0	6.4	140	N	High	Brown	6.20		Prepurge
	6/18/92	1209		15.0	6.4	140	N	High	Brown			1st purge volume
	6/18/92	1213		15.0	6.2	135	N	High	Brown			2nd purge volume
	6/18/92	1217									19(total)	3rd purge volume wer
MW17-003												
	6/18/92	1208	7.94	16.0	7.1	400	N	Slight	Cloudy	6.20		Prepurge
	6/18/92	1212		15.0	7.1	250	N	Clear	Clear			1st purge volume
	6/18/92	1216		15.0	7.3	255	N	Clear	Clear			2nd purge volume
	6/18/92	1220		15.0	7.3	255	N	Clear	Clear		19(total)	3rd purge volume
MW17-004												
	6/18/92	1400	9.71	15	6.3	130	N	Clear	Clear	4.00		Prepurge
	6/18/92	1404		15	6.3	130	N	Clear	Clear			1st purge volume
	6/18/92	1408		15	6.3	130	N	Slight	Cloudy			2nd purge volume
	6/18/92	1412		15	6.3	135	N	Clear	Cloudy		15(total)	3rd purge volume

3.1.7 Surface Water and Sediment Sampling

Surface water and sediment samples were collected from the creeks located adjacent to Sites 12 and 13 for the analytes presented in Table 3-7 to identify possible off-site migration of contaminants. Sites 6 and 17 were also identified as potential surface water sampling sites; however, due to the absence of surface water at these sites, only sediment samples were obtained. Since the creeks at Sites 12 and 13 were shallow and small in width, a single grab sample (representative of the overall water quality) was collected. Only sediment sampling was planned for drainageways at Sites 15, 23, and 27.

Surface waters were collected in the following manner; standing downstream of the sample location, the sampler fully immersed the appropriate sample container such that the container was filled. The bottle was then capped, wiped dry, and labeled. Surface water samples collected for VOC analysis were completely submerged, immediately capped, and checked for air bubbles.

Sediments were collected from the drainageways and stream beds for those analytes presented in Table 3-7. Samples were collected using a stainless steel trowel and bowl. Sediment sampling was conducted consistent with those methods used for surface soil sampling found in the QAPP.

3.1.8 Sampling QA/QC Requirements

Field QA/QC samples were collected and analyzed as part of all field sampling activities. The field QA/QC samples were approximately 10% of the total number of field samples and included trip blanks, field equipment blanks, and field duplicates.

The distribution of field QA/QC samples is detailed in the QAPP, as are field QA/QC procedures (e.g., decontamination and sample handling).

Exact number of QC samples required varied from the proposed scope based on actual schedule and shipping conditions.

Table 3-7

Summary of Analytical Requirements for Sediment and Surface Water, NWS Earle, Colts Neck, New Jersey

Site Number	Site Name	Sediment		Surface Water	
		Number of Samples	Analytes	Number of Samples	Analytes
6	Landfill west of Normandy Road	4 4	TCL organics TAL metals	No water in drainage	
12	Battery Acid Spill Site	1 at storm drain outfall	TAL metals +Cn TCL full scan	1	TAL metals, VOAs
13	Defense Property Disposal Office Yard (DPDO Yard)	2 2	SVOCs PCBs	3 along drainage	SVOCs, PCBs, TAL metals
15	Bilge Water Disposal Site near Waterfront South Gate	4 (in drainageway)	SVOCs	0	NA
17	Disposal Site Behind Training Barge, Waterfront	4 1	TCL organics TAL metals	No water in drainage	
23	Paint Chip Disposal Area (near Building D-5)	2 2 6	TCL organics TAL metals Pb, Zn, Cu, Cr	0	NA
27	Projectiles Refurbishing Area	2 2 6	TCL organics TAL metals Pb, Zn, Cu, Cr	0	NA

Note: QC samples (matrix spikes and duplicates) were taken at a rate of 10% minimum per sampling event. Field blanks were taken daily for each event

3.1.9 Data Analysis

The raw data have been reduced to produce data tables, groundwater level maps, and isoconcentration maps for soil and groundwater chemical data. Data are presented on a site-specific basis in Section 4 of this report. A summary of the sample identification by site and matrix is presented in Table 3-8. This table has been included to allow the reader to cross reference sample identification shown in the figures and analytical tables. A detailed explanation of this numbering system is presented in the QAPP, May 1992, Subsection 1.6.2.

3.2 FIELD INVESTIGATION BY SITE

The following subsections discuss the implementation of the SI at each of the 11 sites. A brief discussion of the Phase II findings is presented for each site. Phase II analytical results are summarized in Appendix C.

3.2.1 Site 1: Ordnance Demilitarization Site, Secured

Based on interviews conducted during the IAS and SI, it was determined that at least 90% of the material burned during the lifetime of this site was smokeless powder, which is essentially nitrocellulose. Black powder (which is 75% potassium (or sodium) nitrate, 15% charcoal, and 10% sulfur) may have been used to aid in igniting the smokeless powder. No records or other hard data describing the operations of this ordnance disposal range are available.

The disposal and burning of ordnance materials and subsequent demilitarization procedures are the source of potential contaminants. These contaminants include explosive compounds and petroleum hydrocarbons which were the focus of the SI activities at Site 1. The SI activities at Site 1 included the following elements:

- Soil Boring/Monitoring Well Installation
- Soil Sampling
- Groundwater Sampling

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Table 3-8

Sample Identifiers by Site and Matrix

Site	Groundwater Sample Identifier	Hydro-Punch© Sample Identifiers	Soil Sample Identifiers	Surface Water Sediment Identifiers
Site - 1 (MW-01) (MW-02) (MW-03)	01-001-M001 01-002-M001 01-003-M001 01-003-M101	NA	01-001-S001 01-002-S001 01-003-S001 01-004-S001 01-005-S001 01-006-S001 01-007-S001 01-008-S001 01-009-S001 01-009-S101 01-010-S001 01-011-S001 01-012-S001 01-013-S001 01-014-S001 01-015-S001 01-016-S001	NA
Site - 6 (MW-01) (MW-02) (MW-03) (MW-04)	06-001-M001 06-002-M001 06-003-M001 06-004-M001	NA	06-002-B014 06-002-B114 06-003-B010	06-001-D001 06-002-D001 06-003-D001 06-004-D001 06-004-D101
Site - 8	NA	NA	08-T001-001 08-T002-001 08-T003-001 08-T004-001 08-T004-101 08-T005-001 08-T006-001	NA
Site - 9	NA	NA	09-001-T007 09-002-T010 09-003-T009 09-004-T001 09-005-T001 09-006-T008	NA
Site - 12	NA	NA	NA	12-002-D001 12-002-W001

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Table 3-8

Sample Identifiers by Site and Matrix (Continued)

Site	Groundwater Sample Identifier	Hydro-Punch© Sample Identifiers	Soil Sample Identifiers	Surface Water Sediment Identifiers
Site - 13	NA	NA	13-001-B001 13-002-B001 13-002-B101 13-003-B001 13-004-B001 13-005-B001 13-006-B101	13-001-D001 13-002-D001 13-002-D001 13-001-W001 13-002-W001 13-003-W001
Site - 15	NA	15-001-K011	15-001-B008 15-002-B007	15-001-D001 15-002-D001 15-003-D001 15-004-D001
Site - 16	NA	NA	16-001-B007 16-002-B007 16-003-B010 16-003-B110 16-004-B008 16-005-B008	NA
Site - 17 (MW-01) (MW-02) (MW-03) (MW-04)	 17-001-M001 17-002-M001 17-003-M001 17-003-M101 17-004-M001	NA	17-002-B006 17-002-B012 17-003-B005 17-003-B008 17-005-B008 17-005-B010 17-006-B006 17-006-B008 17-007-B004 17-007-B010	17-001-D001 17-002-D001 17-003-D001 17-004-D101 17-001-W001 17-002-W001
Site - 23	NA	23-001-K029	23-001-S001 23-002-S001 23-003-S001 23-004-S001 23-005-S001 23-006-S001 23-007-S001 23-008-S001	23-001-D001 23-002-D001 23-003-D001 23-004-D001 23-005-D001 23-006-D001 23-007-D001 23-008-D001
Site - 24	NA	NA	24-001-B001 24-002-B001 24-002-B101 24-003-B001 24-004-B001	NA

Table 3-8

Sample Identifiers by Site and Matrix (Continued)

Site	Groundwater Sample Identifier	Hydro-Punch© Sample Identifiers	Soil Sample Identifiers	Surface Water Sediment Identifiers
Site - 25	NA	NA	25-001-B001 25-002-B001 25-003-B001 25-004-B001	NA
Site - 27	NA	NA	27-001-S001 27-001-S002 27-002-S001 27-002-S002 27-003-S001 27-003-S002 27-004-S001 27-004-S002 27-005-S001 27-005-S002	27-001-D001 27-002-D001 27-003-D001 27-004-D001 27-005-D001 27-006-D001 27-007-D001 27-008-D001
Site - 29	NA	NA	29-001-S001 29-002-S001 29-003-S001 29-004-S001 29-005-S001	NA

B - represents soil boring sample
D - represents sediment sample
S - represents shallow soil sample
T - represents groundwater sample
W - represents water sample

3.2.1.1 Soil Borings/Sampling and Monitoring Well Installation

Prior to the commencement of field work at Site 1, a grid system was established over the apparent burn area to establish surface control and facilitate soil boring and subsequent soil sampling locations. The grid measured approximately 200 ft east by 300 ft north. An existing telephone pole located approximately 67 ft east of the southwest corner was used as a permanent point of reference. Three monitoring wells were installed on the perimeter of the grid area circumscribing the burn area to confirm that no contaminants were migrating off-site. The three new monitor wells (MW1-01, MW1-02, and MW1-03) were installed to depths of approximately 16 ft to monitor the uppermost water-bearing zone. Each well was constructed consistent with the well construction specifications presented in Subsection 3.1.1. Well locations are shown in Figure 3-1. Lithologic logs and well construction summaries are presented in Appendix B.

3.2.1.2 Surface Soil Sampling — Site 1

Sixteen subsurface soil samples were collected at Site 1 at two discrete depth intervals; 0 to 0.5 and 0.5 to 1.5 ft. The sample locations are shown in Figure 3-1. The sample identifiers are summarized in Table 3-8.

3.2.1.3 Groundwater Sampling — Site 1

Groundwater samples from all three monitor wells at Site 1 were collected and analyzed for TCL organics, TAL inorganics, and explosive compounds. Groundwater pH, specific conductance, and temperature were determined in the field.

3.2.2 Site 6: Landfill West of Normandy Road

The IAS provided limited information concerning the landfill. Information provided includes the type of materials and approximate volumes disposed of at the site. The landfill's location was defined on plan view, but the coordinates given appear to contradict current knowledge of the

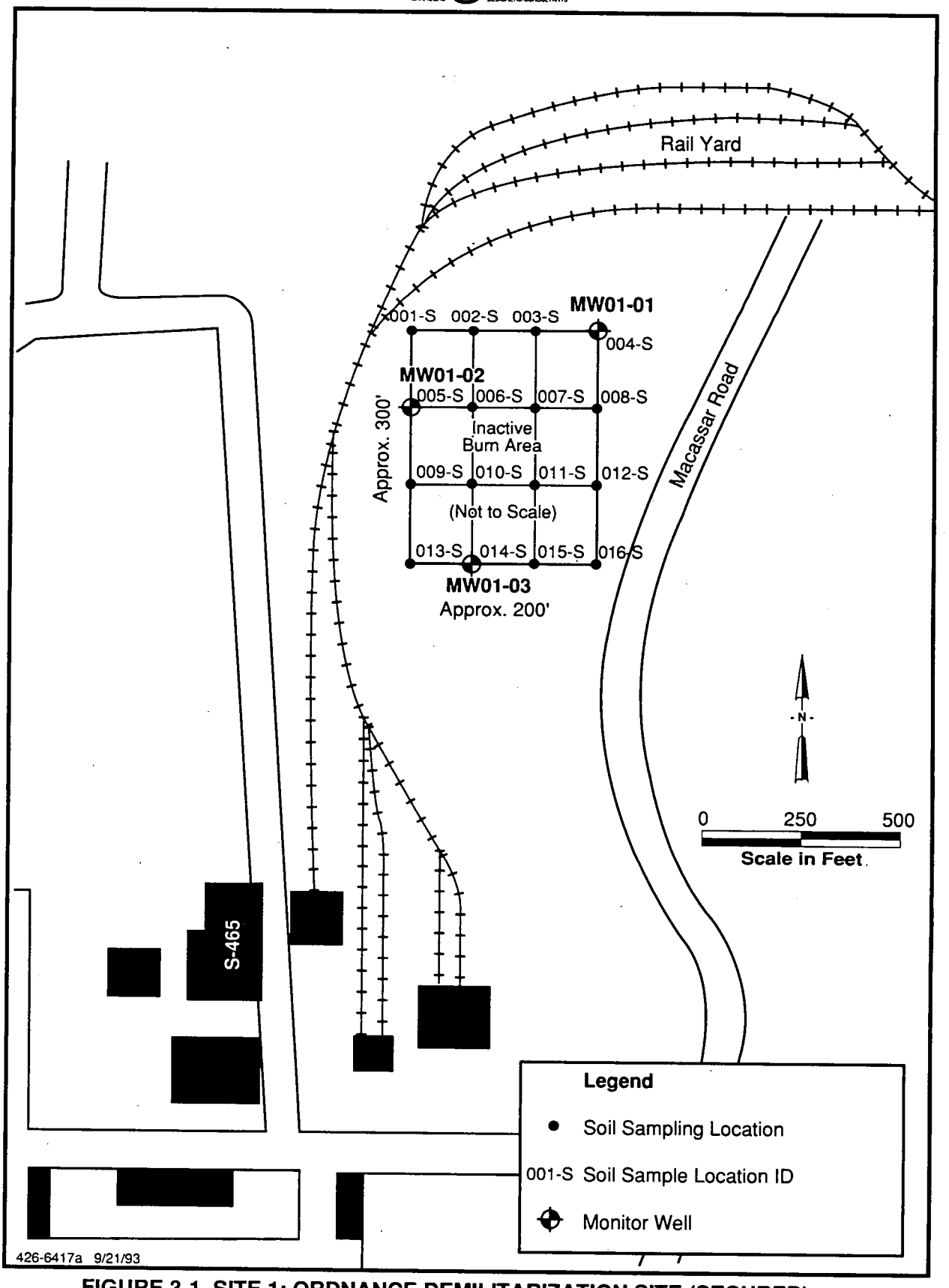


FIGURE 3-1 SITE 1: ORDNANCE DEMILITARIZATION SITE (SECURED), MONITOR WELL AND SAMPLING LOCATIONS, NWS EARLE, NJ

site. The report concluded that the bulk of wastes disposed of at the site was inert. However, due to the varied nature of materials disposed of within the landfill and the lack of detailed documentation of disposal operations, specific contaminants could not be identified. The SI activities at Site 6 included the following elements:

- Soil Boring/Monitoring Well Installation
- Surface Soil Sampling
- Groundwater Sampling

3.2.2.1 Soil Borings/Sampling and Monitoring Well Installation

Four soil borings were drilled and sampled at Site 6 and each was completed as a monitor well. The four monitor wells (MW6-01, MW6-02, MW6-03, and MW6-04) were positioned to surround the suspected source area of the landfill in the vicinity of Buildings R-23 and R-15. MW6-01 was positioned hydraulically upgradient from the site. MW6-04 was located laterally, to the north of the landfill. Both MW6-02 and MW6-03 are located hydraulically downgradient from the landfill. Soils from each boring were analyzed for TCL full scan and TAL metals, including cyanide. Each well was constructed consistent with the well construction specifications presented in Subsection 3.1.1. Well locations are shown in Figure 3-2. Lithologic logs and well construction summaries are presented in Appendix B.

3.2.2.2 Surface Soil Sampling — Site 6

Subsurface soil samples were collected at Site 6 at two discrete depth intervals; 0 to 0.5 and 0.5 to 1.5 ft. The sample locations are shown in Figure 3-2. The sample identifiers are summarized in Table 3-8.

3.2.2.3 Groundwater Sampling — Site 6

Groundwater samples from all four monitoring wells at Site 6 were collected and analyzed for TCL organics, TAL inorganics, and explosive compounds. Groundwater pH and specific conductance and temperature were determined in the field.

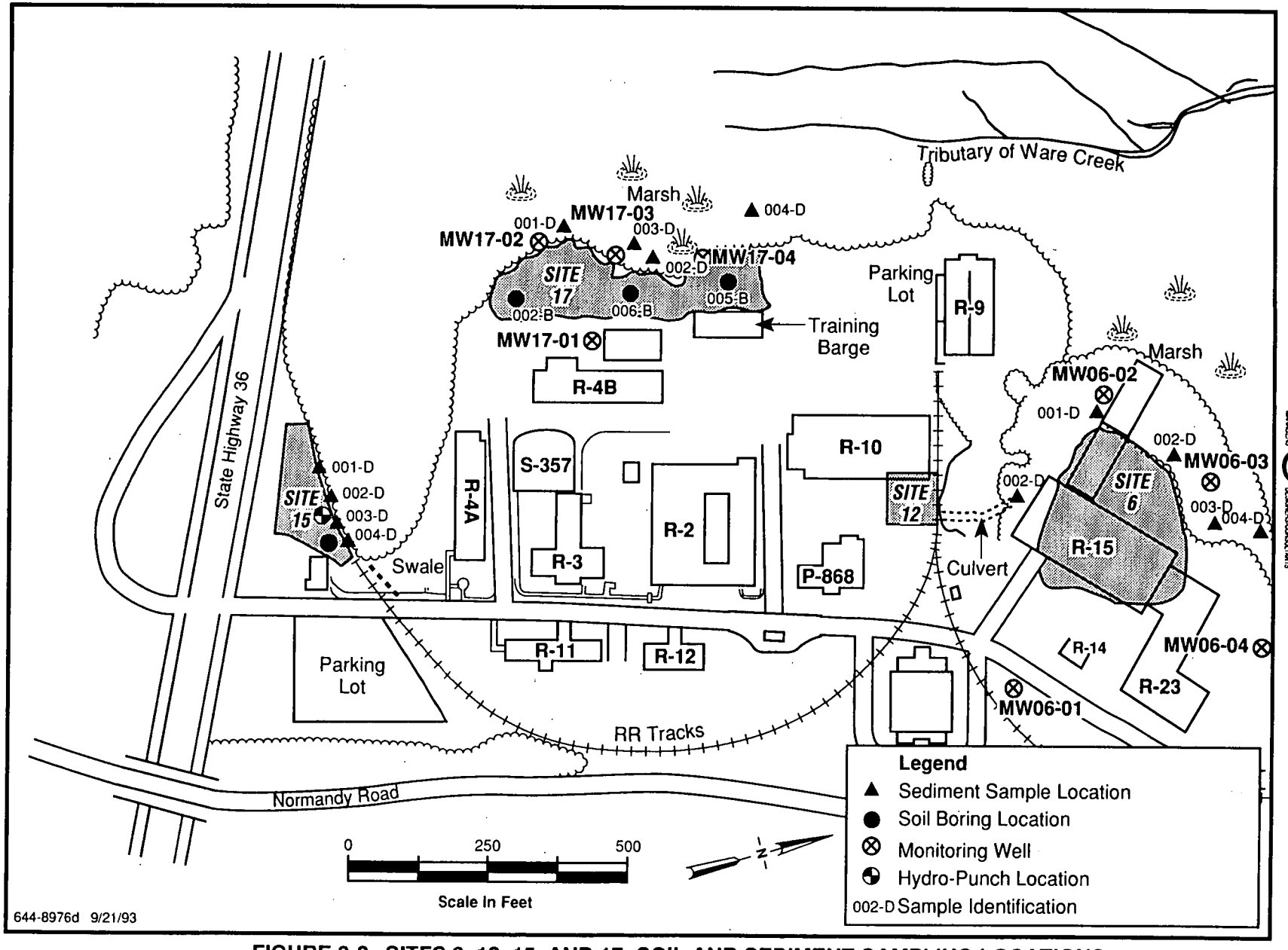


FIGURE 3-2 SITES 6, 12, 15, AND 17: SOIL AND SEDIMENT SAMPLING LOCATIONS, NWS EARLE, NJ

3.2.3 Site 8: Landfill East of Building S-186

An aerial photo interpretation of Site 8 characteristics is presented in Figure 3-3. As discussed in Subsection 1.5.3, Site 8 was investigated independently in August 1991, under a separate work plan which was approved by EPA Region II and NJDEPE in July 1991. No further investigation is planned for Site 8.

3.2.4 Site 9: Landfill Southeast of "P" Barricade

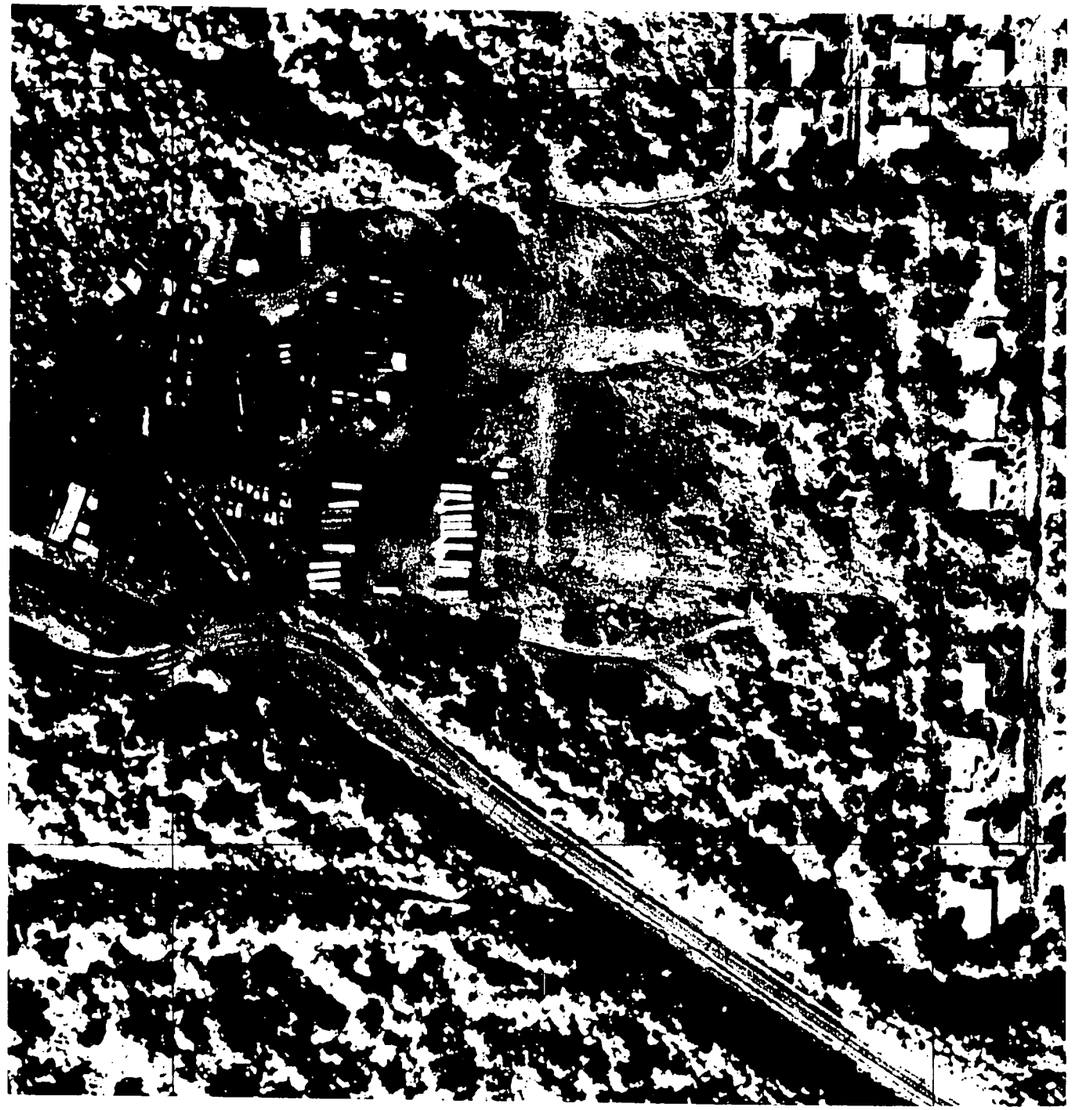
Site 9 was reportedly used for the disposal of dunnage lumber; it has not been established whether the lumber was treated or untreated. It is possible that pentachlorophenol and arsenic contaminants derived from treated wood may be present. Burning of lumber at the site was also reported. The use of an ignition source, such as oils, suggests the possible presence of residual petroleum hydrocarbons.

3.2.4.1 Test Pit Investigation

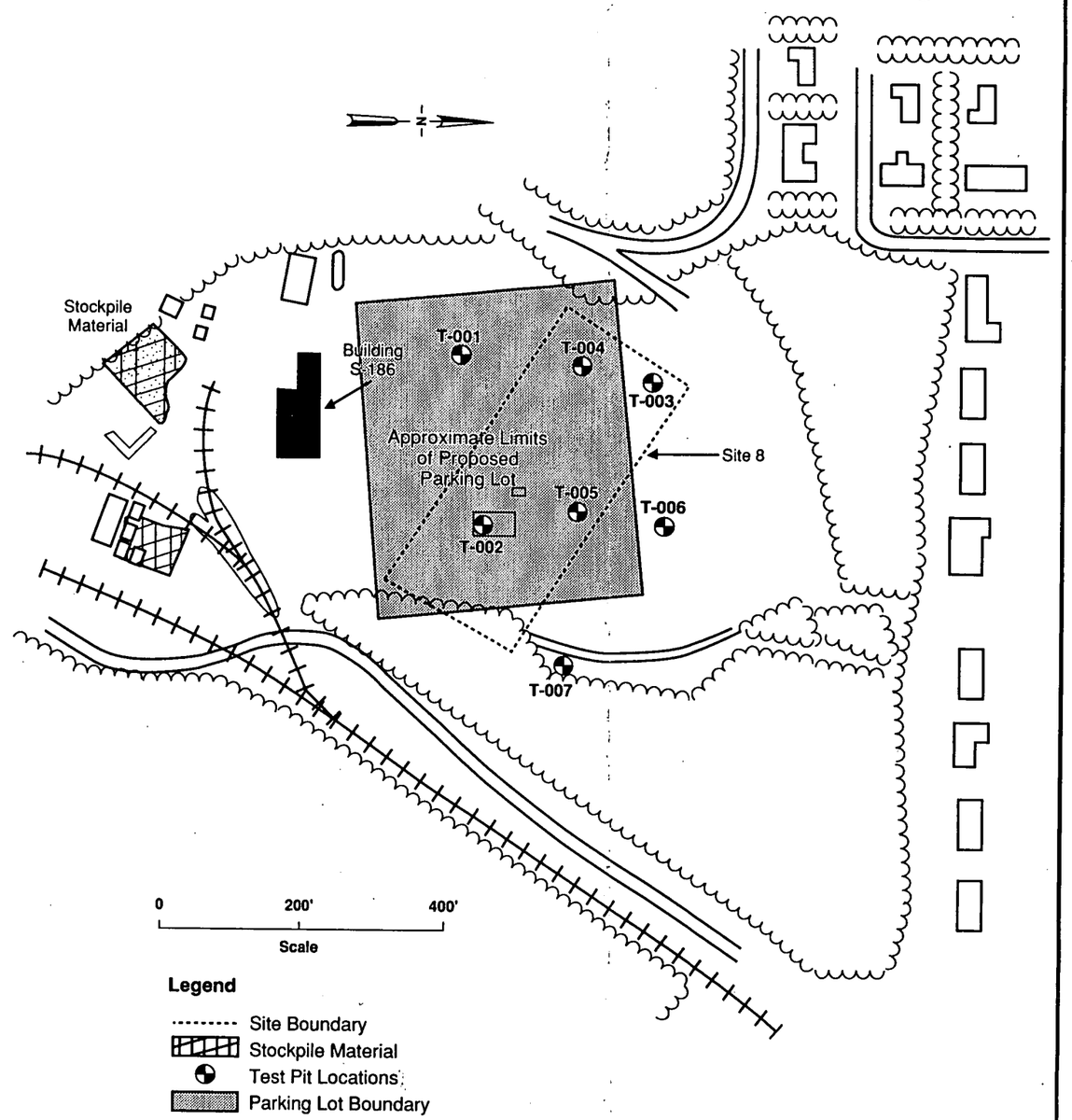
Prior to the commencement of the test pit investigation at Site 9, representatives of Northern Division, NWS Earle Environmental Division and WESTON conducted a site reconnaissance along with a review of the historical aerial photographs. The historical records of the landfill failed to provide an exact location of the site. However, after walking the site, evaluating apparent soil disturbance, and considering the approximate age of the reforestation as well as reviewing several aerial photographs that were taken sequentially during the landfill's period of operation, the area was identified (see Figure 3-4).

3.2.4.2 Soil Sampling

Six test pits were excavated 15 May 1992 at Site 9 for the purposes of defining the general limits of the landfill and obtaining soil samples for chemical analysis. A backhoe was used to excavate test pits at Site 9. The locations of the six test pits are shown in Figure 3-4. The following



1977 aerial photograph showing Site 8 - Dunnage Disposal Landfill northeast of building S-186. Weathering effects and re-establishing vegetation evident in previously disturbed areas.



M402-6110

FIGURE 3-3 SITE 8: LANDFILL EAST OF BUILDING S-186 TEST PIT AND SAMPLING LOCATIONS, NWS EARLE, NJ

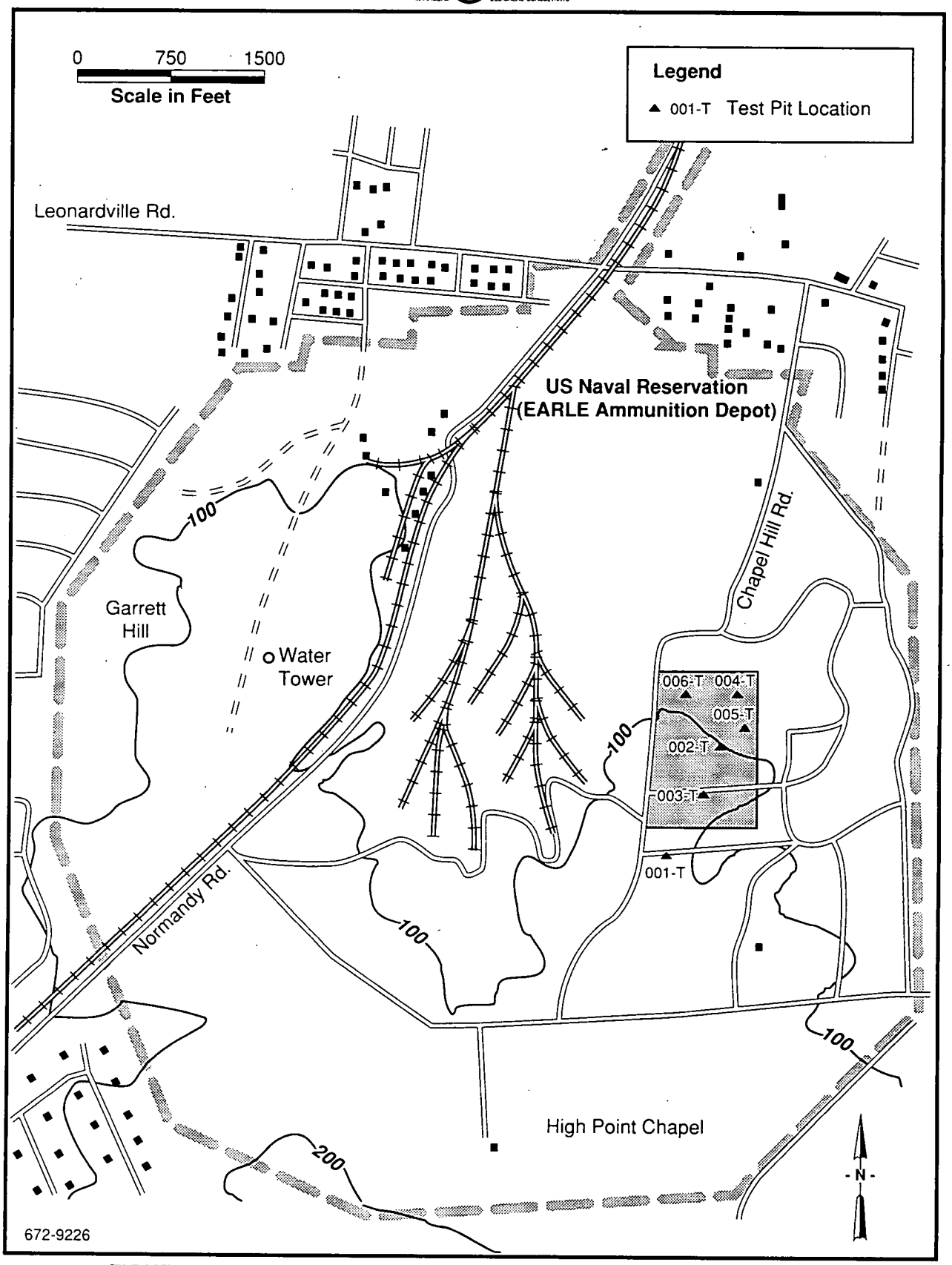


FIGURE 3-4 SITE 9: LANDFILL SOUTHEAST OF "P" BARRICADES TEST PIT AND SAMPLING LOCATIONS, NWS EARLE, NJ

descriptions were obtained from the test pit logs presented in Appendix B.

The first test pit, TP9-1, was excavated upslope from the landfill to establish a background. TP9-1 was excavated to a depth of 7 ft and, in addition to the above analytical samples, matrix spike/matrix spike duplicate (MS/MSD) samples were collected for laboratory QA/QC.

TP9-2 was excavated in the center of the landfill to a depth of 10 ft. The only evidence of disposed material was pieces of cement and trace brick fragments.

The third test pit, TP9-3, was located near the upslope southern margin of the landfill. No disposed materials were encountered there. A naturally occurring formation of iron veins, "Bog Iron," with associated iron staining on the surrounding soils, was exposed at a depth from 6 to 8 ft, indicative of undisturbed soils. TP9-3 was excavated to a depth of 9 ft.

TP9-4 and TP9-5 were excavated on the northeast downslope corner and the east edge of the landfill, respectively. The east edge of the landfill terminates in an abrupt slope, clearly delineating the fill boundary. The ground surface around both test pit locations had exposed waste materials: metal scrap and timber. TP9-4 and TP9-5 were excavated to depths of 9.5 ft and 8 ft, respectively. Neither test pit encountered the groundwater table.

The final test pit, TP9-6, was located within the landfill near the west margin and was excavated to a depth of 10.5 ft. One 4- by 4-inch piece of timber, the only disposed material encountered during the excavation, was exposed within the first 2 ft excavated.

Fill material from the test pits was sampled and analyzed for TCL full scan, TAL metals including cyanide, and TPH. Where no fill was encountered, samples were taken from immediately above the soil/water interface or, in the event that no water was encountered, from the base of the test pit.

The backhoe bucket was decontaminated with high-pressure steam prior to each test pit. All analytical samples were taken from the backhoe bucket. Care was taken during sampling to avoid soils impacted by direct contact with the backhoe bucket.

3.2.5 Site 12: Battery Storage and Handling Area, Waterfront Area

Contaminants associated with battery acid include acid electrolytes and lead. The IAS reasoned that any acidic liquids contaminating the site would be neutralized by the buffering capacity of the sea water in the marsh.

3.2.5.1 Sediment and Surface Water Sampling

It was proposed in the Work Plan that two sediment samples, one in the concrete storm drain basin and one at the storm drain outfall, be collected at Site 12. However, absence of sediment in the concrete storm drain precluded the collection of a sediment sample at this location. Therefore, one sediment sample (12-002-D001) and one surface water sample (12-002-W001) were collected in the drainage at Site 12 at the storm water outfall. The sample location is shown in Figure 3-2. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.7. The sediment sample was analyzed for TCL full scan, TAL metals, and cyanide. The surface water sample was analyzed for TAL metals and TCL VOAs. The analytical results are presented in Section 4.

3.2.6 Site 13: Defense Property Disposal Office Storage Yard

The NJDEPE RCRA site inspection writeup recommended no further action be taken. However, based on further discussions with the agencies, the Navy agreed to collect soil, sediment, and surface water samples at this site.

3.2.6.1 Soil Sampling

A total of six soil samples (13-001-B001 through 13-006-B001) were collected from 0 to 3 ft bgs and were analyzed for semivolatile compounds (SVOCs), PCBs, TAL metals, and cyanide.

3.2.6.2 Sediment and Surface Water Sampling

Three sediment samples (13-001-D001 through 13-003-D001) and three surface water samples (13-001-W001 through 13-003-W001) were collected in the drainageway (see Figure 3-5) and were analyzed for those compounds presented in Table 3-7.

3.2.7 Site 14: Defense Property Disposal Office Warehouse

Since the spill (of very limited quantity) occurred inside the building and was cleaned up, no further action was identified for this site.

3.2.8 Site 15: Sludge Disposal Site Near Waterfront South Gate

The contaminants associated with the oily bilge water are petroleum hydrocarbons.

3.2.8.1 Soil Borings/Sampling

Two soil borings (BH15-1 and BH15-2) were completed at Site 15. The relative locations of the two borings within the site as well as their relationship to a Hydro-Punch© boring also completed there are shown in Figure 3-2. The two borings, BH15-1 and BH15-2, were to be completed to the water table and reached total depths of 12 ft and 8 ft, respectively. Soil boring BH15-1 was completed above a clay layer. Soils at BH15-1 were sampled immediately above the clay. BH15-2 was sampled immediately above the water table. Both samples were analyzed for SVOCs.

Upon completion, each boring was grouted to the surface using the standard protocol presented in the QAPP and was marked with a labeled stake.

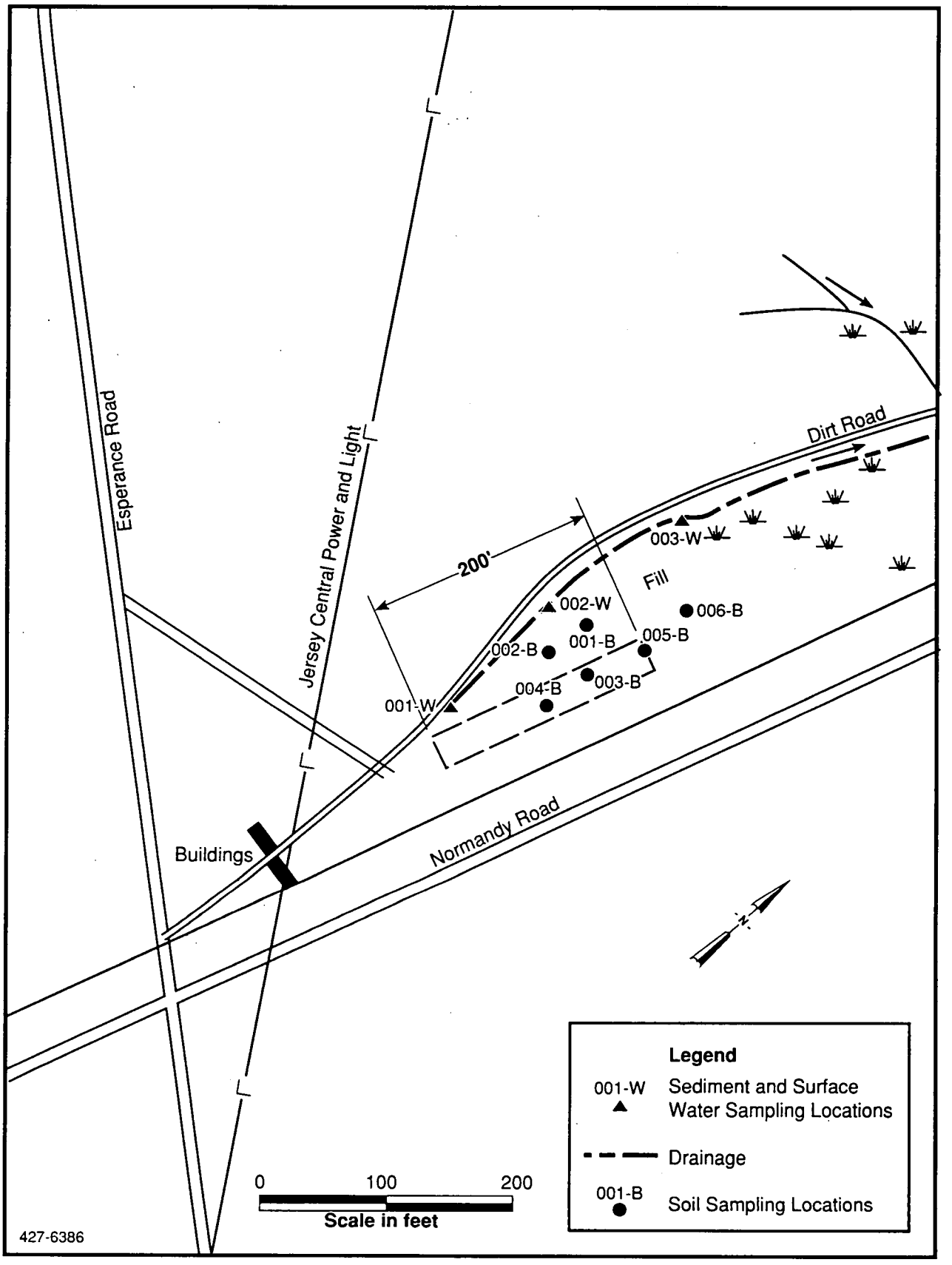


FIGURE 3-5 SITE 13: DEFENSE PROPERTY DISPOSAL OFFICE YARD, SAMPLING LOCATIONS, NWS EARLE, NJ

3.2.8.2 Hydro-Punch© Sampling

One Hydro-Punch© (HP15-1) was collected at Site 15 consistent with the methods presented in Section 3.1.1, for the purpose of sampling in situ groundwater. The location of the Hydro-Punch© boring on the site is presented in Figure 3-2. The groundwater sample was analyzed for those compounds presented in Table 3-5.

Following the sampling, the boring was grouted to ground surface using the standard protocol presented in the QAPP.

3.2.9 Site 16: Fuel Line Connecting Buildings C-19 and C-50

3.2.9.1 Soil Borings/Sampling

Six soil borings were proposed at Site 16 in the SI Work Plan, 3 April 1992, to establish the areal distribution of diesel fuel believed to have leaked from an underground fuel line transporting fuel from a storage tank adjacent to Building C-20 to a dispensing station (pump) located behind Building C-19 or C-20.

A site reconnaissance was performed to identify known utilities and to establish cleared drilling locations. The general area of the underground fuel line was identified by Navy personnel from Public Works. WESTON personnel identified a subsurface anomaly in the area using Ground Penetrating Radar to further delineate the underground fuel line. Accurate locations of several other utilities could not be established. Specifically, the location of a secondary fuel line and a storm sewer line, believed to cross each other in the southern portion of the area of concern, were never established. Subsequently, one soil boring could not be completed at the southern end of the site as proposed, thereby reducing the total number of borings to five. Two of the borings along the eastern side of the primary fuel line were relocated further to the east to an area where buried pipes were not a concern. Figure 3-6 presents the locations of the five borings as well as the suspected locations of the pipes.

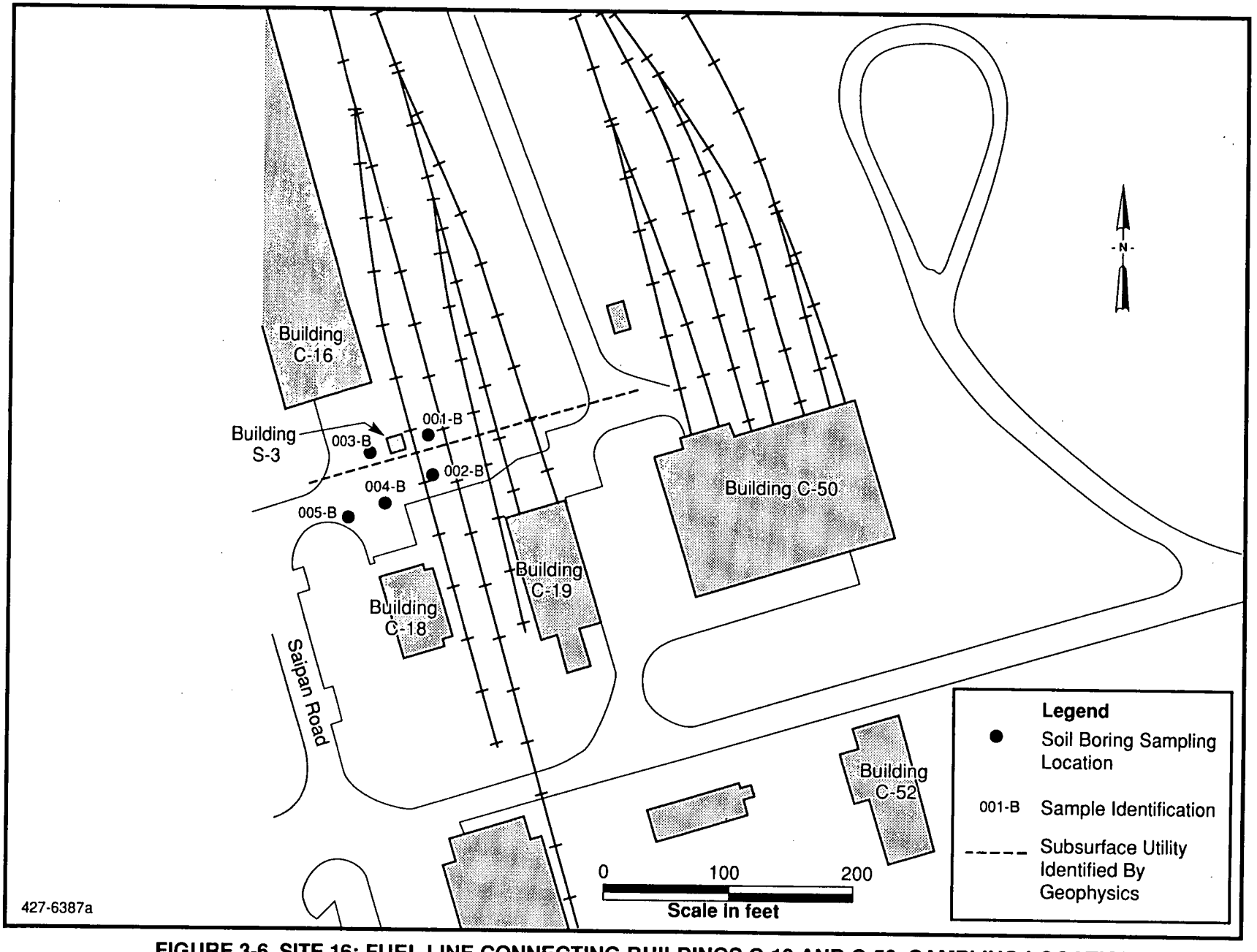


FIGURE 3-6 SITE 16: FUEL LINE CONNECTING BUILDINGS C-19 AND C-50, SAMPLING LOCATION, NWS EARLE, NJ

All five soil borings were completed to the water table. Five soil samples, one from each boring, taken from a depth below the pipe and above the water table, were analyzed for TPH and SVOCs.

3.2.10 Site 17: Disposal Area Behind Training Barge, Waterfront Area

Due to the lack of documentation and the wide variety of materials thought to be disposed of at the site, the exact contaminants cannot be determined.

The SI activities conducted at Site 17 included the following elements:

- Soil Boring/Monitoring Well Installation
- Sediment Sampling
- Groundwater Sampling

3.2.10.1 Soil Borings/Monitoring Well Installation

Four soil borings were proposed in the SI Work Plan, 3 April 1992, within the landfill perimeters for the purpose of further documentation of the landfill's hydrology and collection of impacted soils for chemical analyses. Due to the limited available space in which to operate the drill rig is a result of the Site being used for long-term vehicle parking, one of the four borings could not be completed. The locations of these borings are indicated in Figure 3-2. The three borings BH17-5, BH17-6 and BH17-7 were completed to the water table.

To compensate for the reduced number of borings completed on the site, soil samples were taken from the three soil borings as well as two of the pilot borings for the monitor well constructions. At MW17-03 samples were collected at depths of 5 ft and 8 ft. Monitor well MW17-4 had a soil sample taken at a depth of 11 ft. Soil boring BH17-5 had samples taken at depths of 8 ft and 10 ft. BH17-6 had two samples taken at depths of 6 ft and 8 ft. Soil boring BH17-7 had one sample at a depth of 10 ft. Each sampled interval was analyzed for TAL metals and cyanide.

Four monitor wells (MW17-01, MW17-02, MW17-03, and MW17-04) were drilled at site 17. The four wells were installed on the perimeter of the landfill to confirm potential contaminants migrating off-site. The new monitor wells were installed to depths of approximately 16 to 20 ft to monitor the uppermost water-bearing zone. Each well was constructed consistent with the well construction specifications presented in Subsection 3.1.1. Well locations are shown in Figure 3-2. Lithologic logs and well construction summaries are presented in Appendix B.

All four monitor wells constructed at Site 17 employed modifications to the idealized well construction summarized in the SI Work Plan, 3 April 1992, to better monitor hydrologic conditions unique to each well location on the site. These modifications consisted of adjusting the total screen lengths relative to the interbedded clay layers encountered in some of the borings.

Well MW17-1 was constructed with 10 ft of 4-inch-diameter PVC screen from 9 ft to 19 ft bgs in sediments characterized as silty sand and poorly graded sands. This interval was selected to monitor the uppermost water-bearing zone immediately underlying the fill material. A layer of silty clay was encountered from 2.5 ft to 7 ft bgs. Both MW17-2 and MW17-3 were constructed consistent with MW17-1. However, an underlying clay layer was encountered at approximately 16 ft bgs, and the screen length was reduced to 5 ft.

Fill material consisting of concrete, metal sheeting, rebar, and burnt lumber was encountered from 4 to 10 ft bgs in MW17-4. Saturated conditions were encountered at approximately 9 ft bgs and an underlying clay unit at 16 ft. MW17-4 was screened from 3.8 ft to 15.8 ft bgs to bracket the water table.

3.2.10.2 Sediment Sampling — Site 17

Dry conditions precluded the collection of proposed surface water samples. Four sediment samples (17-001-D001 through 17-004-D001) were collected within the marsh at the toe of the fill face west of Site 17. The sample locations are shown in Figure 3-2. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.7. All four samples

were analyzed for TCL full scan. One sample was analyzed for TAL metals. The analytical results are presented in Section 4.

3.2.10.3 Groundwater Sampling — Site 17

Groundwater samples were collected from all four monitoring wells at Site 17 analyzed for TCL organics, and TAL metals. Groundwater pH, specific conductance and temperature were determined in the field.

3.2.11 Site 23: Paint Chip Disposal Area Adjacent to Building D-5

According to the IAS, materials used in the reworking process included zinc chromate primer, "Witegard" (corrosive alkaline material), and paint thinner. Although most of these materials were hauled off-site by a private contractor, all of these materials may be present within the paint spill. Contaminants resulting from these materials include the following:

- Metals (Pb, Zn, Cu, Cr) derived from the paints.
- Volatiles — paint thinner.
- Naphthenates — paint dryer.
- Toluene — paint thinner.
- Xylenes — paint thinner/paint remover.
- Methylene chloride — paint thinner.

The SI activities conducted at Site 23 included the following elements:

- Soil Sampling.
- Sediment Sampling.
- Groundwater/Hydro-Punch© Sampling.

3.2.11.1 Soil Sampling

Soil samples were collected between the interval 0 and 3 ft bgs at six locations (23-001-B001 through 23-006-B001) around Building D-5 at Site 23. The sample locations are shown in Figure 3-7. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.6. Two samples were analyzed for TCL full scan. Six samples were analyzed for lead, zinc, copper, and chromium. The analytical results are presented in Section 4.

3.2.11.2 Sediment Sampling

Eight sediment samples (23-001-D001 through 23-008-D001) were collected along the drainage surrounding Site 23. The sample locations are shown in Figure 3-7. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.7. Two of the eight samples were analyzed for TCL full scan and TAL metals. The remaining samples were analyzed for lead, zinc, copper, and chromium. The analytical results are presented in Section 4.

3.2.11.3 Hydro-Punch©/Groundwater Sampling

One Hydro-Punch© groundwater sample (23-001-K029) was completed at Site 23 for the purpose of sampling in situ groundwater. Section 3.1.1 of this document presents a further description of Hydro-Punch© sampling. The relative location of the Hydro-Punch© boring on the site is presented in Figure 3-7.

Perched water conditions and "tight" sediments encountered in the Hydro-Punch© boring at Site 23 yielded three unsuccessful attempts to take Hydro-Punch© groundwater samples. A fourth attempt encountered the groundwater table at 20 ft bgs and was confirmed by wet soils in a split spoon sample taken from 20 to 22 ft. The boring was advanced an additional 3 ft to a depth of 25 ft to ensure that the Hydro-Punch© sampler would penetrate to the water table. The Hydro-Punch© was hammered to a depth of 29 ft. The rods attached to the Hydro-Punch© were then raised 4 ft, thereby opening the Hydro-Punch© and exposing the screen from 25 to 29 ft bgs. The groundwater was then sampled using a 3/4-inch Teflon bailer. Samples were analyzed for TCL

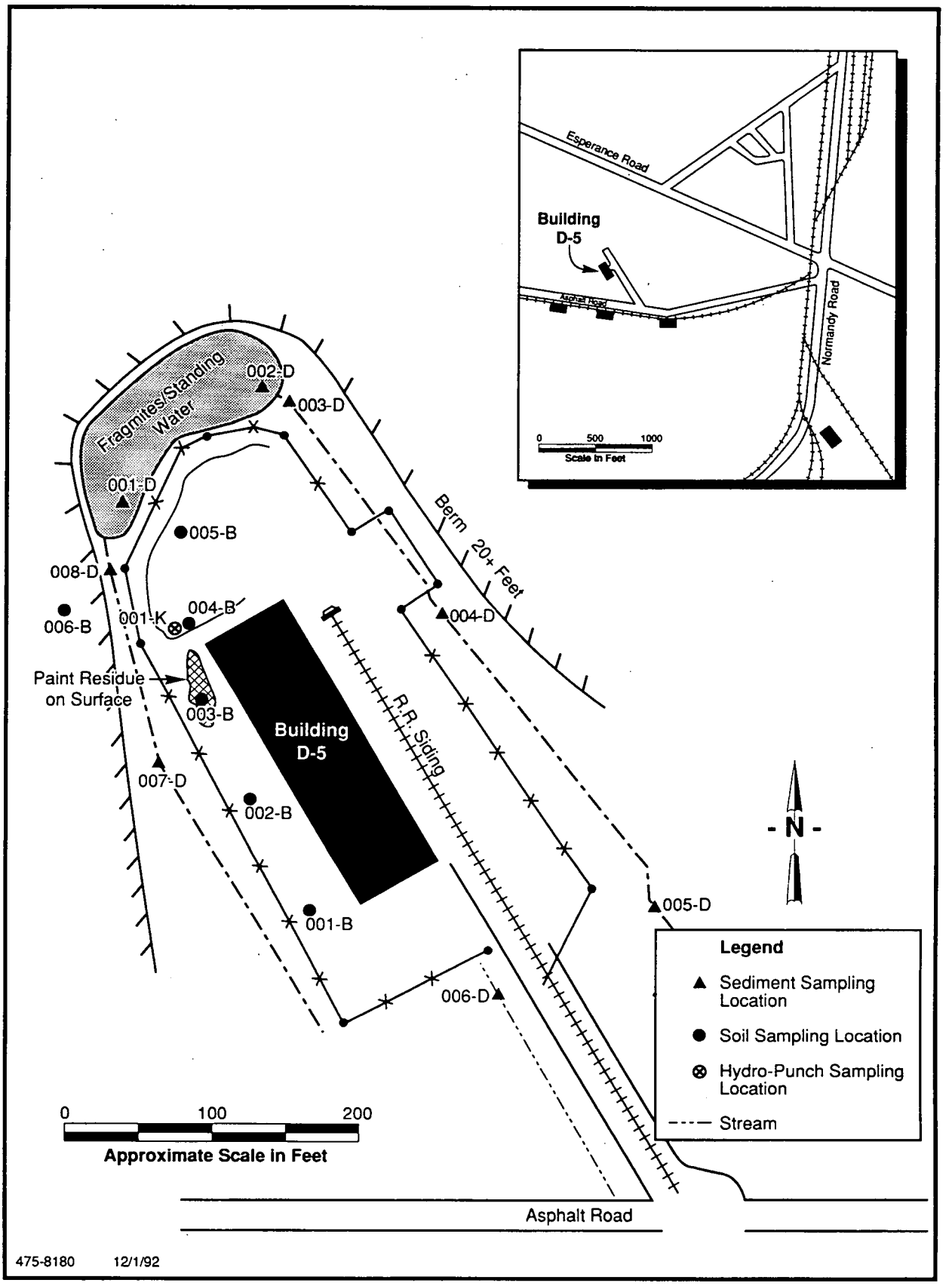


FIGURE 3-7 SITE 23: PAINT CHIP DISPOSAL AREA ADJACENT TO BUILDING D-5, SAMPLING LOCATIONS, NWS EARLE, NJ

full scan and TAL metals. After sampling, the Hydro-Punch© was removed and the boring was filled to ground surface with a cement/bentonite grout by standard methods.

3.2.12 Site 24: Closed Pistol Range

The possible site contaminants at Site 24 (Figure 3-8) are the metals derived from the spent cartridge cases and bullets, including lead, copper, and zinc.

3.2.12.1 Soil Borings/Sampling

Four shallow soil boring samples (24-001-S001 through 24-004-S001) were collected at Site 24. The samples were collected at a depth of 3 ft bgs along the berm behind the target area. The sample locations are shown in Figure 3-9. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.6. All four samples were analyzed for cadmium, chromium, copper, lead, and zinc. The analytical results are presented in Section 4.

3.2.13 Site 25: Closed Pistol Range — Treated Rail Ties

Like Site 24, the possible site contaminants are the metals derived from the spent cartridge cases and bullets, including lead, copper, and zinc. Site 25 is presented on Figure 3-8.

3.2.13.1 Soil Borings/Sampling

Consistent with the rationale at Site 24, four shallow soil boring samples (25-001-S001 through 25-004-S001) were collected at Site 25. The samples were collected at a depth of 3 ft bgs along the berm behind the target area. The sample locations are shown in Figure 3-9. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.6. All four samples were analyzed for cadmium, chromium, copper, lead, and zinc. The analytical results are presented in Section 4.

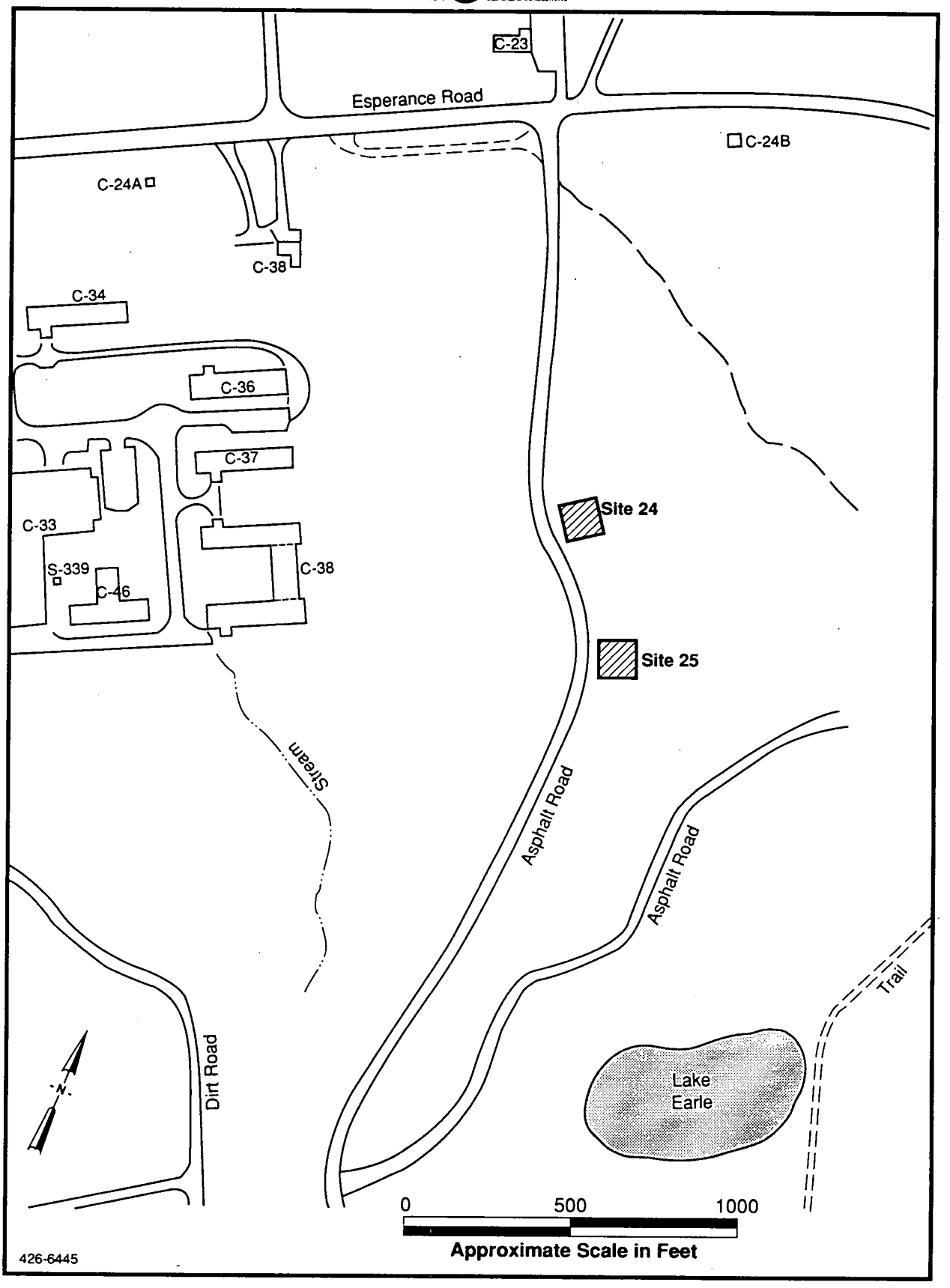


FIGURE 3-8 SITES 24 AND 25: CLOSED PISTOL RANGES, SITE LOCATIONS, NWS EARLE, NJ

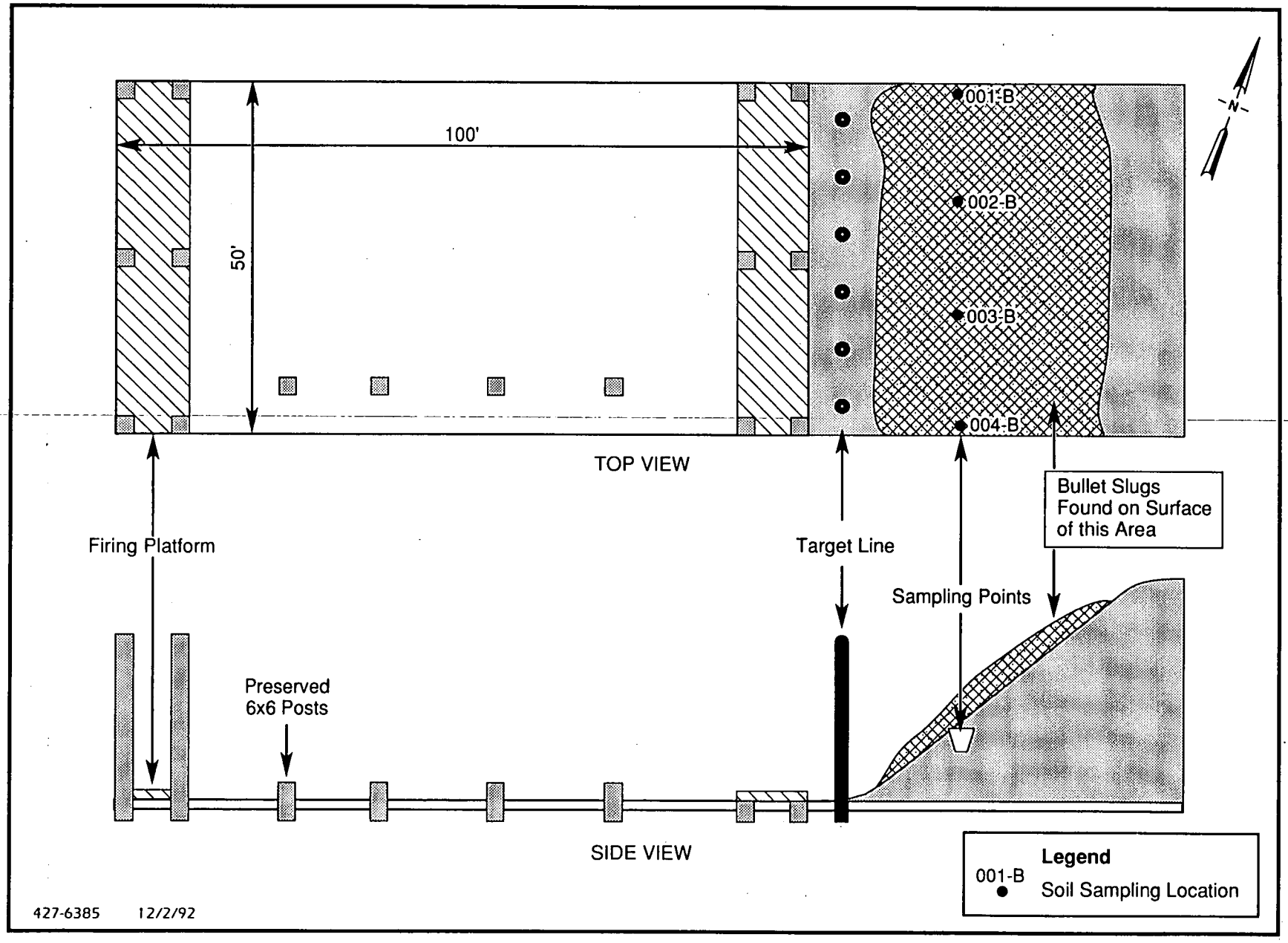


FIGURE 3-9 SITES 24 & 25: CLOSED PISTOL RANGES SAMPLING LOCATIONS, NWS EARLE, NJ

3.2.14 Site 27: Projectiles Refurbishing Area

The observation of paint chips and spent blasting shot along with evidence of on-site disposal practices suggest the possibility that residues from these site operations are present. The contaminants identified resulting from the waste materials include the following:

- Metals (Pb, Zn, Cu, Cr) originating in blasting shot and paint.
- Toluene occurring in paint thinner.
- Volatiles derived from paint thinner.

The SI activities conducted at Site 27 included the following elements:

- Soil Sampling
- Sediment Sampling

3.2.14.1 Soil Sampling

Soil samples were collected at two discrete depth intervals, 0 to 0.5 ft and 0.5 to 1.5 ft, at five locations for a total of 10 soil samples. Soil samples collected from the 0- to 0.5-ft interval are identified as (27-001-S001 through 27-005-S001). Soil samples collected from the 0.5- to 1.5-ft interval are identified as (27-001-S002 through 27-005-S002). The five locations were concentrated in an area behind Building D-14 where disposal reportedly occurred and some soil staining was observed. The sample locations are shown in Figure 3-10. The samples were collected consistent with the procedures discussed earlier in Subsection 3.1.6. All 10 samples were analyzed for TCL full scan TAL metals and cyanide. The analytical results are presented in Section 4.

3.2.14.2 Sediment Sampling

Eight sediment samples (27-001-D001 through 27-008-D001) were collected within the drainages on either side of the railroad tracks located behind Building D-14. The sample locations are shown in Figure 3-10. The samples were collected consistent with the procedures discussed in

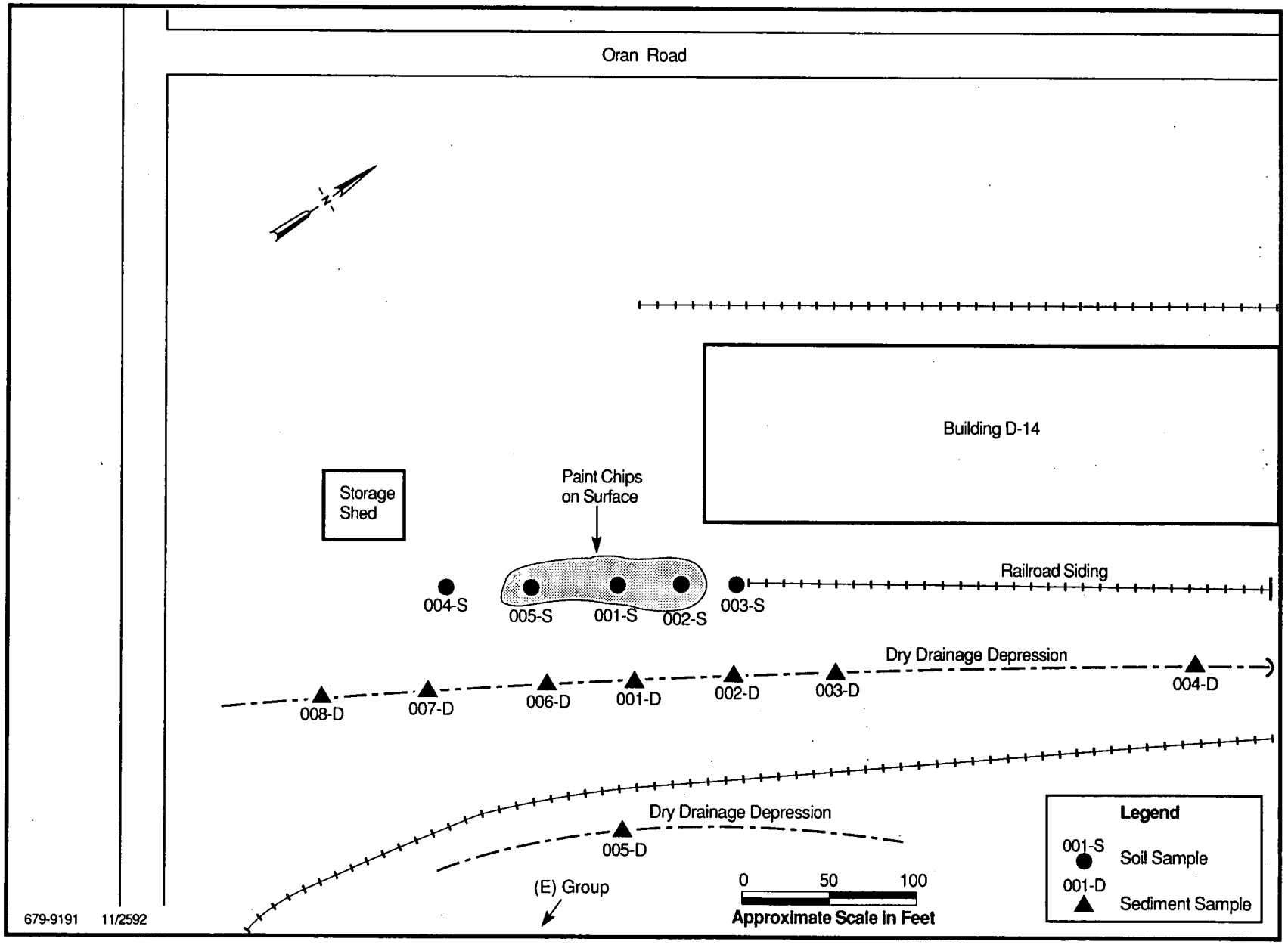


FIGURE 3-10 SITE 27: PROJECTILE REFURBISHING AREA, SAMPLING LOCATIONS, NWS EARLE, NJ

Subsection 3.1.7. Two of the eight samples were analyzed for TCL full scan and TAL metals. The remaining samples were analyzed for chromium, copper, lead, and zinc. The analytical results are presented in Section 4.

3.2.15 Site 28: Waste Oil Tank

At the time of the 1986 NJDEP RCRA site inspection, this site was undergoing a state-approved closure. The RCRA site inspection report recommends no further action at this site.

3.2.16 Site 29: PCB Spill Site, Building C-16

Contaminants resulting from the spill include PCBs and petroleum hydrocarbons. The SI activities conducted at Site 29 included the collection of five soil samples.

3.2.16.1 Soil Sampling

Soil samples were collected at five locations at depth intervals of 0.5 to 1.5 ft. Soil samples are identified as (29-001-S001 through 29-005-S001). The five locations were concentrated at the southeast corner of the storage yard in an area where the spill reportedly occurred. The sample locations are shown in Figure 3-11. The samples were collected consistent with the procedures discussed in Subsection 3.1.6. All five samples were analyzed for TPH and PCBs. The analytical results are presented in Section 4.

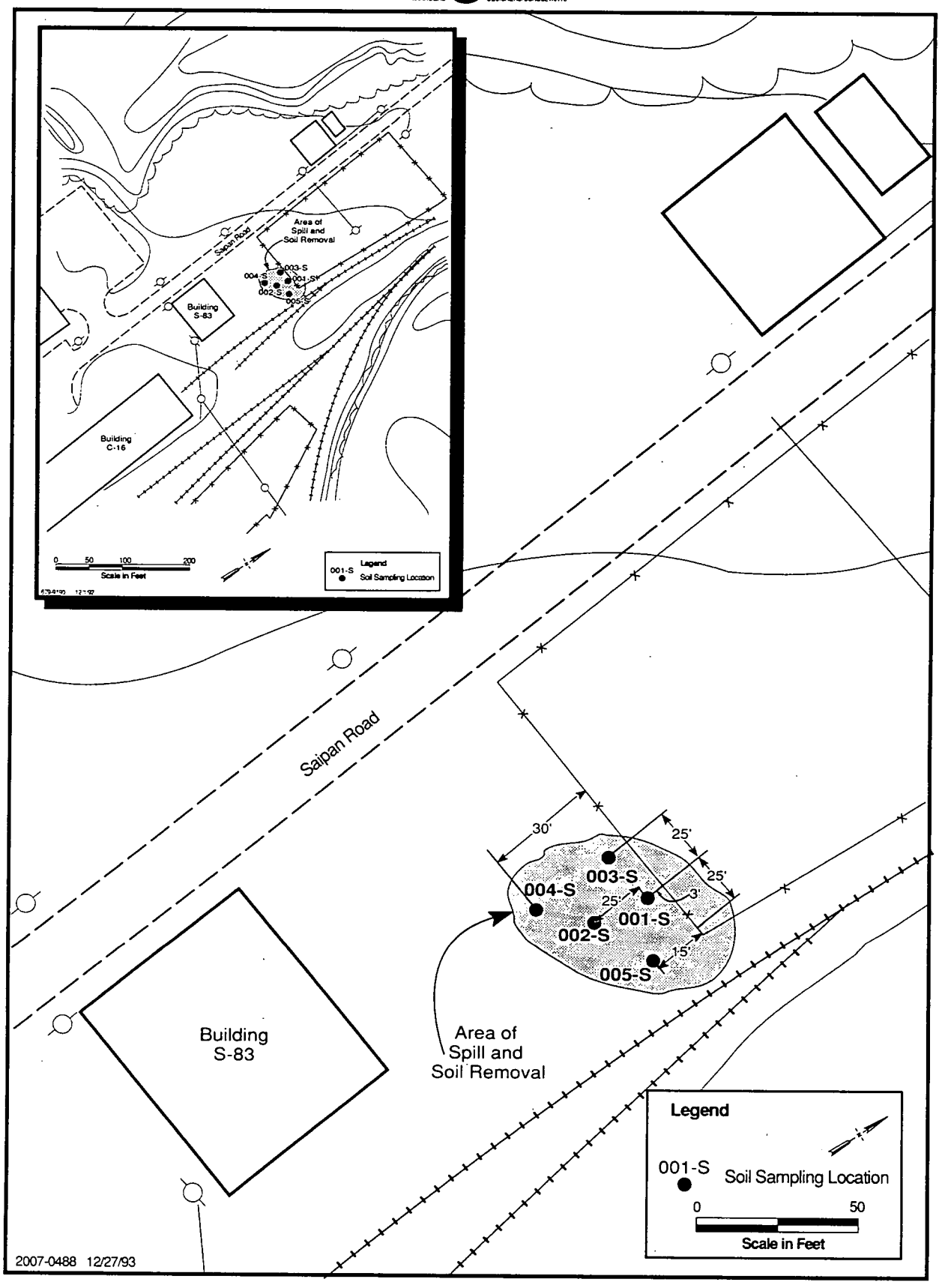


FIGURE 3-11 SITE 29: PCB SPILL SITE ADJACENT TO BUILDING C-16 SAMPLING LOCATIONS, NWS EARLE, NJ

SECTION 4

RESULTS OF THE FIELD INVESTIGATION

This section describes the results of the field investigation of site conditions, including the presence of contaminants, the medium affected, and the potential and observed pathways of contaminant migration. This section presents each site separately with the physical data first, followed by the chemical data. Analytical data tables in this section summarize significant "hits" for each medium and site. Complete analytical summaries are included in Appendix C. Each site subsection in Section 4 is concluded with a characterization summary of the site as understood through current and past information. The significance of the results is discussed in Section 5.

4.1 SITE 1: ORDNANCE DEMILITARIZATION SITE, SECURED

4.1.1 Physical Characteristics

Site 1 is approximately 6 acres in size and appears as a level field with a communications tower located in its approximate center. Vegetation consists of sparse grass. The precise area of activity was not visible either in the field inspection or from historical aerial photographs. The site is bordered to the east by Macassar Road, to the north and west by railroad tracks, and to the south by an asphalt road. The site location, sampling grid, and locations of samples and monitor wells are shown in Figure 3-1.

4.1.1.1 Soils and Sediments

The original soils within Site 1 (part of the Tinton-Collington-Colts Neck Group Section 2) have been altered or excavated from past site activities. As a result, the surface soils, as they presently exist, would be classified as Udorthents (altered soils). Based on the samples obtained during the soil and sediment sampling, the shallow soils at Site 1 are generally characterized by sandy

loam and gravel, strong brown to yellow brown (10YR 5/3 to 10YR 5/8 munsel color classification).

4.1.1.2 Drainage

No drainage swales or streams are located on the site. Drainage at Site 1 also occurs through infiltration and evaporation. Infiltration is the main source of recharge to the shallow aquifer at the site and is a controlling factor of groundwater flow.

The perennial streams nearest to Site 1 are two tributaries of Hockhockson Brook. These streams are located approximately 1,500 ft to the north and to the south of the site.

4.1.1.3 Hydrogeology

The following lithologic description of the geologic materials at Site 1 is based on the physical descriptions of continuous split spoon samples obtained during drilling for the monitoring well installations. These descriptions are also contained in the boring logs presented in Appendix B. The sediments underlying Site 1 consist of predominantly poorly graded sands with occasional silt layers that vary slightly in color from yellow brown to olive brown. These characteristics are consistent with the types of sediments which compose the Vincentown Formation. Based on the base geologic map (Figure 2-2), Site 1 is situated within the outcrop and recharge area of the Vincentown Formation.

Generally, groundwater levels across the site range from between 5 and 10 ft bgs. Figure 4-1 presents the groundwater elevation contours developed from the groundwater elevations obtained 16 June 1992. Groundwater flow is toward the southwest with an average gradient of .001 ft/ft. This places MW1-02 hydraulically upgradient from MW1-01 and MW1-03.

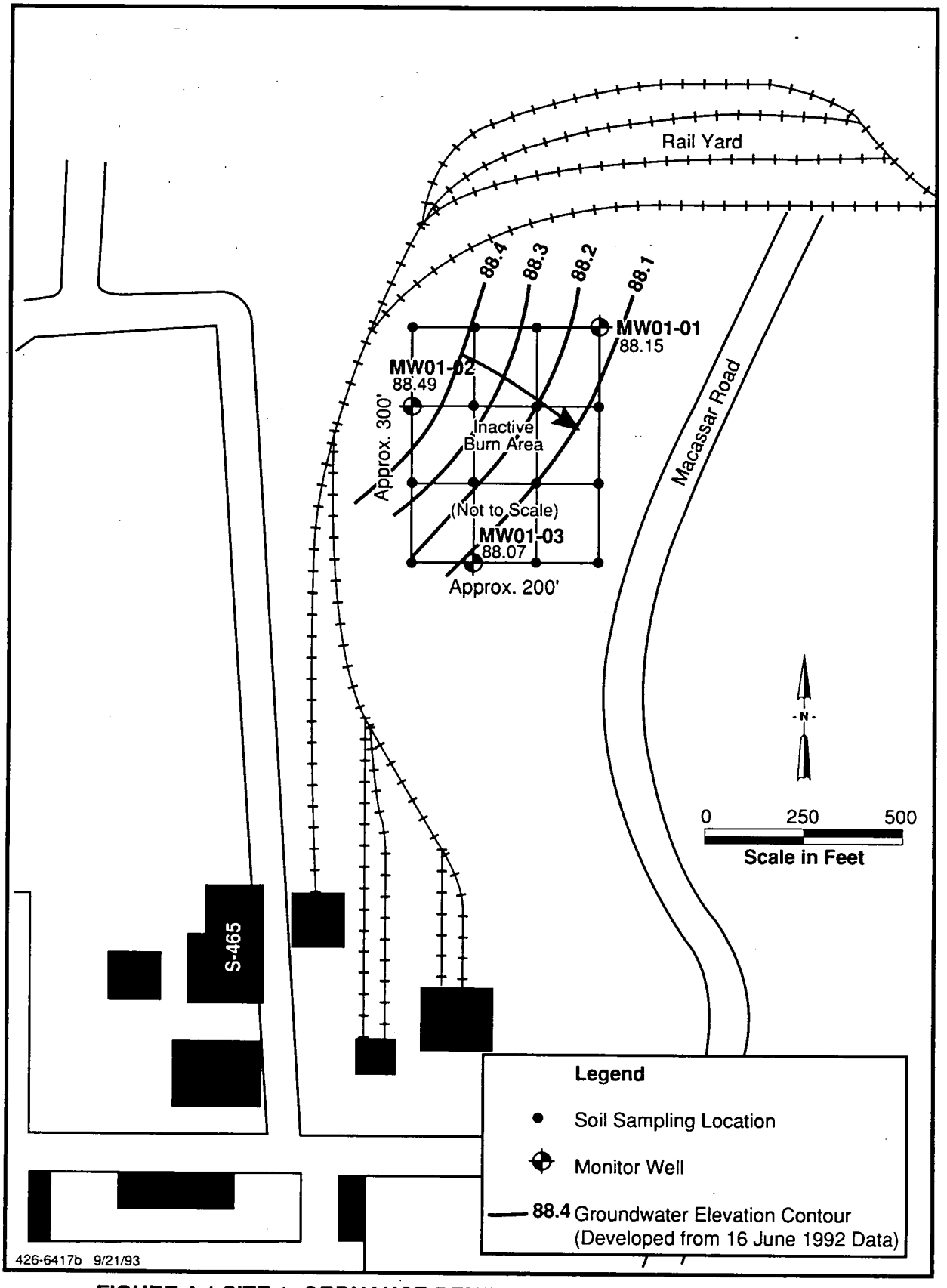


FIGURE 4-1 SITE 1: ORDNANCE DEMILITARIZATION SITE (SECURED), GROUNDWATER SURFACE CONTOURS, NWS EARLE, NJ

4.1.2 Chemical Results

4.1.2.1 Analysis of Soils

The analytical results and locations for surface soil samples collected at Site 1 are presented in Table 4-1 and Figure 4-2, respectively. Of the 12 samples collected from 0 to 0.5 ft, eight samples were analyzed for explosive compounds and TPH, and four samples were analyzed for metals. Of the 12 samples analyzed from 0.5 to 1.5 ft, eight samples were analyzed for explosive compounds and TPH, and five samples (four locations and one duplicate) were analyzed for metals. Thirteen metals were detected in some or all of the samples. The highest concentrations of cadmium were detected in samples 001-S and 004-S at 2.2 mg/kg and 1.3 mg/kg, respectively. Chromium concentrations ranged from 12.4 mg/kg to 65.7 mg/kg. Copper concentrations ranged from non-detect to 73.5 mg/kg. Mercury was detected in samples 001-S, 006-S, and 012-S at 0.11 mg/kg, 0.75 mg/kg, and 1.9 mg/kg, respectively. Lead concentrations ranged from 1.5 mg/kg to 95.6 mg/kg. No explosives were detected in any of the other 16 samples analyzed. Nitrate ranged from non-detect to 2.6 mg-n/kg. TPH was detected at 450 mg/kg in sample 004-S. TPH concentrations ranged from 2.2 to 450 mg/kg in all other samples.

4.1.2.2 Analysis of Groundwater

The analytical results and locations for three groundwater samples collected at Site 1 are presented in Table 4-2 and Figure 4-2, respectively. Samples were analyzed for TCL organics, TAL metals, and explosive compounds. 1,1-Dichloroethylene was detected at 80 ug/l in well MW1-02. Methylene chloride, acetone, and chloroform were detected in all groundwater samples below the instrument detection limit (J values) or detected in the method blank and equipment blank. No other VOCs were detected. Diethylphthalate was detected in MW1-03 and the duplicate at 1J ug/l.

RDX and 2,4-DNT were detected in MW1-02 at 8.98 ug/l and 0.82 ug/l, respectively. Ten metals were detected in some or all of the wells. The highest concentrations of chromium, lead, and zinc were detected in well MW1-01 at 538 ug/l, 12.5 ug/l, and 652 ug/l, respectively.

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TABLE 4-1
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES COLLECTED DURING ROUND I -- SITE 1: ORDNANCE DEMILITARIZATION SITE (ODS), SECURED

	SAMPLE ID>	09-JUN-92 01-001-S001		09-JUN-92 01-002-S001		09-JUN-92 01-003-S001		09-JUN-92 01-004-S001		09-JUN-92 01-005-S001		09-JUN-92 01-006-S001	
INORGANICS	UNITS												
Silver, Total	MG/KG	4.500	=					2.600	=			5.400	=
Aluminum, Total	MG/KG	2590.000	=					1210.000	=			2980.000	=
Arsenic, Total	MG/KG	2.800	=									4.000	=
Barium, Total	MG/KG	132.000	=									277.000	=
Cadmium, Total	MG/KG	2.200	=									1.300	=
Chromium, Total	MG/KG	56.000	=					25.400	=			65.700	=
Copper, Total	MG/KG	73.500	=					13.800	=			119.000	=
Iron, Total	MG/KG	11100.000	=					5210.000	=			11200.000	=
Mercury, Total	MG/KG	0.110	=									0.750	=
Potassium, Total	MG/KG	750.000	B									1130.000	=
Manganese, Total	MG/KG	34.800	=					12.900	=			36.600	=
Lead, Total	MG/KG	95.600	=					64.200	=			143.000	=
Vanadium, Total	MG/KG	27.200	=					12.300	=			43.800	=
Zinc, Total	MG/KG	71.500	=					18.000	=			204.000	=
Nitrite, as N	MG-N/KG												
Nitrate, as N	MG-N/KG	2.000	=	1.500	=	2.600	=			1.200	=	0.960	=
Petroleum Hydrocarbons	MG/KG	6.500	=	3.600	J	16.000	=	450.000	=	5.800	=	40.000	=

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

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TABLE 4-1 (continued)
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES COLLECTED DURING ROUND I -- SITE 1: ORDNANCE DEMILITARIZATION SITE (ODS), SECURED

	SAMPLE ID>	09-JUN-92 01-007-S001		09-JUN-92 01-008-S001		09-JUN-92 01-009-S001		09-JUN-92 01-009-S101		11-JUN-92 01-010-S001		09-JUN-92 01-011-S001	
INORGANICS	UNITS												
Silver, Total	MG/KG	5.900	=							6.800	=		
Aluminum, Total	MG/KG	1330.000	=			1390.000	=	1150.000	=	1830.000	=		
Arsenic, Total	MG/KG	3.300	=										
Barium, Total	MG/KG	290.000	=										
Cadmium, Total	MG/KG	1.900	=										
Chromium, Total	MG/KG	34.800	=			32.100	=	25.800	=	50.200	=		
Copper, Total	MG/KG	136.000	=							6.900	=		
Iron, Total	MG/KG	6600.000	=			6880.000	=	5190.000	=	8680.000	=		
Mercury, Total	MG/KG	0.960	=										
Potassium, Total	MG/KG												
Manganese, Total	MG/KG	45.800	=			4.700	=	4.000	=	7.000	=		
Lead, Total	MG/KG	179.000	=			8.460	=	14.900	=	15.200	=		
Vanadium, Total	MG/KG	17.700	=			14.300	=	12.000	=	20.000	=		
Zinc, Total	MG/KG	183.000	=			6.600	=	6.200	=	23.500	=		
Nitrite, as N	MG-N/KG												
Nitrat , as N	MG-N/KG	1.000	=	0.790	=	1.200	=	0.750	=	1.100	=	1.000	=
Petroleum Hydrocarbons	MG/KG	9.400	=	4.300	U	5.200	=	3.300	J	3.400	J	2.200	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

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TABLE 4-1 (continued)
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES COLLECTED DURING ROUND I -- SITE 1: ORDNANCE DEMILITARIZATION SITE (ODS), SECURED

	SAMPLE ID>	09-JUN-92 01-012-S001		09-JUN-92 01-013-S001		09-JUN-92 01-014-S001		09-JUN-92 01-015-S001		09-JUN-92 01-015-S201		09-JUN-92 01-016-S001	
INORGANICS	UNITS												
Silver, Total	MG/KG	26.900	=										
Aluminum, Total	MG/KG	1610.000	=			538.000	=	2060.000	=				
Arsenic, Total	MG/KG												
Barium, Total	MG/KG							45.400	=				
Cadmium, Total	MG/KG												
Chromium, Total	MG/KG	53.400	=			12.400	=	46.500	=				
Copper, Total	MG/KG	29.000	=					9.600	=				
Iron, Total	MG/KG	8880.000	=			2590.000	=	9170.000	=				
Mercury, Total	MG/KG												
Potassium, Total	MG/KG												
Manganese, Total	MG/KG	11.100	=					10.500	=				
Lead, Total	MG/KG	41.900	=			3.500	=	5.300	=				
Vanadium, Total	MG/KG	24.000	=					18.700	=				
Zinc, Total	MG/KG	36.400	=					21.100	=				
Nitrite, as N	MG-N/KG									.32	=		
Nitrate, as N	MG-N/KG	1.900	=	1.000	=	1.900	=	0.620	=			1.300	=
Petroleum Hydrocarbons	MG/KG			4.000	J	2.400	J	2.300	J			9.600	=

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

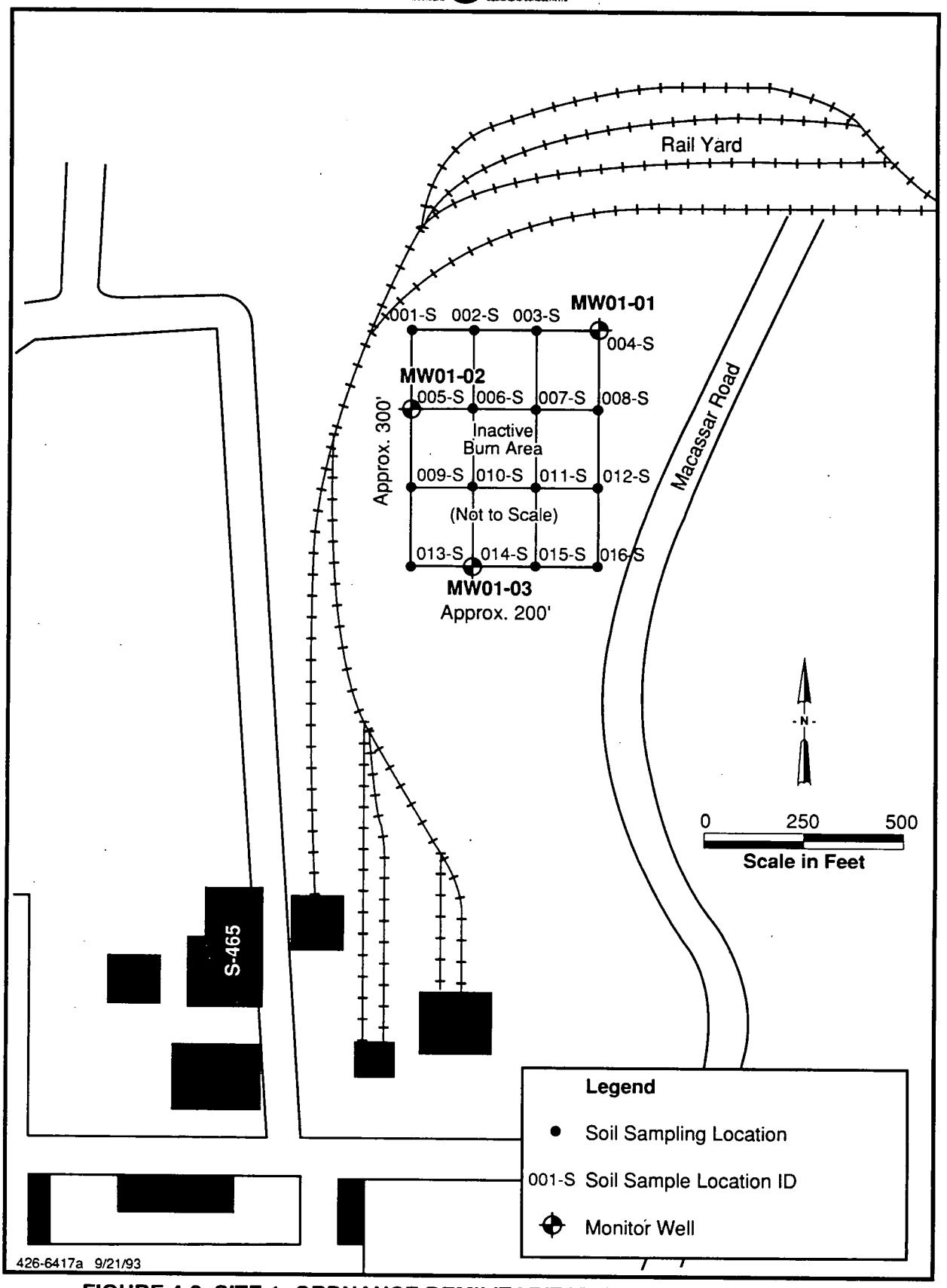

FIGURE 4-2 SITE 1: ORDNANCE DEMILITARIZATION SITE (SECURED), MONITOR WELL AND SAMPLING LOCATIONS, NWS EARLE, NJ

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TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
SAMPLES COLLECTED DURING ROUND I -- SITE 1:
ORDNANCE DEMILITARIZATION SITE (ODS), SECURED

		24-JUN-92		16-JUN-92		16-JUN-92		24-JUN-92		24-JUN-92	
	SAMPLE ID>	01-001-M001		01-002-M001		01-002-M201		01-003-M001		01-003-M101	
	WELL #>	MW-01		MW-02		MW-02(Equip. Blk)		MW-03		MW-03(Duplicate)	
INORGANICS	UNITS										
Aluminum, Total	UG/L	31000	=	2310	=			16800	=	8610	=
Barium, Total	UG/L	220	=								
B ryllium, Total	UG/L	6	=								
Chromium, Total	UG/L	538	=	33.1	=			245	=	122	=
Copper, Total	UG/L	26.7	=								
Iron, Total	UG/L	75700	=	5030	=			40400	=	21300	=
Potassium, Total	UG/L	13700	=					7130	=		
Magnesium, Total	UG/L	6200	=								
Manganese, Total	UG/L	110	=	20.4	=			45.4	=	29.6	=
L ad, Total	UG/L	12.5	=					7.2	=	5.3	=
Vanadium, Total	UG/L	172	=					88.9	=		
Zinc, Total	UG/L	652	=	192	=			66.7	=	50.4	=
PESTICIDES											
HEPTACHLOR	UG/L					.034	J				
ORGANICS											
ACETONE	UG/L	7	J							6	J
1,1-DICHLOROETHYLENE	UG/L			80	=						
CHLOROFORM	UG/L					4	J				
DIETHYLPHTHALATE	UG/L							1	J	1	J
EXPLOSIVES											
RDX	UG/L			8.98	=						
2,4-DNT	UG/L			.82	=						
Nitrate Nitrite	MG-N/L	1.4	=	1.2	=			.15	=	.16	=

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

4.1.3 Summary of Site 1 Characterization

Although no obvious physical signs of disposal activity remain, past detonation and burning activities at Site 1 appear to have impacted soils and groundwater. Results of groundwater analysis indicate the presence of organic and explosive compounds in MW1-02. Elevated TPH levels were observed in one soil sample 004-S, which is located near MW1-01. The presence of TPH and explosive compounds at Site 1 is consistent with known site history. They appear limited in extent but have affected groundwater and soils. The presence of elevated metals in upgradient MW1-01 appears anomalous and its source is currently unknown. Site 1 is not adjacent to, or in the vicinity of, any other SI or RI site. The levels of metals in soils appear similar to other sites at NWS Earle. However, their interpretation will require the additional background information that is discussed in Section 5.

4.2 SITE 6: LANDFILL WEST OF NORMANDY ROAD

4.2.1 Physical Characteristics

Site 6 is a 4-acre landfill which was used for the disposal of refuse from waterfront area operations. Suspected wastes disposed of at this site include dunnage lumber, glass, paper, packing material, and small amounts of paint and solvent wastes. Site 6 is located adjacent to a tidal marsh and within close proximity to Sandy Hook Bay. Surface drainage from the site flows into the marsh and eventually into the bay. The toe of the landfill slopes toward the marsh area. The landfill surface is 10 to 15 ft higher than the marsh areas and has a level surface, which grades imperceptibly into the waterfront complex. The toe and edge are vegetated. Much of the remaining surface is paved. The recreation building reportedly covers part of the landfill, although these data could not be confirmed.

4.2.1.1 Soils and Sediments

Although it is adjacent to an extensive salt marsh, no evidence, such as an organic-rich horizon, was found in the boring logs to indicate that the landfill encroached on the marsh. The original soils within Site 6 are part of the Tinton-Phalanx Group described in Section 2. Based on the samples obtained from the soil borings, the shallow soils at Site 6 are generally characterized as sandy loam, with some mixed fill materials (brick, wood, and construction debris), dark brown to yellow brown (10YR 3/2 to 10YR 4/6 munsel color classification). One sediment was collected in the marshland at location 06-004-D001 and analyzed for grain size analysis. Based on the distribution curve for the grain size analysis (Appendix C), the sediments are characterized as a dark brown gravelly and silty or clayey sand with 3% gravel and 24% silt or clay.

4.2.1.2 Drainage

Much of Site 6 is paved or covered with buildings so that infiltration is limited and the overland flow drains toward the salt marsh that is located north of the site. This salt marsh joins Ware Creek, which is situated approximately 1,000 ft northwest of Site 6.

4.2.1.3 Hydrogeology

The following lithologic description of the geologic materials at Site 6 is based on the physical characterization of continuous split spoon samples obtained during drilling for soil sampling and the monitor well installation. These descriptions are contained in the boring logs presented in Appendix B. The sediments underlying Site 6 consist of predominantly poorly graded sand with some silt, and interbedded thin clay layers. Colors range from dark brown to yellow and light olive brown. These characteristics are consistent with the types of sediments which compose the Upper Cretaceous Formations.

Generally, groundwater levels across the site range from between 8 and 12 ft bgs. Figure 4-3 presents the groundwater elevation contours developed from the water elevations obtained 16

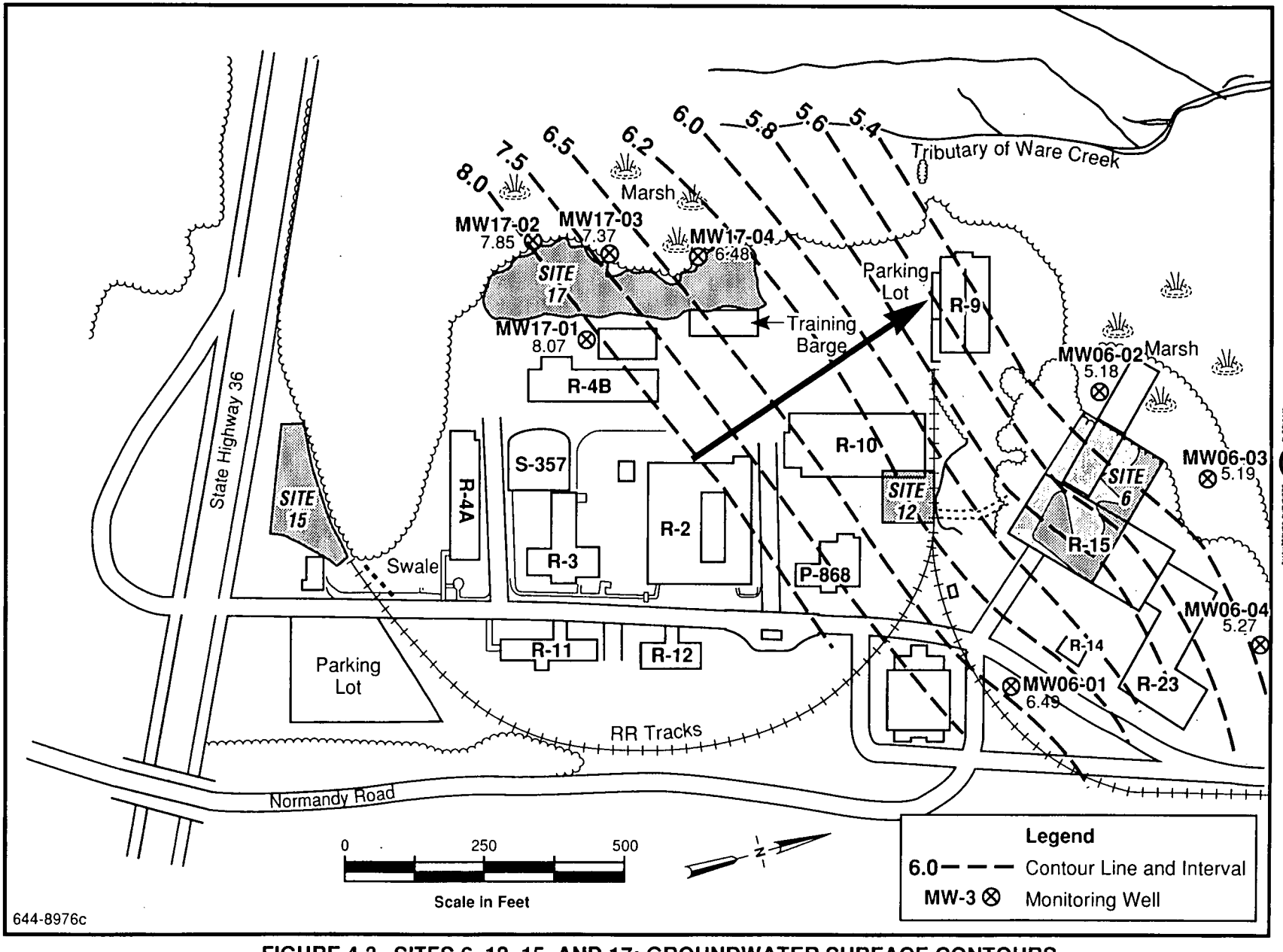

FIGURE 4-3 SITES 6, 12, 15, AND 17: GROUNDWATER SURFACE CONTOURS, NWS EARLE, NJ

June 1992. Groundwater flow is toward the north-northwest with an average gradient of .005 ft/ft. MW6-01 is hydraulically upgradient from MW6-02, MW6-03, and MW6-04.

4.2.2 Chemical Results

4.2.2.1 Analysis of Soils

The analytical results for subsurface soil samples collected at Site 6 are presented in Table 4-3. Sample locations are presented in Figure 4-4. Samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. 2-butanone was detected in soil boring 002-B at 12 ug/kg. Methylene chloride and acetone were detected in both soil borings at the J value level and were also detected in the associated blanks. One phenol, four phthalates, and eight polynuclear aromatics (PAH) were detected in both samples at the J value level. The compound 4,4'-DDE was detected in boring 002-B at 0.81 ug/kg (J value), and was detected in boring 003-B along with 4,4-DDT at J value concentrations of 0.81 ug/kg and 10 ug/kg, respectively. Arochlor-1254 was detected at the J value level in boring 003-B at 32 ug/kg. The highest concentrations of arsenic and chromium were detected in boring 002-B at 3.7 mg/kg and 14.4 mg/kg, respectively. The highest concentrations of lead and zinc were detected in boring 003-B at 11.6 mg/kg and 25.7 mg/kg, respectively.

4.2.2.2 Analysis of Sediments

Analytical results for sediment samples collected from surface drainage at the base of the landfill toe at Site 6 are presented in Table 4-4. Sample locations are presented in Figure 4-4. 2-Butanone was detected in sample 001-D at 12 ug/kg. Methylene chloride and acetone were detected in all sediment samples at low concentrations and were also detected in the associated blanks. Seventeen PAHs, three phthalates, and one phenol were detected at low levels or at the J value level. Elevated levels of benzo(A)pyrene were detected in sediment samples 002-D, 003-D, and 004-D at 380 ug/kg (J value), 900 ug/kg, and 380 ug/kg (J value), respectively. Ten pesticides were detected at low levels or at the J value level. Arochlor-1260 was detected at 150J in one sample (06-003). Eighteen metals were detected in some or all of the samples. Arsenic

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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR SOIL BORING SAMPLES COLLECTED DURING ROUND I -- SITE 6: LANDFILL WEST OF NORMANDY ROAD

		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-002-B014		06-002-B114		06-003-B010	
INORGANICS	UNITS						
Aluminum, Total	MG/KG	3090	=	2360	=	2390	=
Arsenic, Total	MG/KG	3.7	=	2.5	=	1.5	B
Barium, Total	MG/KG	10.5	B	8.5	B	11.7	B
Beryllium, Total	MG/KG	0.26	B	0.38	B	0.25	B
Calcium, Total	MG/KG	145	B	145	B	2240	=
Chromium, Total	MG/KG	14.4	=	8	=	8.5	=
Cobalt, Total	MG/KG	2.2	B			2.2	B
Copper, Total	MG/KG	3.6	B	4	B	5.5	B
Iron, Total	MG/KG	123000	=	7000	=	8900	=
Lead, Total	MG/KG	6.9	=	8.6	B	11.6	=
Magnesium, Total	MG/KG	327	B	213	=	372	B
Manganese, Total	MG/KG	37.5	=	14.7	=	36.8	=
Potassium, Total	MG/KG	854	B	603	B	533	B
Silver, Total	MG/KG					3	=
Sodium, Total	MG/KG	61.5	B	57	B	72.7	B
Vanadium, Total	MG/KG	11	B	7.6	B	13.3	=
Zinc, Total	MG/KG	12	=	10.3	=	25.7	=
PESTICIDES							
4,4'-DDE	UG/KG	0.81	J	0.85	J		
4,4'-DDT	UG/KG	0.81	J	1.7	J	10	J
ORGANICS							
ACETONE	UG/KG	34	B	28	B	17	B
2-BUTANONE	UG/KG	12	=				
PHENOL	UG/KG	24	J				
DIETHYLPHTHALATE	UG/KG					390	JB
PHENANTHRENE	UG/KG					28	J
DI-N-BUTYLPHTHALATE	UG/KG	76	J	28	J	120	J
FLUORANTHENE	UG/KG					39	J
PYRENE	UG/KG					41	J
BUTYLBENZYLPHTHALATE	UG/KG					23	J
BENZO(A)ANTHRACENE	UG/KG					29	J
CHRYSENE	UG/KG					27	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	140	J	23	J	160	J
BENZO(B)FLUORANTHENE	UG/KG					28	J
BENZO(K)FLUORANTHENE	UG/KG					22	J
BENZO(A)PYRENE	UG/KG					21	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

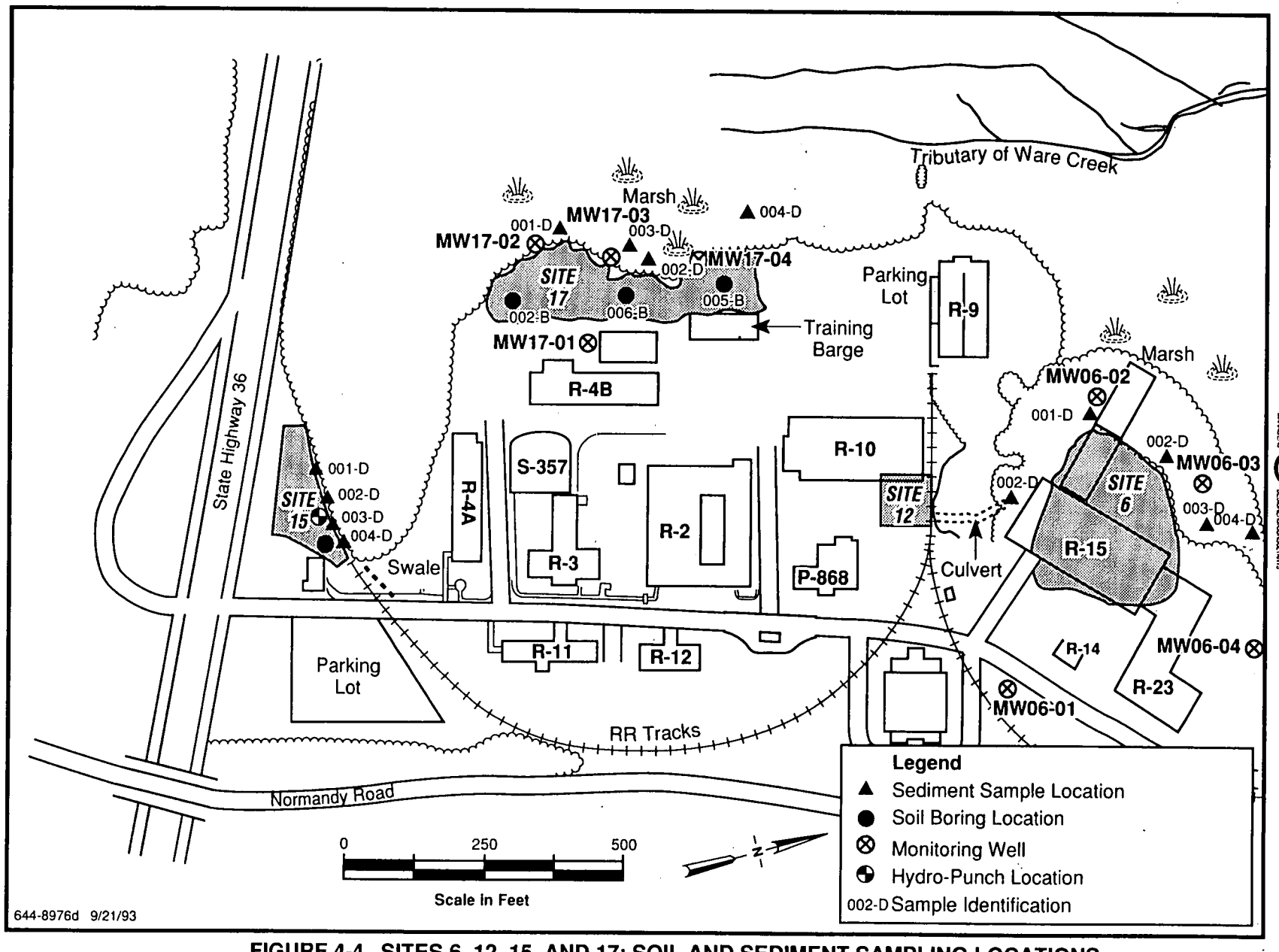

FIGURE 4-4 SITES 6, 12, 15, AND 17: SOIL AND SEDIMENT SAMPLING LOCATIONS, NWS EARLE, NJ

NWS-BARLS B4-4.WK3

TABLE 4-4
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT
SAMPLES COLLECTED DURING ROUND I -- SITE 6:
LANDFILL WEST OF NORMANDY ROAD

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-001-D001		06-002-D001		06-003-D001		06-004-D001		06-004-D101	
INORGANICS	UNITS										
Aluminum, Total	MG/KG	2320	=	2710	=	3100	=				
Arsenic, Total	MG/KG	1.5	B	4.7	=	5.1	=				
Barium, Total	MG/KG	22.2	B	24.3	B	25	B				
Beryllium, Total	MG/KG	0.27	B	0.33	B	0.55	B				
Cadmium, Total	MG/KG					1.3	=				
Calcium, Total	MG/KG	886	B	2120	=	3630	=				
Chromium, Total	MG/KG	7.3	=	16.1	=	16.1	=				
Cobalt, Total	MG/KG	2.9	B	3.4	B	4.3	B				
Copper, Total	MG/KG	16	=	29.6	=	21.8	=				
Iron, Total	MG/KG	8770	=	14700	=	16400	=				
Lead, Total	MG/KG	29.5	=	59	=	66.7	=				
Magnesium, Total	MG/KG	628	B	801	B	1350	=				
Manganese, Total	MG/KG	27	=	112	=	98.1	=				
Mercury, Total	MG/KG			0.32	=	0.1	B				
Nickel, Total	MG/KG			5.2	B	4.9	B				
Potassium, Total	MG/KG	306	B	792	B	748	B				
Silver, Total	MG/KG			2.1	B						
Sodium, Total	MG/KG	140	B	332	B	65.8	B				
Vanadium, Total	MG/KG	6.8	B	18.3	=	14.1	=				
Zinc, Total	MG/KG	97	=	121	=	139	=				
PESTICIDES/PCB											
HEPTACHLOR	UG/KG	1.2	J			9.1	J				
HEPTACHLOR EPOXIDE	UG/KG					1.1	J				
DIELDRIN	UG/KG					23	J				
4,4'-DDE	UG/KG	7	J	18	J	34	=	30	=	16	=
4,4'-DDD	UG/KG	17	=			13	J	22	J	6.5	J
4,4'-DDT	UG/KG	6.6	J	95	=	93	=	100	=	62	=
ALPHA CHLORDANE	UG/KG	12	=								
GAMMA CHLORDANE	UG/KG	13	=								
AROCHLOR-1260	UG/KG			150	J						
ORGANICS											
METHYLENE CHLORIDE	UG/KG	18	B	20	B	23	B	29	B	28	B
ACETONE	UG/KG	36	B								
2-METHYLNAPHTHALENE	UG/KG					22	J				
ACENAPHTHYLENE	UG/KG	24	J	23	J	200	J	89	J	100	J
ACENAPHTHENE	UG/KG					28	J				
FLUORENE	UG/KG					41	J			22	J
PENTACHLOROPHENOL	UG/KG									30	J
PHENANTHRENE	UG/KG	190	J	120	J	590	=	270	J	300	=
ANTHRACENE	UG/KG	62	J	38	J	360	=	170	J	180	=
CARBAZOLE	UG/KG	23	J			110	J	49	J		
DI-N-BUTYLPHTHALATE	UG/KG			30	J						
FLUORANTHENE	UG/KG	460	=	810	=	1600	=	790	=	710	=
PYRENE	UG/KG	430	=	950	=	1500	=	700	=	690	=
BENZO(A)ANTHRACENE	UG/KG	220	J	480	=	950	=	380	J	380	=
CHRYSENE	UG/KG	270	J	520	=	1200	=	510	=	510	=
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG			39	J						
BENZO(B)FLUORANTHENE	UG/KG	230	J	640	=	1100	=	430	=	470	=
BENZO(K)FLUORANTHENE	UG/KG	190	J	470	=	890	=	390	J	400	=
BENZO(A)PYRENE	UG/KG	190	J	380	J	900	=	380	J	360	J
INDENO(1,2,3-CD)PYRENE	UG/KG	150	J	220	J	600	=	230	J	240	J
DIBENZ(A,H)ANTHRACENE	UG/KG	77	J	96	J	240	J	110	J	130	J
BENZO(G,H,I)PERYLENE	UG/KG	160	J	180	J	620	=	290	J	280	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

was detected in all three samples and ranged from 1.5 mg/kg (Blank) to 5.1 mg/kg. Chromium concentrations ranged from 7.3 mg/kg to 16.1 mg/kg, copper concentrations ranged from 16 mg/kg to 29.6 mg/kg, and lead concentrations ranged from 29.5 mg/kg to 66.7 mg/kg in all three samples. Mercury was detected in sample 002-D at 0.32 mg/kg and in sample 003-D at 0.1 mg/kg and was also detected in the associated blank.

4.2.2.3 Analysis of Groundwater

The analytical results for groundwater samples collected at Site 6 are presented in Table 4-5. Monitor well locations are presented in Figure 4-4. Low levels of 2-Butanone (MEK) were detected in upgradient well MW6-01. Methylene chloride and acetone were detected at the J value level or at low concentrations and were present in the associated blanks. One phenol and three phthalates were detected at the J value level and in associated field blanks. Pesticides and PCBs were not detected. Fifteen metals were detected in all or some of the samples. The highest concentrations of lead were detected in well MW6-04 at 20.7 ug/l. Zinc ranged in concentration from 35.3 ug/l to 216 ug/l in all four wells. Sodium and chloride were elevated in all wells, probably reflecting their natural brackishness (levels were highest in MW6-01). Landfill "indicator" parameters were relatively low compared to the active solid waste landfills. BOD 5 Day, ammonia, total organic carbon, and turbidity were highest at well MW6-01. Nitrate and nitrite were highest at well MW6-02, sulfate was highest at well MW6-03, and chemical oxygen demand and phosphate were highest at well MW6-04.

4.2.3 Summary of Site 6 Characterization

Past disposal activities at Landfill 6 have had minimal impact on soils, sediments, and groundwater. Low levels of various compounds were detected in the soils. Results of the sediment sampling indicated the presence of PAHs and other SVOCs in total concentrations up to and exceeding 10 mg/kg. Results of the groundwater analyses show few compounds detected above instrument detection levels in either the upgradient well or the downgradient wells.

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TABLE 4-5
SUMMARY OF ANALYTICA RESULTS FOR GROUNDWATER
SAMPLES COLLECTED DURING ROUND I -- SITE 6:
LANDFILL WEST OF NORMANDY ROAD

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-001-M001		06-002-M001		06-003-M001		06-004-M001	
WELL #>		MW-01		MW-02		MW-03		MW-04	
	UNITS								
INORGANICS									
Aluminum, Total	UG/L	3110	=	2420	=	1800	=	2580	=
Arsenic, Total	UG/L	2.6	B						
Barium, Total	UG/L	74	B	112	B				
Calcium, Total	UG/L	32800	=	8810	=	11100	=	102000	=
Chromium, Total	UG/L	9.9	B					8.3	B
Cobalt, Total	UG/L							7.1	B
Copper, Total	UG/L	9	B	8.3	B			18.9	B
Iron, Total	UG/L	49800	=	16800	=	35000	=	46900	=
Lead, Total	UG/L	2.9	B					20.7	=
Magnesium, Total	UG/L	14500	=	6620	=			42400	=
Manganese, Total	UG/L	1650	=	322	=	105	=	1120	=
Potassium, Total	UG/L	7060	=	2980	=			9450	=
Sodium, Total	UG/L	60800	=	37400	=	40300	=	13200	=
Vanadium, Total	UG/L							13.6	B
Zinc, Total	UG/L	35.3	=	69	=	118	=	216	=
ORGANICS									
METHYLENE CHLORIDE	UG/L	8	JB	8	JB	7	JB	8	JB
ACETONE	UG/L	82	B	33	B	22	B	55	B
2-BUTANONE	UG/L	27	=			20	=		
DIETHYLPHTHALATE	UG/L					10	JB	10	JB
DI-N-BUTYLPHTHALATE	UG/L			10	JB	2	JB	10	JB
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L					7	JB		
TYPICAL LANDFILL PARAMETERS									
BOD 5 Day	MG/L	3.5	=			1.1	=	2	=
Chloride	MG/L	155	=	98.8	=	72.5	=	17.8	=
Chemical Oxygen Demand	MG/L	62.9	=	12.8	=	28.1	=	158	=
Nitrate Nitrite	MG-N/L	0.14	=	0.55	=	.13	=		
Ammonia, as N	MG/L	5.1	=	0.42	=	.2	=	3.6	=
Total Organic Carbon	MG/L	18.4	=	2.4	=	5.8	=	17.5	=
Phosphate, as P	MG/L	0.42	=	0.045	=	.098	=	0.51	=
Sulfate	MG/L	53.8	=	29	=	75.7	=	10.2	=
Turbidity	NTU	1440	=	128	=	219	=	552	=

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

4.3 SITE 9: LANDFILL SOUTHEAST OF "P" BARRICADES

4.3.1 Physical Characteristics

Site 9 is an isolated 3-acre site that was used for the disposal of dunnage lumber. Fill material was encountered in some of the test pits and consisted of what appeared to be mainly construction debris along with some household trash. The surface of the landfill is primarily vegetated with scrub pines and grasses. There are some scarred and open areas where vegetation is sparse. The landfill cover is thin and waste is exposed in some areas. The landfill surface is flat and slopes gently toward the south.

4.3.1.1 Soils

The original soils within Site 9 are part of the Tinton-Phalanx Group described in Section 2. Based on the samples obtained from the background test pits, the shallow soils at Site 9 generally consist of a silty, sandy loam dark yellow brown to light yellowish brown (10YR 3/4 to 10YR 6/4 munsel color classification). Coarse fragments of iron-cemented sandstone were encountered in every test pit. Some mixed fill materials (brick, steel sheeting, metal banding, burnt wood, and timber) were encountered in several of the test pits.

4.3.1.2 Drainage

No drainage swales or streams are located on the site. Drainage at Site 9 occurs through infiltration and evaporation. The perennial stream nearest to Site 9 is Wagner Creek, which is located off station approximately 2,000 ft to the northeast.

4.3.2 Chemical Results

4.3.2.1 Analysis of Soils

The analytical results for test pit soil samples are presented in Table 4-6. Test pit locations are presented in Figure 4-5. Samples were collected and analyzed for VOCs, SVOCs, metals, cyanide, and TPH. Chloroform and two phthalates were detected at the J value level. 4,4'-DDE, 4,4'-DDD, 4,4'-DDT were detected at low concentrations in test pits 004-T and 005-T. Low levels of methoxychlor were also detected in test pit 004-T. PCBs were not detected. Twenty metals were detected. The highest concentrations of lead were detected in test pit 005-T at 17.4 mg/kg and the highest concentrations of chromium were detected in test pit 006-T at 25.8 mg/kg. Cyanide was also detected in test pit 006-T at 1.57 mg/kg. TPH was detected in samples 001-T, 003-T, and 005-T at very low levels.

4.3.3 Summary of the Site 9 Characterization

Based on observations in test pits and the results of soil analyses, past disposal activities have had minimal impact on soils. Low levels of pesticides, metals, and cyanide were found in test pit soils located in the central portion of the site.

4.4 SITE 12: BATTERY STORAGE AND HANDLING AREA, WATERFRONT AREA

4.4.1 Physical Characteristics

Site 12 was used as a transhipment staging area for forklift batteries being sent off-site for reclamation and recharge. Site 12 is a paved area located to the east of Building R-10 and to the south of the railroad tracks. A drainpipe leads from Site 12 toward the tree line near Building 15. One sediment and surface water sample was collected from the storm drain outfall which discharges to a drainage way in the marsh adjacent to the site (Figure 4-4). Based on the

NWS- EARL\TB4- 6.WK3

TABLE 4-6
SUMMARY OF SOIL (TEST PIT) SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 9, (LANDFILL SOUTHEAST OF P BARRACADES)

		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92	
	SAMPLE ID>	09-001-T007		09-002-T010		09-003-T009		09-004-T005		09-005-T006		09-006-T008	
INORGANICS	UNITS												
Aluminum, Total	MG/KG	2320	=	9070	=	6090	=	7350	=	6280	=	9220	=
Arsenic, Total	MG/KG	6	=	7.9	=	13.2	=	6.5	=	6.3	=	8.8	=
Barium, Total	MG/KG	5	B	13.5	B	7.7	B	20.4	B	31.8	B	10.1	B
Beryllium, Total	MG/KG	0.3	B	1.2	B	0.52	B	0.72	B	0.58	B	0.93	B
Cadmium, Total	MG/KG					0.99	=						
Calcium, Total	MG/KG	110	B	242	B	141	B	750	B	799	B	89.5	B
Chromium, Total	MG/KG	10.9	=	16.2	=	21	=	19.4	=	16.9	=	25.8	=
Cobalt, Total	MG/KG	2.1	B	4.3	B	2.3	B	4.6	B	3.9	B	4	B
Copper, Total	MG/KG	3	B	4.2	B	4.1	B	4.9	B	6.3	=	3.1	B
Iron, Total	MG/KG	8580	=	36300	=	22300	=	33300	=	27600	=	26600	=
Lead, Total	MG/KG	5.5	=	5.6	=	9.9	=	12.7	=	17.4	=	6.9	=
Magnesium, Total	MG/KG	147	B	1210	B	911	B	1100	=	893	B	1520	=
Manganese, Total	MG/KG	49.2	=	112	=	24.4	=	104	=	168	=	28.1	=
Potassium, Total	MG/KG			1840	=	1970	=	2040	=	1420	=	4120	=
Silver, Total	MG/KG			2.7	=			2.5	=	2.2	B		
Sodium, Total	MG/KG	42.6	B	52.8	B	47.8	B	50.5	B	36.5	B	51.3	B
Vanadium, Total	MG/KG	23.2	=	5.7	B	20.8	=	11	=	11.7	B	11.5	B
Zinc, Total	MG/KG	5.3	=	39.8	=	17.5	=	60.3	=	44.6	=	60.1	=
Cyanide, Total	MG/KG											1.57	=
PESTICIDES													
4,4'-DDE	UG/KG							0.41	J	1.2	J		
4,4'-DDT	UG/KG							0.82	J	.41	JP		
METHOXYCHLOR	UG/KG							93	=				
ORGANICS													
CHLOROFORM	UG/KG	1	J	1	J								
DI-N-BUTYLPHTHALATE	UG/KG	23	J	37	J	25	J	28	J	25	J	21	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG			35	J	440	J			26	J	34	J
Petroleum Hydrocarbons	MG/KG	4.7	J			4.3	J			3.6	J		

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

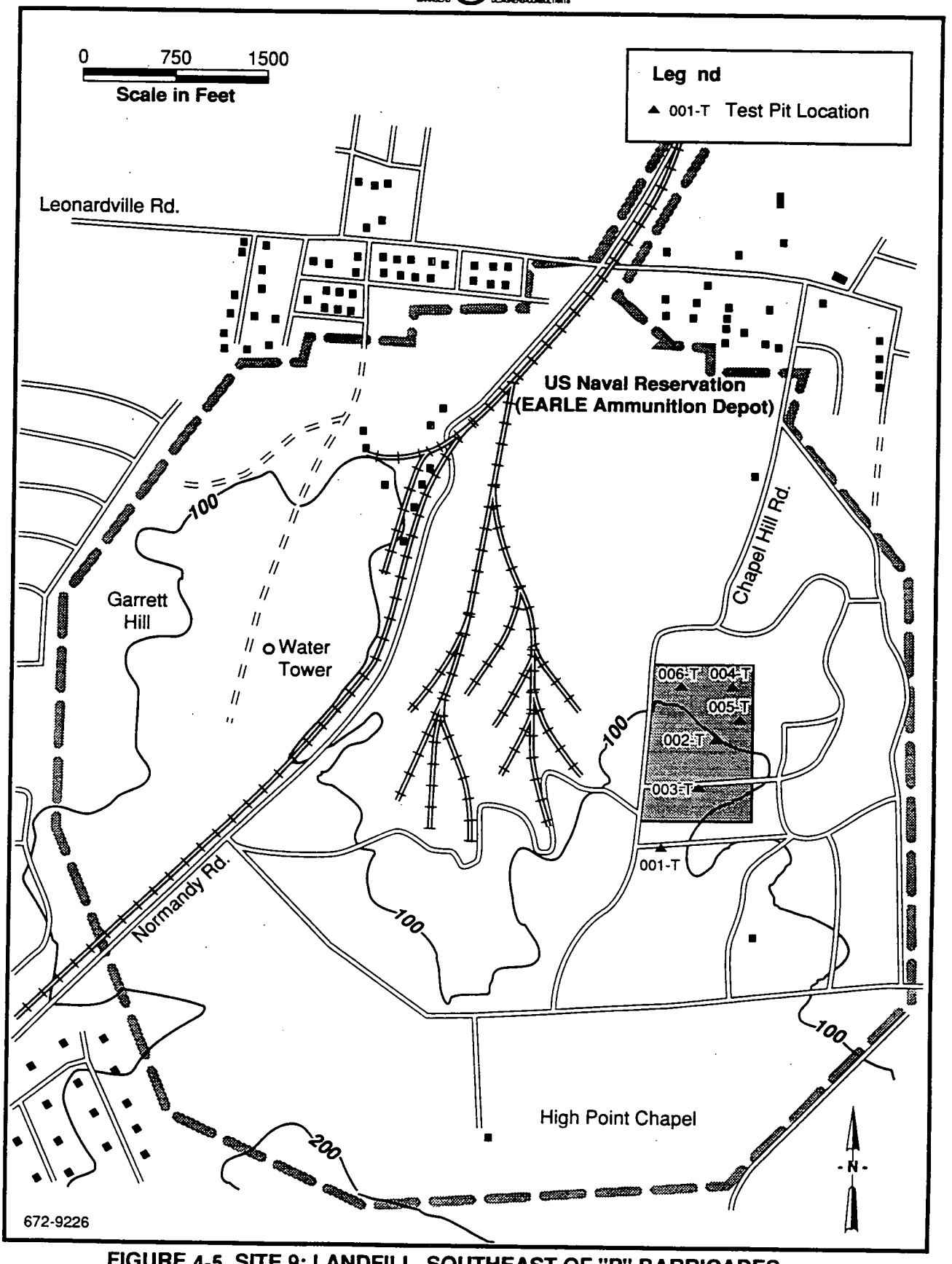

FIGURE 4-5 SITE 9: LANDFILL SOUTHEAST OF "P" BARRICADES TEST PIT AND SAMPLING LOCATIONS, NWS EARLE, NJ

results of the grain size analysis (Appendix C), sediments within the drainage at location 12-002-D001 consisted of loose, silty or clayey fine sand with some organic silts and clay.

4.4.1.1 Drainage

Because the area is either paved or covered with buildings, precipitation runs off this area to the stormwater control system. The asphalt parking lot at Site 12 is graded to direct rainwater to a small stormwater collection basin. Stormwater runoff from the basin discharges to a small drainageway by way of a concrete culvert. The drainageway flows toward the salt marsh located north of Site 6. This salt marsh joins Ware Creek, which is situated approximately 1,000 ft northwest of Site 6.

4.4.2 Chemical Results

4.4.2.1 Analysis of Sediments and Surface Waters

The analytical results are presented in Table 4-7. The sample locations are presented in Figure 4-4. The sediment sample from the stormwater culvert outflow was analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. The surface water sample was analyzed for VOCs, metals, and cyanide. Chloromethane and 2-butanone were detected in the sediment sample at 20 ug/kg (J value) and 59 ug/kg, respectively. Methylene chloride and acetone were detected at 28 ug/kg and 210 ug/kg, respectively, and were also detected in the laboratory blank. Volatiles were not detected in the surface water sample. Fifteen PAHs, four phthalates, and one phenol were detected at low concentrations or at the J value level in the sediment sample. Six pesticides were also detected in the sediment sample at low levels with three below quantification limits (J values). Nineteen metals were detected in the sediment and surface water sample. Levels of lead in the sediments and surface water were 261 mg/kg and 20.5 ug/l, respectively. Cyanide was not detected.

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TABLE 4-7
SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

SAMPLE ID>	16-JUN-92 12-002-D001 SEDIMENT				16-JUN-92 12-002-W001 SURFACE WATER				
INORGANICS	UNITS				UNITS				
Aluminum, Total	MG/KG	5220	=		UG/L		243	=	
Antimony, Total	MG/KG				UG/L				
Arsenic, Total	MG/KG	10.2	=		UG/L		2.9	B	
Barium, Total	MG/KG	61.7	B		UG/L		59.3	B	
Beryllium, Total	MG/KG	1.1	B		UG/L				
Cadmium, Total	MG/KG	1.7	B		UG/L				
Calcium, Total	MG/KG	2000	=		UG/L		22600	=	
Chromium, Total	MG/KG	45.4	=		UG/L				
Cobalt, Total	MG/KG	8.2	B		UG/L				
Copper, Total	MG/KG	58	=		UG/L				
Iron, Total	MG/KG	19900	=		UG/L		23200	=	
Lead, Total	MG/KG	261	=		UG/L		20.5	=	
Magnesium, Total	MG/KG	1380	B		UG/L		7380	=	
Manganese, Total	MG/KG	71.1	=		UG/L		591	=	
Mercury, Total	MG/KG	0.37	=		UG/L				
Nickel, Total	MG/KG	15.6	=		UG/L				
Potassium, Total	MG/KG	1010	B		UG/L		3480	B	
Selenium, Total	MG/KG				UG/L				
Silver, Total	MG/KG	3.5	B		UG/L				
Sodium, Total	MG/KG	341	B		UG/L		57900	=	
Thallium, Total	MG/KG				UG/L				
Vanadium, Total	MG/KG	21.2	=		UG/L				
Zinc, Total	MG/KG	306	=		UG/L		47.3	=	
Cyanide, Total	MG/KG				UG/L				
PESTICIDES									
DIELDRIN	UG/KG	54	J						
4,4'-DDE	UG/KG	57	J						
4,4'-DDD	UG/KG	91	=						
4,4'-DDT	UG/KG	33	J						
ALPHA CHLORDANE	UG/KG	87	=						
GAMMA CHLORDANE	UG/KG	90	=						

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

NWS-EARL\TB4-7.WK3

TABLE 4-7 (Continued)
SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

	SAMPLE ID>	16-JUN-92 12-002-D001 SEDIMENT						16-JUN-92 12-002-W001 SURFACE WATER				
ORGANICS												
CHLOROMETHANE	UG/KG	20	J									
METHYLENE CHLORIDE	UG/KG	28	B									
ACETONE	UG/KG	210	B									
2-BUTANONE	UG/KG	59	=									
PHENOL	UG/KG	42	J									
ACENAPHTHYLENE	UG/KG	100	J									
ACENAPHTHENE	UG/KG	100	J									
PHENANTHRENE	UG/KG	1600	=									
ANTHRACENE	UG/KG	520	J									
CARBAZOLE	UG/KG	630	J									
FLUORANTHENE	UG/KG	3300	=									
PYRENE	UG/KG	2300	=									
BUTYLBENZYLPHTHALATE	UG/KG	160	J									
BENZO(A)ANTHRACENE	UG/KG	1100	=									
CHRYSENE	UG/KG	1600	=									
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	3700	=									
DI-N-OCTYLPHTHALATE	UG/KG	170	J									
BENZO(B)FLUORANTHENE	UG/KG	1400	=									
BENZO(K)FLUORANTHENE	UG/KG	1300	=									
BENZO(A)PYRENE	UG/KG	1200	=									
INDENO(1,2,3-CD)PYRENE	UG/KG	770	=									
DIBENZ(A,H)ANTHRACENE	UG/KG	300	J									
BENZO(G,H,I)PERYLENE	UG/KG	730	=									

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

4.4.3 Summary of Site 12 Characterization

There is no existing source at Site 12 (batteries, contaminated soils or other residue) and no firm evidence that there was ever a release to the environment. The PAHs and pesticides found in the drainageway indicate some impact from Base activity not directly related to the battery handling at Site 12. Some elevated levels of lead were present in the sediments and surface water that may or may not be related to the battery handling activity. There are no batteries or any other materials currently handled or stored in the area.

4.5 SITE 13: DEFENSE PROPERTY DISPOSAL OFFICE YARD

4.5.1 Physical Properties

Site 13 is located near the rail classification yards. Activities conducted at this site included the storage of scrap metals and forklift batteries. In addition, transformers containing PCBs were stored at this site in open rail cars before being transported to the controlled storage area.

4.5.1.1 Soils and Sediments

The original soils at Site 13 are part of the Atsion Soils Series described in Section 2. Soil sampling at Site 13 was limited to the upper 3-ft interval. The shallow soils encountered within that zone were disturbed in places and varied from a gray to red brown loamy sand with some root matter to a mixture of soil containing slag and gravel. Based on the grain size analysis (Appendix C), the sediments within the drainage at location 13-001-D001 consisted of poorly graded sand with 2% silt or clay with little organics.

4.5.1.2 Drainage

The ground surface at Site 13 is relatively flat with little to no relief. There are no well developed drainages on the site surface. Drainage at the site occurs through overland runoff, infiltration, and evaporation. Overland runoff drains toward the north to marshland and west to

a perennial tributary of Hockhockson Brook. This tributary is situated within 50 ft of the western boundary of Site 13. A second tributary of Hockhockson Brook is located approximately 800 ft from the east boundary of the site.

4.5.2 Chemical Results

4.5.2.1 Analysis of Soils

Analytical results for six soil samples taken at 0 to 3 ft are presented in Table 4-8. Sample locations are shown on Figure 4-6. Soil samples were analyzed for SVOCs, PCBs, metals, and cyanide. Nineteen PAHs were detected in surface soils at locations 001-B, 002-B, and 005-B at the J value level. Bis(2-ethylhexyl)phthalate was detected at 2,700 ug/kg at location 002-B. 4,4'-DDE and 4,4'-DDT were detected at all locations and ranged from 1.4 ug/kg (J value) to 11 ug/kg. PCBs (Arochlor-1260) were detected at locations 001-B, 002-B, 004-B, and 006-B at concentrations ranging from 21 ug/kg (J value) to 300 ug/kg. Eighteen metals were detected in some or all of the samples. The highest chromium concentrations were detected at location 008-B at 44.1 mg/kg, and ranged from 2.8 mg/kg to 2 mg/kg at all other locations. The highest concentrations of lead were detected at location 001-B at 96.9 mg/kg, and ranged from 1.5 mg/kg to 58 mg/kg at all other locations. Mercury was detected at locations 004-B and 006-B at levels of 0.46 mg/kg and 0.36 mg/kg, respectively. It was also detected in duplicate sample of 002-B at 0.83 mg/kg. Zinc was detected at all locations and ranged from 7.6 mg/kg to 50.6 mg/kg.

4.5.2.2 Analysis of Sediments and Surface Waters

Analytical results for sediment and surface water samples taken from the drainageway adjacent to Site 13 are presented in Table 4-9. Sample locations are shown on Figure 4-6. The three sediment samples were analyzed for SVOCs, pesticides, and PCBs. The three surface water samples were analyzed for SVOCs, PCBs, pesticides, metals and cyanide. Three SVOCs were detected in sediment sample 002-D at the J value level. Arochlor-1260 and 4,4'-DDE were also detected in sediments at location 002-D at 27 ug/kg J value level, and 0.84 ug/kg J value level, respectively. SVOCs, pesticides, and PCBs were not detected in surface waters. Thirteen metals

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TABLE 4-8
SUMMARY OF ANALYTICAL RESULTS FOR SURFACE SOIL
SAMPLES COLLECTED DURING ROUND I -- SITE 13:
DEFENSE PROPERTY DISPOSAL OFFICE YARD

SAMPLE ID>		16-JUN-92 13-001-B001		16-JUN-92 13-002-B001		16-JUN-92 13-002-B101		16-JUN-92 13-003-B001		16-JUN-92 13-004-B001		13-005-B001		13-006-B001	
INORGANICS	UNITS														
Aluminum, Total	MG/KG	2050	=	1080	=	1260	=	512	=	816	=	519	=	1790	=
Arsenic, Total	MG/KG	3	=	0.9	B	1.1	B			0.83	B	0.68	B	1.6	B
Barium, Total	MG/KG	14.5	B	4.9	B	5.3	B	1.8	B	4.6	B			5.3	B
Beryllium, Total	MG/KG	0.24	B	0.29	B	0.33	B							0.47	B
Cadmium, Total	MG/KG	0.87	=									0.86	U	1.1	=
Calcium, Total	MG/KG	329	B	39.7	B	36.4	B	35.3	B	29.1	B	17.4	B	121	B
Chromium, Total	MG/KG	14.8	=	21.7	=	22	=	2.8	=	8.8	=	10.3	=	44.1	=
Cobalt, Total	MG/KG	2.4	B												
Copper, Total	MG/KG	25.2	=	4.2	B	4.4	B			3.5	B				
Iron, Total	MG/KG	8040	=	3850	=	4110	=	2520	=	2920	=	2400	=	6980	=
Lead, Total	MG/KG	96.9	=	58	=	25.7	=	1.5	=	5.6	=	3.8	=	22.6	=
Magnesium, Total	MG/KG	236	B	99.8	B	107	B	43.4	B	54.4	B	26.7	B	170	B
Manganese, Total	MG/KG	27	=	12.4	=	11.8	=	4.5	=	6.7	=	3.6	=	14.8	=
Mercury, Total	MG/KG					0.83	=			0.46	=			0.36	=
Potassium, Total	MG/KG	231	B	246	B	211	B			195	B			545	B
Silver, Total	MG/KG	6.4	=							2.6	=			42.1	=
Sodium, Total	MG/KG							24.1	B						
Vanadium, Total	MG/KG	14.8	=	25.3	=	26.7	=	3.3	B	9.3	B	11.5	=	53.9	=
Zinc, Total	MG/KG	50.6	=	13.7	=	14.5	=	7.6	=	10.5	=	12.4	=	39.9	=
PESTICIDES															
4,4'-DDE	UG/KG	4.9	R	11	=	7.6	J			1.4	J	3.6	J	6.5	=
ENDOSULFAN II	UG/KG	4.6	R												
4,4'-DDD	UG/KG	16	R											1.8	R
4,4'-DDT	UG/KG	75	R									4.4	=	8.3	R
PCB's															
AROCHLOR-1260	UG/KG	300	=	77	=	150	=			21	J			180	=
ORGANICS															
PHENOL	UG/KG	35	J												
NAPHTHALENE	UG/KG	61	J												
2-METHYLNAPHTHALENE	UG/KG	44	J												
ACENAPHTHYLENE	UG/KG	680	J												
ACENAPHTHENE	UG/KG	89	J												
DIBENZOFURAN	UG/KG	100	J												
FLUORENE	UG/KG	280	J												
PHENANTHRENE	UG/KG														
ANTHRACENE	UG/KG	1800	J												
CARBAZOLE	UG/KG	260	J												
DI-N-BUTYLPHTHALATE	UG/KG			37	J			40	J	27	J	34	J	36	J
FLUORANTHENE	UG/KG											24	J		
PYRENE	UG/KG			51	J										
BENZO(A)ANTHRACENE	UG/KG			33	J										
CHRYSENE	UG/KG			53	J							43	J		
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG			2700	=										
BENZO(B)FLUORANTHENE	UG/KG			38	J							46	J		
BENZO(K)FLUORANTHENE	UG/KG			45	J							42	J		
BENZO(A)PYRENE	UG/KG	2400	J	47	J							23	J		
INDENO(1,2,3-CD)PYRENE	UG/KG	870	J	25	J							41	J		
DIBENZ(A,H)ANTHRACENE	UG/KG	880	J												
BENZO(G,H,I)PERYLENE	UG/KG	1700	J									20	J		

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.
R - Data rejected by validators.

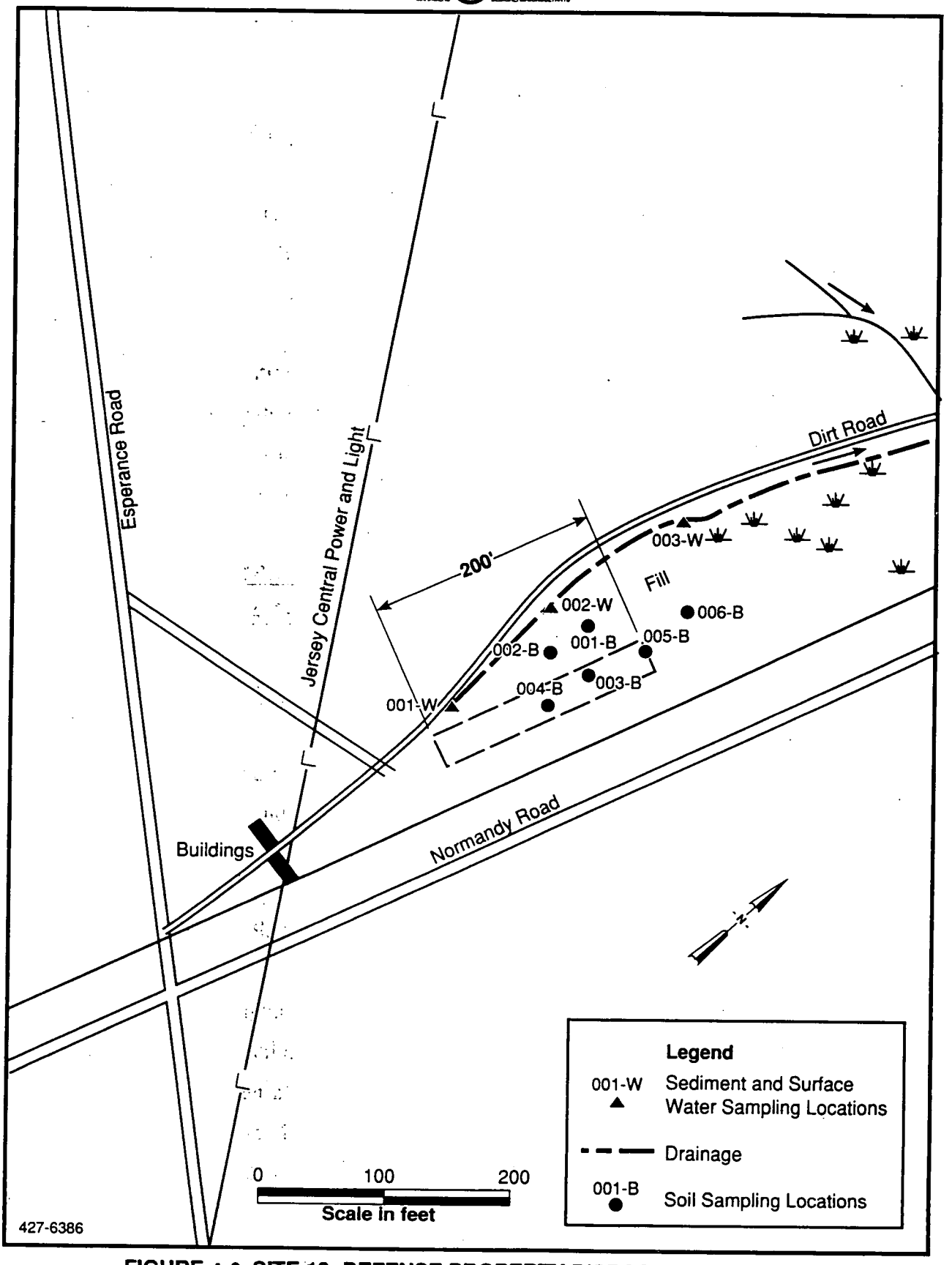

FIGURE 4-6 SITE 13: DEFENSE PROPERTY DISPOSAL OFFICE YARD, SAMPLING LOCATIONS, NWS EARLE, NJ

NWS-EARL\TB4-9.WK3

TABLE 4-9
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT AND SURFACE SAMPLES COLLECTED DURING ROUND I -- SITE 13:
DEFENSE PROPERTY DISPOSAL OFFICE YARD

	SAMPLE ID>	16-JUN-92 13-001-D001		16-JUN-92 13-002-D001		16-JUN-92 13-003-D001		16-JUN-92 13-001-W001		16-JUN-92 13-002-W001		16-JUN-92 13-003-W001	
INORGANICS	UNITS						UNITS						
Aluminum, Total	MG/KG						MG/L	407	=	1350	=	2630	=
Barium, Total	MG/KG						MG/L	41.9	B	43.4	B	41.5	B
Beryllium, Total	MG/KG						MG/L	1.2	B				
Calcium, Total	MG/KG						MG/L	7960	=	2360	B	1890	B
Chromium, Total	MG/KG						MG/L			9.4	B	35.9	=
Iron, Total	MG/KG						MG/L	86.9	B	499	=	5750	=
Lead, Total	MG/KG						MG/L			16.9	=		
Magnesium, Total	MG/KG						MG/L	1330	B	2090	B	2300	B
Manganese, Total	MG/KG						MG/L	62	=	60.5	=	61.6	=
Nickel, Total	MG/KG						MG/L					21.9	B
Potassium, Total	MG/KG						MG/L			1050	=	2360	B
Sodium, Total	MG/KG						MG/L	4410	B	3770	B	4270	B
Vanadium, Total	MG/KG						MG/L	11.8	B	10.7	B	13.9	B
Zinc, Total	MG/KG						MG/L	30.1	=	53.1	=	72.7	=
PESTICIDES													
4,4'-DDE	UG/KG			0.84	J		UG/L						
PCB's													
AROCHLOR-1260	UG/KG			27	J		UG/L						
ORGANICS													
PHENANTHRENE	UG/KG			21	J		UG/L						
DI-N-BUTYLPHTHALATE	UG/KG			48	J		UG/L						
PYRENE	UG/KG			22	J		UG/L						

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

were detected in some or all of the surface water samples. Chromium was detected at location 003-D at 35.9 mg/L and lead was detected at location 002-D at 16.9 mg/kg.

4.5.3 Summary of Site 13 Characterization

Site 13 is a secured area that is used as a long-term parking facility. Currently, there are no materials being handled or stored in the area. The PCB Arochlor 1260 was found in five soil samples from 27 J to 300 ug/kg. Numerous BNA compounds were detected but not quantified. A number of BNA compounds, pesticides, and Arochlor 1260 were found at concentrations below quantitation limits (27 J ug/kg) in one off-site sediment sample. Generally, concentrations in the sediments were much lower than those in the on-site soils. Some elevated metals were present in the sediments and surface water. BNA compounds, pesticides, and PCBs were not detected in any of the surface water samples.

4.6 SITE 15: SLUDGE DISPOSAL SITE NEAR WATERFRONT SOUTH GATE GATE

4.6.1 Physical Characteristics

This site is a railroad grade that extends into a wooded area near the waterfront entrance gate. Tracks and ties were removed long ago. The site location is built up approximately 6 ft above grade.

4.6.1.1 Soils

The original soils at Site 15 are part of the Tinton-Phalanx Group described in Section 2. Based on the soil descriptions in the boring logs (Appendix B), the shallow soils at Site 15 are generally characterized as silty and poorly graded sands, with some layers of clay and elastic silt. The soils are dark yellow brown, dark gray to black (10YR 3/4 to 10YR 3/1 munsel color classification).

4.6.1.2 Drainage

Site 15 is contained within a relatively small area with a small drainage swale that runs parallel to the old railroad bed on the north side. Overland flow drains toward the swale. The swale is also a receptor for stormwater from the adjacent paved areas. It is usually dry except between periods of runoff.

4.6.2 Analysis of Soils

Soil samples were collected from each of two soil borings drilled at Site 15. Sample 15-001-B008 was collected from boring number 1 at 8 ft bgs. Sample 15-002-B007 was collected from boring number 2 at 7 ft bgs. The analytical results for the soil samples collected at Site 15 are shown in Table 4-10. The locations are shown on Figure 4-4 and are identified as 001-B and 002-B. Samples were analyzed for BNAs. Three BNA compounds were detected consistently at levels below quantification limits in both soil samples. They include di-n-butylphthalate, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate. No other BNA compounds were detected in either sample.

4.6.3 Analysis of Sediments

Four sediment samples were collected within the drainage at Site 15. The locations are shown on Figure 4-4 and are identified as 001-D through 004-D. A summary of sediment sample analytical results for samples collected at Site 15 is presented in Table 4-11. The sediments were sampled from 0 to 0.5 ft bgs. Samples 001-D through and 004-D were analyzed for BNAs.

As shown in Table 4-11, diethylphthalate was detected in one sample at 23 mg/kg, SVOCs; phenanthrene, anthracene, di-n-butylphthalate, fluoranthene, pyrene, bis(2-ethylhexyl)phthalate, and others were detected below quantification limits in all four samples.

NWS-EARL\TB4-10.WK3

TABLE 4-10
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

		07-MAY-92		07-MAY-92			
	SAMPLE ID>	15-001-B008		15-002-B007			
BNA's	UNITS						
PHENOL	UG/KG			24	J		
DI-N-BUTYLPHTHALATE	UG/KG	150	J	110	J		
BUTYLBENZYLPHTHALATE	UG/KG	47	J	22	J		
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	530	J	190	J		

= – Analyte quantified above method detection limit.
J – Estimated value.
B – Analyte also detected in a blank sample.

NWS-EARL\TB4-11.WK3

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT
SAMPLES COLLECTED DURING ROUND I -- SITE 15:
BILGE WATER DISPOSAL SITE NEAR WATERFRONT SOUTH GATE

		07-MAY-92		07-MAY-92		07-MAY-92		07-MAY-92	
	SAMPLE ID>	15-001-D001		15-002-D001		15-003-D001		15-004-D001	
BNA's	UNITS								
PHENOL	UG/KG	230	J						
DIETHYLPHTHALATE	UG/KG	23000	=						
PHENANTHRENE	UG/KG			58	J			48	J
ANTHRACENE	UG/KG			36	J			36	J
CARBAZOLE	UG/KG							24	J
DI-N-BUTYLPHTHALATE	UG/KG	56	J	31	J	34	J	32	J
FLUORANTHENE	UG/KG	33	J	250	J	41	J	140	J
PYRENE	UG/KG			180	J	23	J	110	J
BUTYLBENZYLPHTHALATE	UG/KG							21	J
BENZO(A)ANTHRACENE	UG/KG			74	J			57	J
CHRYSENE	UG/KG			160	J	28	J	120	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	34	J	51	J	290	J	63	J
BENZO(B)FLUORANTHENE	UG/KG			140	J	28	J	120	J
BENZO(K)FLUORANTHENE	UG/KG			130	J	24	J	100	J
BENZO(A)PYRENE	UG/KG			63	J				
INDENO(1,2,3-CD)PYRENE	UG/KG			61	J			31	J
BENZO(G,H,I)PERYLENE	UG/KG			39	J			38	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

4.6.4 Analysis of Groundwater

Analytical results for the Hydro-Punch© groundwater sample are presented in Table 4-12. The Hydro-Punch© location is presented in Figure 4-4. The sample (15-001-K011) was analyzed for TAL metals and the full scan of TCL compounds. Arsenic, barium, and beryllium were detected at 20 ug/l, 2,040 ug/l, and 42.5 ug/l, respectively. Chromium, lead, nickel, and silver were detected at 1,840 ug/l, 264 ug/l, 557 ug/l, and 198 ug/l, respectively. Zinc was detected at 1,470 ug/l.

4.6.5 Summary of Results for Site 15

Except for the altered topography, there is no physical surficial evidence of use of Site 15 as a railroad grade or location of bilgewater dumping. Small quantities of BNA organic compounds were found in soils and sediments but not in the groundwater.

4.7 SITE 16: FUEL LINE CONNECTING BUILDINGS C-19 AND C-50

4.7.1 Physical Characteristics

Site 16 is located in an active railroad yard near Buildings C-18, C-19, C-20, and C-50. These buildings are used for fueling and maintenance of rail cars. The underground diesel fuel line is located adjacent to Building C-19.

4.7.1.1 Drainage

No drainage swales or streams are located at Site 16. Much of the site is paved or covered with buildings so that drainage is limited to overland flow to the station stormwater control system. The surface perennial stream nearest to Site 16 is a tributary of Hockhockson Brook which is located approximately 1,000 ft to the northwest of the site.

NWS-EARL\TB4-12.WK3

TABLE 4-12
SUMMARY OF ANALYTICAL RESULTS FOR
(HYDROPUNCH) SAMPLE (JUNE 1992) NWS
EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

SAMPLE ID>	07-MAY-92 15-001-K011 HYDROPUNCH			07-MAY-92 15-001-K211	
INORGANICS	UNITS				
Aluminum, Total	UG/L	621000	=		
Antimony, Total	UG/L	360	R	36	R
Arsenic, Total	UG/L	20	R	2	R
Barium, Total	UG/L	2040	=		
Beryllium, Total	UG/L	42.5	=		
Cadmium, Total	UG/L	11.9	=		
Calcium, Total	UG/L	37900	=		
Chromium, Total	UG/L	1840	=		
Cobalt, Total	UG/L	388	=		
Copper, Total	UG/L	189	R		
Iron, Total	UG/L	3070000	=	206	=
Lead, Total	UG/L	264	=		
Magnesium, Total	UG/L	65800	=		
Manganese, Total	UG/L	7620	=		
Mercury, Total	UG/L	2.8	=		
Nickel, Total	UG/L	557	=		
Potassium, Total	UG/L	52000	=		
Silver, Total	UG/L	198	=		
Sodium, Total	UG/L	16200	=		
Thallium, Total	UG/L	20	R	2	R
Vanadium, Total	UG/L	541	=		
Zinc, Total	UG/L	1470	=		
ORGANICS					
METHYLENE CHLORIDE	UG/L	9	JB	2	JB
ACETONE	UG/L	18	=	4	J
CHLOROFORM	UG/L			10	J
DIETHYLPHTHALATE	UG/L	1	J		
DI-N-BUTYLPHTHALATE	UG/L	1	J	10	J

= – Analyte quantified above method detection limit.
J – Estimated value.
B – Analyte also detected in a blank sample.
R – Data rejected by data validators.

4.7.2 Chemical Results

4.7.2.1 Analysis of Soils

Analytical results for soil samples obtained near the top of the water table (approximately 8 ft bgs) are presented in Table 4-13. Soil boring locations are presented in Figure 4-7. Five PAHs and one phthalate were detected. Concentrations ranged from 1.2 mg/kg (J value) to 110 mg/kg. Elevated levels of TPH were detected in all samples with concentrations ranging from 4,700 mg/kg to 22,000 mg/kg.

4.7.3 Summary of Site 16 Characterization

Hydrocarbon contamination was found in all of the subsurface soil samples. TPH concentrations ranged from 4,700 mg/kg to 22,000 mg/kg. Because of the current use of the site and of the existence of other subsurface features, it is not certain that the old pipeline is the source, or the only source of hydrocarbons in these soils. This area has been an active railyard for several decades, it is therefore possible that the results are indicative of a more widespread occurrence of hydrocarbon contamination.

4.8 SITE 17: DISPOSAL AREA BEHIND TRAINING BARGE, WATERFRONT AREA

4.8.1 Physical Characteristics

The Site 17 landfill is approximately 3 acres in size and was used for the disposal of forklift vehicles, empty paint cans, construction debris, and other inert materials. This site is located approximately 500 ft southwest of Site 6, adjacent to a tidal marsh and within close proximity to Sandy Hook Bay (Figure 4-3). Like Site 6, surface drainage from the site flows into the marsh and eventually into the bay. The face of the landfill is 10 to 15 ft above the marsh area. The toe and edge are vegetated. Much of the remaining surface is paved.

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TABLE 4-13
SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED DURING ROUND I -- SITE 16: FUEL LINE
CONNECTING BUILDINGS C-20 AND C-50

		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92	
	SAMPLE ID>	16-001-B007		16-001-B207		16-002-B007		16-003-B010		16-003-B110		16-004-B008		16-005-B008	
BNA's	UNITS														
NAPHTHALENE	UG/KG	22000	J		=	16000	=	25000	=	56000	U	18000	=	4000	J
2-METHYLNAPHTHALENE	UG/KG	78000	=			59000	=	86000	=	110000	=	64000	=	15000	=
FLUORENE	UG/KG					4600	J								
PHENANTHRENE	UG/KG	14000	J			9300	J	11000	J	16000	J	9700	J	2500	J
PYRENE	UG/KG					1200	J								
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG					1800	J	1200	J					1400	J
TPH	MG/KG	14000		1.1		9800		22000		22000		13000		4700	

= -- Analyte quantified above method detection limit
J -- Estimated value.
B -- Analyte also detected in a blank sample.

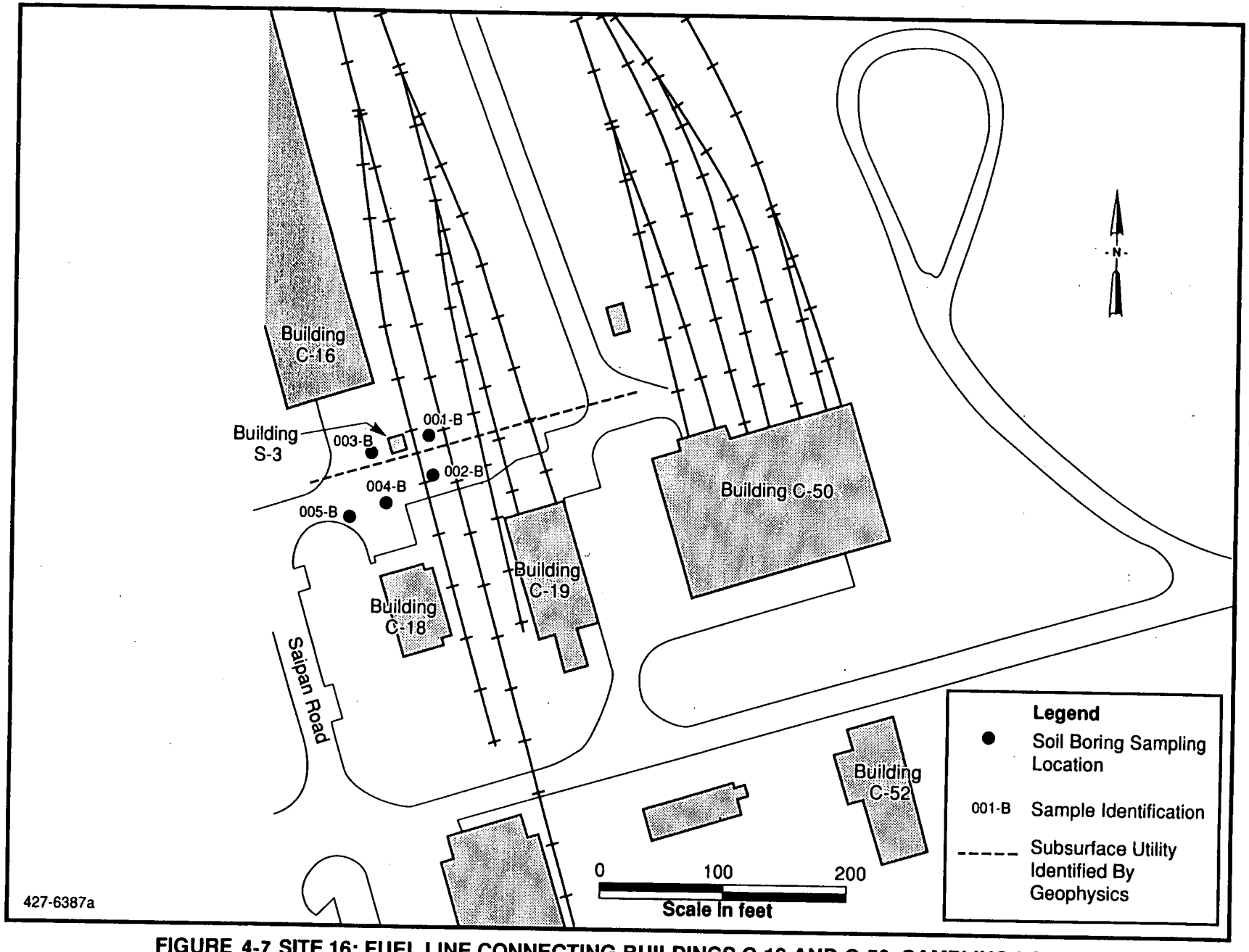

FIGURE 4-7 SITE 16: FUEL LINE CONNECTING BUILDINGS C-19 AND C-50, SAMPLING LOCATION, NWS EARLE, NJ

4.8.1.1 Soils

The following lithologic description of the geologic materials at Site 17 is based on the physical characterization of continuous split spoon samples obtained during drilling for soil sampling and the monitor well installation. These descriptions are contained in the boring logs presented in Appendix B. Fill material was encountered from the ground surface down to a depth of between 5 and 7 ft, consistently in borings MW17-1, MW17-2, MW17-3, BH17-5, BH17-6, and BH17-7. Fill material was encountered deeper (to 10 ft) in MW17-1. The natural soils underlying fill material consist of predominantly poorly graded sand with some silt, and interbedded thin plastic clay layers. Colors range from dark brown to yellow and light olive brown. Iron staining was evident in several places. Based on the grain size analysis (Appendix C), sediments at locations 17-001-D001 and 17-004-D001 consisted of brown silty sand with 2% gravel and 45% silt or clay.

4.8.1.2 Drainage

A large area of Site 17 is covered with either asphalt or macadam. Drainage by overland flow is toward the salt marsh located northwest of the site. Infiltration is limited by the paved surfaces found over much of the site.

4.8.1.3 Hydrogeology

Generally, groundwater levels across the site range from between 6 to 10 ft bgs. Figure 4-3 presents the groundwater elevation contours developed from the water elevations obtained 16 June 1992. Groundwater flow is to the north-northwest toward the marsh with an average gradient of .005 ft/ft. Site 17 is crossgradient from Site 6.

4.8.2 Analysis of Soils

Soil samples were collected from each of four soil borings (003-B, 005-B, 006-B, and 007-B) drilled at Site 17. The locations are shown on Figure 4-4 and are identified as 17-003-B001

through 17-007-B001. The analytical results for the soil samples collected at Site 17 are shown in Table 4-14. Samples were analyzed for TAL metals and cyanide. No significant concentrations of metals were detected in any of the samples.

4.8.3 Analysis of Sediments

Four sediment samples were collected within the drainage at the toe of the fill material at Site 17. The locations are shown on Figure 4-4 and are identified as 17-001-D001 through 17-004-D001. A summary of sediment sample analytical results for samples collected at Site 17 is shown in Table 4-15. The sediments were sampled from 0 to 0.5 ft bgs. Samples 001-D through and 004-D were analyzed for the full scan of TCL compounds (including VOCs, SVOCs, pesticides, and PCBs) In addition, sample 003-D was analyzed for TAL metals and cyanide.

As shown in Table 4-15, metal concentrations in the sediments taken at location 001-D were low and within the range of naturally occurring concentrations.

Various pesticide compounds were detected in the soils below quantifiable levels.

VOAs methylene chloride and acetone were detected at trace concentrations below quantification limits. Toluene was detected in sample 17-004-D001 at 3 J ug/kg.

SVOCs phenol and 2-butanone were detected in one sample; phenanthrene, anthracene, fluoranthene, pyrene, and others were detected below quantification limits in all four samples.

4.8.4 Analysis of Groundwater

The analytical results for groundwater samples collected from monitoring wells MW17-01 through MW17-04 at Site 17 are presented in Table 4-16. Samples were analyzed for TAL metals, the full scan of TCL compounds (including VOCs, SVOCs, pesticides, and PCBs) and typical landfill parameters.

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TABLE 4 - 14
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 17, (DISPOSAL SITE BEHIND TRAINING BARG E)

	SAMPLE ID>	11-MAY-92 17-002-B006		11-MAY-92 17-002-B012		11-MAY-92 17-003-B005		11-MAY-92 17-003-B008		12-MAY-92 17-005-B008		12-MAY-92 17-005-B010		13-MAY-92 17-006-B006		13-MAY-92 17-006-B008		13-MAY-92 17-007-B004		13-MAY-92 17-007-B010	
INORGANICS	UNITS																				
Aluminum, Total	MG/KG	NA		NA		5310	=	4480	=	2400	=	3200	=	4300	=	1040	=	NA		7310	=
Antimony, Total	MG/KG	NA		NA														NA			
Arsenic, Total	MG/KG	NA		NA		13.9	=	7.4	=	2.3	=	3.4	=	3.3	=	11.7	=	NA		3.2	=
Barium, Total	MG/KG	NA		NA		14.9	B	10.1	B	13.6	B	6.9	B	7.6	B	5.9	B	NA		7.1	B
Beryllium, Total	MG/KG	NA		NA		0.82	B	0.71	B			0.29	B	0.31	B			NA			
Cadmium, Total	MG/KG	NA		NA														NA			
Calcium, Total	MG/KG	NA		NA		392	B	173	B	17600	=	560	B	173	B	98.5	B	NA		796	B
Chromium, Total	MG/KG	NA		NA		19.4	=	36.1	=	15.3	=	6.3	=	17.5	=	9.9	=	NA		22.8	=
Cobalt, Total	MG/KG	NA		NA		5.1	B	2.4	B	3.7	B			1.7	B			NA		6.5	B
Copper, Total	MG/KG	NA		NA		9.2	=	15.6	=	19.1	=	2.4	B	4.5	B	1.6	B	NA		12.7	=
Iron, Total	MG/KG	NA		NA		20400	=	21000	=	14200	=	8380	=	18200	=	5500	=	NA		103000	=
Lead, Total	MG/KG	NA		NA		28.1	=	14.8	=	63.6	=	6	=	9.8	=	5.6	=	NA		15.1	=
Magnesium, Total	MG/KG	NA		NA		536	B	208	B	1900	=	127	B	178	B	112	B	NA		285	B
Manganese, Total	MG/KG	NA		NA		85.9	=	19.9	=	112	=	22.8	=	16.4	=	6.8	=	NA		127	=
Mercury, Total	MG/KG	NA		NA										1.2	=			NA			
Nickel, Total	MG/KG	NA		NA						11.8	=							NA			
Potassium, Total	MG/KG	NA		NA		1130	B	724	B	236	B			375	B			NA		371	B
Selenium, Total	MG/KG	NA		NA														NA			
Silver, Total	MG/KG	NA		NA								2.3	B					NA		4.6	=
Sodium, Total	MG/KG	NA		NA		379	B	1.21	B	1300	=	479	B	53.7	B	65.3	B	NA		73	B
Thallium, Total	MG/KG	NA		NA														NA			
Vanadium, Total	MG/KG	NA		NA		24.7	=	72.5	=	21.4	=	17.9	=	44.2	=	23.4	=	NA		15.7	=
Zinc, Total	MG/KG	NA		NA		41.5	=	6.8	=	41.5	=			5.4	=	3	B	NA		24.9	=
CYANIDE	MG/KG	NA		NA														NA			

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

NWS-EARLTB4-15.WK3

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT SAMPLES
COLLECTED DURING ROUND I - SITE 17: DISPOSAL AREA
BEHIND TRAINING BARGE, WATERFRONT AREA

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	17-001-D001		17-002-D001		17-003-D001		17-004-D001	
INORGANICS	UNITS								
Aluminum, Total	MG/KG					1530	=		
Arsenic, Total	MG/KG					3.5	=		
Barium, Total	MG/KG					5.5	B		
Beryllium, Total	MG/KG					0.27	B		
Calcium, Total	MG/KG					959	=		
Chromium, Total	MG/KG					12.4	=		
Copper, Total	MG/KG					6.4	=		
Iron, Total	MG/KG					10400	=		
Lead, Total	MG/KG					12.8	=		
Magnesium, Total	MG/KG					386	B		
Manganese, Total	MG/KG					29.6	=		
Potassium, Total	MG/KG					219	B		
Sodium, Total	MG/KG					5500	=		
Vanadium, Total	MG/KG					16.1	=		
Zinc, Total	MG/KG					33.9	=		
Cyanide, Total	MG/KG					3.09	=		
PESTICIDES									
4,4'-DDE	UG/KG	13	=			6.4	=	120	=
4,4'-DDD	UG/KG	5.7	J					19	J
4,4'-DDT	UG/KG	35	=			4.3	J	210	=
ENDRIN ALDEHYDE	UG/KG					210	=		
ALPHA CHLORDANE	UG/KG					23	=	42	J
GAMMA CHLORDANE	UG/KG	6.6	=			23	=	16	J
ORGANICS									
METHYLENE CHLORIDE	UG/KG	11	B			20	B	46	B
ACETONE	UG/KG					150	B	32	B
2-BUTANONE	UG/KG					42	J	190	=
PHENOL	UG/KG							1900	=
PHENANTHRENE	UG/KG	33	J	45	J	32	J	230	J
ANTHRACENE	UG/KG	30	J	26	J			73	J
DI-N-BUTYLPHTHALATE	UG/KG					28	J		
FLUORANTHENE	UG/KG	110	J	91	J	92	J	460	J
PYRENE	UG/KG	96	J	79	J	65	J	390	J
BENZO(A)ANTHRACENE	UG/KG	60	J	47	J	36	J		
CHRYSENE	UG/KG	85	J	110	J	58	J	120	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	77	J			76	J		
BENZO(B)FLUORANTHENE	UG/KG	72	J	76	J	52	J	230	J
BENZO(K)FLUORANTHENE	UG/KG	120	J	60	J	50	J	240	J
BENZO(A)PYRENE	UG/KG	45	J	46	J	47	J	190	J
INDENO(1,2,3-CD)PYRENE	UG/KG			36	J			180	J
BENZO(G,H,I)PERYLENE	UG/KG	47	J	37	J			190	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.
R - Data rejected by validation.

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TABLE 4-16
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
SAMPLES COLLECTED DURING ROUND I -- SITE 17:
DISPOSAL AREA BEHIND TRAINING BARGE, WATERFRONT AREA

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	17-001-M001		17-002-M001		17-003-M001		17-003-M101		17-004-M001	
	WELL #>	MW-01		MW-02		MW-03		MW-03 (DUP)		MW-04	
INORGANICS	UNITS										
Aluminum, Total	UG/L	27400	=	23300	=	1990	=	2320	=	5780	=
Arsenic, Total	UG/L	16.5	=	37	=						
Barium, Total	UG/L	129	B	82.1	B	68.5	B	77.3	B	551	=
Beryllium, Total	UG/L	6.1	=	2.1	B						
Cadmium, Total	UG/L			4.7	B						
Calcium, Total	UG/L	17600	=	15300	=	7410	=	8250	=	466000	=
Chromium, Total	UG/L	139	=	156	=	9.3	B	10.9	=	13.3	=
Cobalt, Total	UG/L	39.1	B	44	B	11.1	B	10.6	B	12.2	B
Copper, Total	UG/L	81.1	=	81.5	=					7.1	B
Iron, Total	UG/L	88000	=	71000	=	2300	=	2600	=	136000	=
Lead, Total	UG/L	80	=	56	=	16.4	=	17.6	=		
Magnesium, Total	UG/L	9840	=	5320	=	5260	=	5910	=	76100	=
Manganese, Total	UG/L	1540	=	286	=	290	=	325	=	2380	=
Mercury, Total	UG/L	0.13	B	0.13	B						
Nickel, Total	UG/L	41.8	=	43.3	=						
Potassium, Total	UG/L	9220	=	9170	=	2640	B	2710	B	58900	=
Selenium, Total	UG/L			2.2	B						
Sodium, Total	UG/L	9370	=	14300	=	17900	=	17600	=	703000	=
Vanadium, Total	UG/L	376	=	259	=	10.3	B	10.9	B	51.8	=
Zinc, Total	UG/L	253	=	182	=	90.4	=	63.1	=	75.2	=
ORGANICS											
ACETONE	UG/L			35	B	44	B	8	JB	51	B
TYPICAL LANDFILL PARAMETERS											
BOD 5 Day	MG/L	3.9		1.7		1		19.2		8.8	
Chloride	MG/L	37.6		17.3		34.6		47		19900	
Chemical Oxygen Demand	MG/L	119		79.6		8.1		119		15.9	
Nitrate Nitrite	MG-N/L			0.1							
Ammonia, as N	MG/L			0.49						6.6	
Total Organic Carbon	MG/L	4.2		97.2		1.4		1.3		30.9	
Phosphate, as P	MG/L	0.48		0.41		0.028		0.022		0.48	
Sulfate	MG/L	576		12.9		46.8		4513		260	
Turbidity	NTU	242		288		9.2		10		550	

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

Low levels of arsenic, chromium, and lead and were detected in wells MW17-01 and MW17-02. Arsenic was detected in MW17-01 (16.5 ug/l) and MW17-02 (37 ug/l). Chromium was detected in MW17-01 (139 ug/l) and MW17-02 (156 ug/l). Lead was detected in MW17-01 (80 ug/l) and MW17-02 (56 ug/l).

Methylene chloride was detected in wells MW17-02, MW17-03, and MW17-04 below the instrument detection limit (J values) or were also detected in the method blank sample. No other VOCs, pesticides, or PCBs were detected in any of the groundwater samples. Landfill parameters were generally low when compared to active landfills.

4.8.5 Summary of Site 17 Characterization

Site 17 is an inactive solid waste landfill that was constructed at the edge of the waterfront area and is currently covered mostly by paved parking areas and the Training Barge. Monitor wells placed around the site indicate that the groundwater table flow gradient is toward the marsh area. None of the monitor well groundwater sample results indicated significant releases of contaminants from Site 17. Past disposal activities at Landfill 17 appear to have had minimal impact on soils, sediments, and groundwater.

4.9 SITE 23: PAINT CHIP DISPOSAL AREA ADJACENT TO BUILDING D-5

4.9.1 Physical Characteristics

Site 23 is located off of Normandy Road and includes Building D-5. A small area of visible paint residue on the ground surface is adjacent to the northwest corner of Building D-5. An earthen berm approximately 20 ft high surrounds the north, east, and west sides of the site. Within the berm on the northwestern side of the site is standing water with fragmites. Six soil samples were collected from 0 to 3 ft. Eight sediment samples were collected, and one Hydro-Punch© groundwater sample was collected.

4.9.1.1 Soils and Sediments

The original soils at Site 23 are part of the Atsion Soils Series described in Section 2. Soil sampling at Site 23 was limited to the upper 3-ft interval. The shallow soils encountered within that zone were disturbed in places and varied from an olive gray to reddish brown loamy sand with some root matter. The upper few inches of soil in a very small area in the vicinity of sample 23-003-B001 were stained with what appeared to be paint residue. The sediments within the drainage consisted of loose, silty sand ranging in color from olive brown to dark yellow brown.

Based on the physical characterization of samples obtained during the Hydro-Punch© drilling, the deeper soils consisted of poorly graded sands, dark green gray (5 G 4/1 munsel color classification). These descriptions are contained in the boring logs presented in Appendix B.

4.9.1.2 Drainage

Site 23 is partially paved and covered by Building D-5. The only non-paved surfaces are those located behind Building D-5 and outside of the fenceline. Drainage at the site occurs through overland runoff and evaporation. Some infiltration occurs within the non-paved areas. Overland runoff drains radially across the site and into a shallow (1 to 2 ft deep) drainage depression which surrounds the site on three sides. The drainage flows toward the northwest to small marshland with standing water. A tributary of Hockhockson Brook is located approximately 500 to 600 ft southwest of the site.

4.9.2 Analysis of Soils

Analytical results for soil samples taken with a split spoon during the Hydro-Punch© sampling are presented in Table 4-17. The sample locations are presented in Figure 4-8. Soil samples 003-B and 006-B were collected for VOCs, SVOCs, pesticides, PCBs, and five metals, and four soil samples were collected for five metals. Di-n-butylphthalate and methylene chloride were detected at 003-B and 006-B at the J value level. Pesticides and PCBs were not detected. The

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TABLE 4-17
SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED DURING ROUND I -- SITE 23: PAINT
CHIP DISPOSAL AREA ADJACENT TO BUILDING D-5

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	23-001-B001		23-002-B001		23-003-B001		23-004-B001		23-005-B001		23-006-B001		23-007-B001		23-008-B001	
INORGANICS	UNITS																
Cadmium, Total	MG/KG	0.87	=							2.1	=			1.21	=		
Chromium, Total	MG/KG	17.7	=	239	=	40.3	=	17.8	=	51.5	=	7.7	=	115	=		
Copper, Total	MG/KG	5	=	4.8	B	5.6	B	3	B	6.3	=	2.6	B	9	=		
Lead, Total	MG/KG	17.8	=	560	=	9.4	=	15.3	=	13.7	=	3.1	=	39.2	=		
Zinc, Total	MG/KG	24.7	=	558	=	16.2	=	89.9	=	191	=	4.2	B	11.8	=		
ORGANICS																	
METHYLENE CHLORIDE	UG/KG					3	J					8	J				
DI-N-BUTYLPHTHALATE	UG/KG					48	J					40	J				

= -- Analyte quantified above method detection limit.
J -- Estimated value.
B -- Analyte also detected in a blank sample.

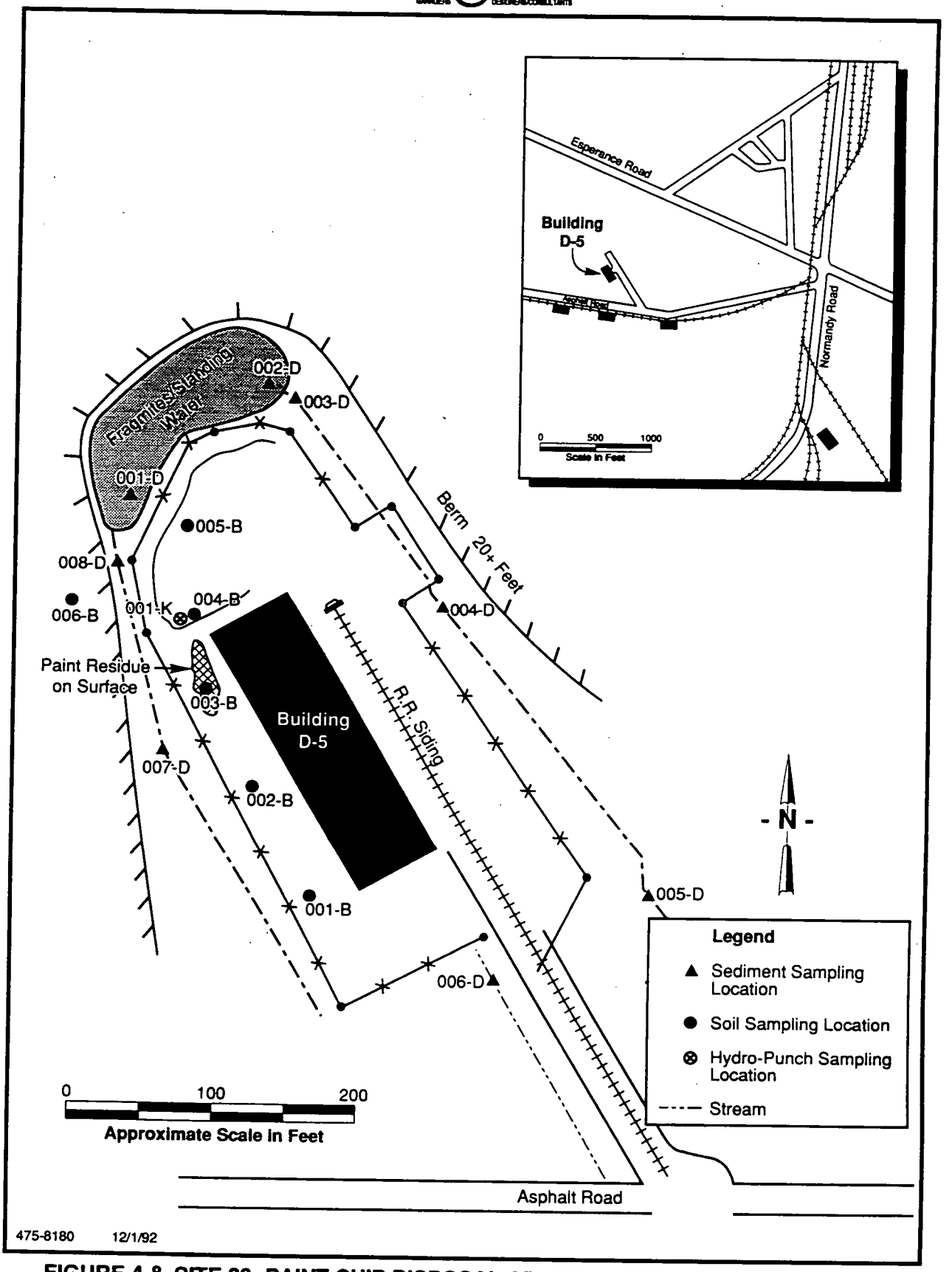


FIGURE 4-8 SITE 23: PAINT CHIP DISPOSAL AREA ADJACENT TO BUILDING D-5, SAMPLING LOCATIONS, NWS EARLE, NJ

highest concentrations of chromium were detected in sample 002-B at 239 mg/kg. In other samples chromium concentrations ranged from 7.7 mg/kg to 51.5 mg/kg. The highest concentrations of lead were also detected in sample 002-B at 500 mg/kg. In other samples, lead concentrations ranged from 3.1 mg/kg to 15.3 mg/kg. Concentrations of cadmium and copper ranged from non-detect to 2.1 mg/kg, and from 2.6 to 9.0 mg/kg, respectively. Copper was also detected in laboratory blanks.

4.9.3 Analysis of Sediments

Analytical results for sediment samples are presented in Table 4-18 The sediment sample locations are presented in Figure 4-8. Samples 002-D and 007-D were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. Methylene chloride was detected at the J value level in both samples. Phenol and 4-methylphenol were detected at the J value level in sample 002-D at 57 ug/kg and 130 ug/kg, respectively. One phthalate and six PAHs were detected at the J value level in both samples. 4,4'-DDE was detected in a duplicate sample, however, no other pesticides were detected. PCBs were not detected. Samples 002-D and 008-D were analyzed for the full list of metals, and all other samples were analyzed for cadmium, chromium, copper, lead, and zinc. The highest concentrations of cadmium, copper, lead, and zinc were detected in sample 004-D at 6.7 mg/kg, 27.9 mg/kg, 143.1 mg/kg, and 499 mg/kg, respectively. The highest concentrations of chromium were detected in sample 006-D at 280 mg/kg.

4.9.4 Analysis of Groundwater

Analytical results for the Hydro-Punch© groundwater sample are presented in Table 4-19. The sample was analyzed for VOCs, SVOCs, pesticides, PCBs, explosive compounds, typical landfill parameters, and metals. Methylene chloride and acetone were detected at 5 ug/l (J value) and 55 ug/l, respectively. Pesticides and PCBs were not detected. Explosives were not detected. Metals results were generally elevated as shown in Table 4-19. For example, arsenic and copper were detected at 144 ug/l and 141 ug/l, respectively. Cadmium was detected at 10.5 ug/l, and nickel and lead were detected at 812 and 395 ug/l, respectively.

NWS-EARL\TB4-18.WK3

TABLE 4-18
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT
SAMPLES COLLECTED DURING ROUND I -- SITE 23:
PAINT CHIP DISPOSAL AREA ADJACENT TO BUILDING D-5

SAMPLE ID>		16-JUN-92 23-002-D001		16-JUN-92 23-002-D101		16-JUN-92 23-003-D001		16-JUN-92 23-004-D001		16-JUN-92 23-005-D001		16-JUN-92 23-006-D001		16-JUN-92 23-007-D001		16-JUN-92 23-008-D001	
INORGANICS	UNITS																
Aluminum, Total	MG/KG	3140	=	1930	=											1750	=
Arsenic, Total	MG/KG	6.7	=	6.2	=											3.52	=
Barium, Total	MG/KG	27.5	B	20.4	B											3.8	B
Beryllium, Total	MG/KG	1.2	B	0.77	B												
Cadmium, Total	MG/KG					1	B	6.7	=	1.7	=			1.21	=		
Calcium, Total	MG/KG	1480	=	938	B											102	B
Chromium, Total	MG/KG	56.9	=	37.1	=	32.1	=	116	=	149	=	280	=	115	=	24.2	=
Cobalt, Total	MG/KG	1.8	B													2.6	B
Copper, Total	MG/KG					5.2	=	27.9	=	19.5	=	15.8	=	9	=	3.4	B
Iron, Total	MG/KG	12600	=	10800	=											23600	=
Lead, Total	MG/KG	9.65	=	7.5	=	5.1	=	143.1	=	128.5	=	82.7	=	39.2	=	15.9	=
Magnesium, Total	MG/KG	1110	B	792	B											213	B
Manganese, Total	MG/KG	52.6	=	46.6	=											13.8	=
Potassium, Total	MG/KG	2360	=	1570	=											678	B
Silver, Total	MG/KG															1.8	B
Sodium, Total	MG/KG	73	B	62.8	B											30.1	B
Vanadium, Total	MG/KG	94.9	=	74.3	=											14.2	=
Zinc, Total	MG/KG	49.8	=	39.5	=	81.6	=	499	=	131	=	32.4	=	11.8	=	17.9	=
PESTICIDES																	
4,4'-DDD	UG/KG			0.84	J												
ORGANICS																	
METHYLENE CHLORIDE	UG/KG	3	J														
ACETONE	UG/KG	26	J	38	J									27	B		
PHENOL	UG/KG	57	J	51	J												
4-METHYLPHENOL	UG/KG	130	J	41	J												
PHENANTHRENE	UG/KG	34	J	30	J									46	J		
DI-N-BUTYLPHTHALATE	UG/KG	54	J	58	J									53	J		
FLUORANTHENE	UG/KG	64	J	58	J									110	J		
PYRENE	UG/KG	57	J	51	J									90	J		
BENZO(A)ANTHRACENE	UG/KG													39	J		
CHRYSENE	UG/KG													70	J		
BENZO(B)FLUORANTHENE	UG/KG	31	J	26	J									54	J		
BENZO(K)FLUORANTHENE	UG/KG	31	J	29	J									55	J		
BENZO(A)PYRENE	UG/KG	28	J	25	J									41	J		

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

NWS-EARL\TB4-19.WK3

TABLE 4-19
SUMMARY OF GROUNDWATER (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

		01-MAY-92			
	SAMPLE ID>	23-001-K029			
		HYDROPUNCH			
INORGANICS	UNITS				
Aluminum, Total	UG/L	158000	=		
Arsenic, Total	UG/L	144	=		
Beryllium, Total	UG/L	34.8	=		
Calcium, Total	UG/L	16100	=		
Cadmium, Total	UG/L	10.5	=		
Cobalt, Total	UG/L	240	=		
Chromium, Total	UG/L	5680	=		
Copper, Total	UG/L	141	=		
Iron, Total	UG/L	230000	=		
Potassium, Total	UG/L	69100	=		
Magnesium, Total	UG/L	22100	=		
Manganese, Total	UG/L	469	=		
Nickel, Total	UG/L	812	=		
Lead, Total	UG/L	395	=		
Vanadium, Total	UG/L	3340	=		
Zinc, Total	UG/L	587	=		
ORGANICS					
METHYLENE CHLORIDE	UG/L	5	J		
ACETONE	UG/L	55	=		
EXPLOSIVES		ND			
INDICATOR PARAMETERS					
Total Organic Carbon	MG/L	76	=		

= – Analyte quantified above method detection limit.
J – Estimated value.
B – Analyte also detected in a blank sample.

4.9.5 Summary of Site 23 Characterization

Site 23 soils contained only slight signs of surface staining from paint residues. Lead exceeded 100 mg/kg in several soil samples. The upper few inches of soil were stained with what appeared to be paint residue in a very small area in the vicinity of sample 23-003-B001. The Hydro-Punch© groundwater sample contained elevated levels of several metals.

4.10 SITES 24 and 25: CLOSED PISTOL RANGES

4.10.1 Physical Characteristics

Sites 24 and 25 are located off an asphalt road to the south of Esperance Road, and approximately 1,000 ft northwest of Building C-24B (Figure 3-8). These closed small arms practice ranges contain lead and copper-jacketed bullets in the impact berm. Site 25 is located east of the asphalt road and to the south of Site 24. Site 25 is similar in location to Site 24. Four soil borings were completed 1 to 4 ft bgs in the berms of each site (Figure 4-9).

4.10.1.1 Soils and Sediments

Due to their close proximity and identical characteristic, both Sites 24 and 25 are included in the following two discussions. The original soils at Sites 24 and 25 are part of the Atsion Soils Series described in Section 2. Soil sampling at both sites was limited to the upper 3-ft interval in the berm behind the target area. A steeply sloping sand facies approximately 70 ft high forms the backdrop of the target area at each site. The sands that slough from this exposure form the shallow soils encountered within each target area. The shallow soils at Sites 24 and 25 generally consist of a loose silty, medium to coarse sand and loam (with some root matter), which varies in color from pale brown to brown (10YR 7/4 to 10YR 4/3 munsel color classification).

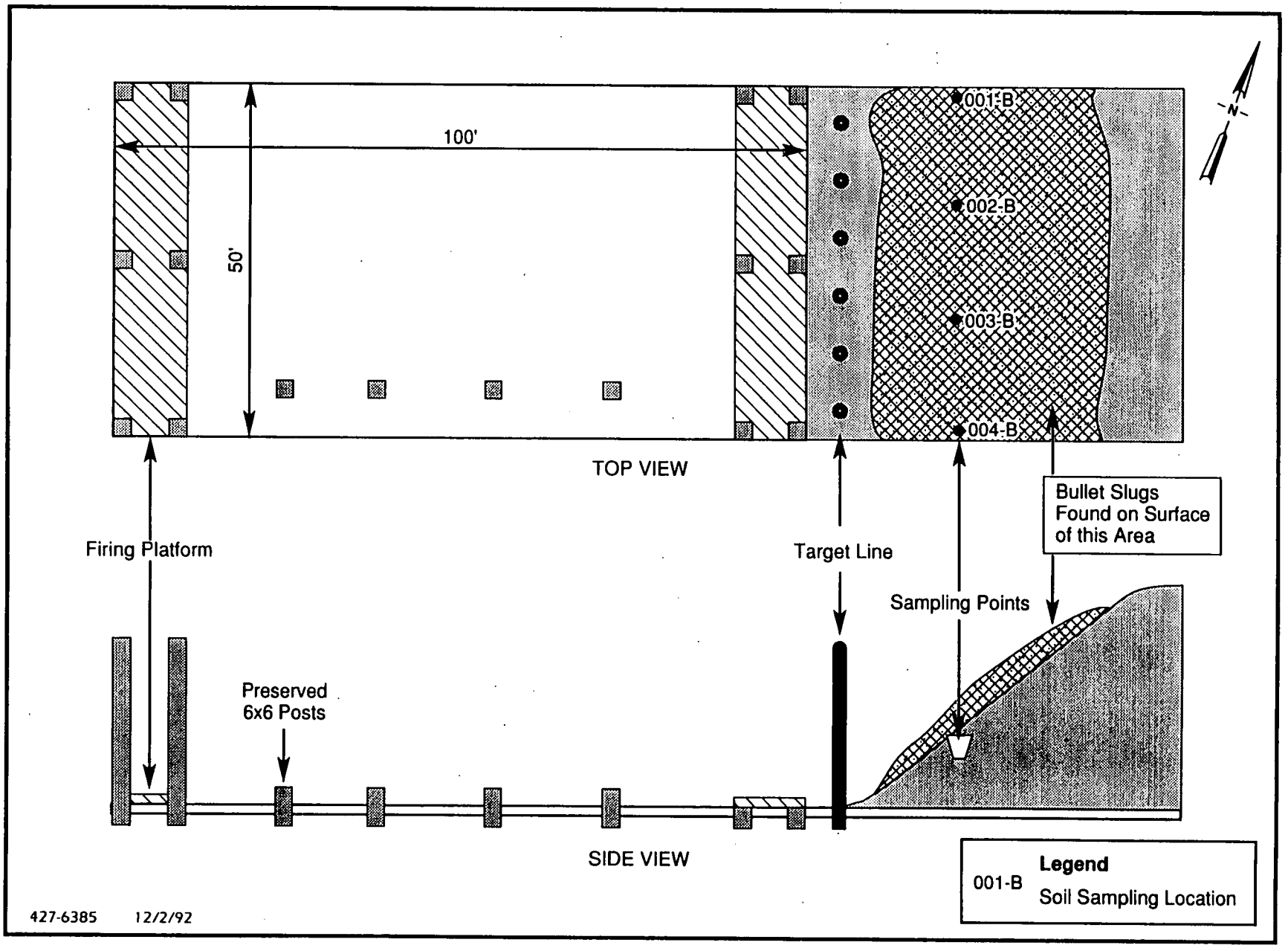


FIGURE 4-9 SITES 24 & 25: CLOSED PISTOL RANGES SAMPLING LOCATIONS, NWS EARLE, NJ

4.10.1.2 Drainage

No drainage swales or streams are located at either site. Drainage at Sites 24 and 25 occurs primarily through infiltration and evaporation. The closest surface water body is Lake Earle, located approximately 1,200 ft to the south-southeast.

4.10.2 Chemical Results

4.10.2.1 Analysis of Soils

Analytical results for soil samples collected at Site 24 are presented in Table 4-20. The soil sampling locations for Sites 24 and 25 are presented in Figure 4-9. Samples were collected for the analysis of lead, zinc, copper, chromium, and cadmium. Cadmium and copper were not detected. The results of all but one lead analysis for both sites were rejected by the validators due to poor recoveries in the surrogate QA/QC laboratory samples. Low levels of chromium were detected in four of the five samples. Concentrations ranged from 1.41 mg/kg to 2.4 mg/kg. Chromium was also detected in the blank associated with sample 003-B. Zinc was detected in all samples and in the associated blanks. Concentrations ranged from 1.2 mg/kg to 2.0 mg/kg.

Analytical results for soil samples collected at Site 25 are presented in Table 4-21. Samples were collected for the analysis of lead, zinc, copper, chromium, and cadmium. Cadmium was not detected. Copper was detected in all samples and in the blank associated with sample 001-B. Concentrations of copper ranged from 3.5 mg/kg (Blank) to 5.3 mg/kg for samples 001-B, 002-B, and 003-B. Copper was detected in sample 004-B at 82.6 mg/kg. Lead was detected at 113 mg/kg in sample 003-B. Chromium was detected in sample 001-B at 1.6 mg/kg and was also detected in the associated blank. Zinc was detected in samples 001-B, 002-B, and 004-B, and in the blank associated with sample 001-B and 004-B. Concentrations ranged from 1.2 mg/kg to 2.9 mg/kg.

NWS-EARL\TB4-20.WK3

TABLE 4-20
SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED DURING ROUND I -- SITE 24: CLOSED PISTOL RANGES

		09-JUN-92 SAMPL24-001-B001		09-JUN-92 24-101-B001		09-JUN-92 24-002-B001		10-JUN-92 24-003-B001		09-JUN-92 24-004-B001	
INORGANICS	UNITS										
Cadmium, Total	MG/KG	0.81	U	0.8	U	0.8	U	0.83	U	0.8	U
Chromium, Total	MG/KG	2.2	=	1.41	=	1.4	U	1.9	B	2.4	=
Copper, Total	MG/KG	1.42	U	1.41	U	1.4	U	1.44	U	1.4	U
Lead, Total	MG/KG	9.95	R	6.4	R	9	R	1.7	R	6.3	R
Zinc, Total	MG/KG	1.3	B	1.2	B	1.3	B	2	B	1.5	B

= – Analyte quantified above method detection limit.
J – Estimated value.
B – Analyte also detected in a blank sample.
R – Data rejected by validators.
U – Analyte not detected.

NWS-EARL\TB4-21.WK3

TABLE 4-21
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED DURING ROUND I -- SITE 25:
CLOSED PISTOL RANGE, TREATED RAILROAD TIES

		09-JUN-92		09-JUN-92		10-JUN-92		09-JUN-92	
	SAMPLE ID>	25-001-B001		25-002-B001		25-003-B001		25-004-B001	
INORGANICS	UNITS								
Cadmium, Total	MG/KG	0.83	U	0.8	U	0.82	U	0.79	U
Chromium, Total	MG/KG	1.6	B	1.4	U	1.43	U	1.38	U
Copper, Total	MG/KG	3.5	B	5.3	=	5.3	=	82.6	=
Lead, Total	MG/KG	11.9	R	61.8	R	113	=	406	R
Zinc, Total	MG/KG	1.4	B	1.2	=	1.8	U	2.9	B

= – Analyte quantified above method detection limit.
J – Estimated value.
B – Analyte also detected in a blank sample.
R – Data rejected by validators.
U – Analyte not detected.

4.10.3 Summary of Sites 24 and 25 Characterization

Sites 24 and 25 are both defunct pistol ranges. Samples of soils from the target berms were analyzed for lead and four other metals. Care was taken when collecting the samples to not collect pieces of slugs. However, the rejection of the lead results because of out-of-range surrogate recovery may reflect inhomogeneity in the soil samples due to lead fragments. The results of the sampling also indicated no detectable cadmium and only low concentrations of copper, zinc, and chromium (all but one copper concentration was < 5.3 mg/kg). Shallow soils around the target berms at Sites 24 and 25 contain visible quantities of spent bullet slugs that may have affected the lead concentrations of surrounding soils.

4.11 SITE 27: PROJECTILES REFURBISHING AREA

4.11.1 Physical Characteristics

Site 27 exhibits many of the same characteristics as Site 23. Site 27 is located off an asphalt road from Normandy Road and includes Building D-14 and a small storage locker. The surface soils are stained red in the area adjacent to the southeast corner of Building D-14. A railroad siding and a small drainage depression exist on the east sides of the site behind Building D-14.

4.11.1.1 Soils and Sediments

The original soils at Site 27 are part of the Atsion Soils Series described in Section 2. Soil sampling at Site 27 was limited to the shallow soils in the upper 1.5-ft interval. The shallow soils encountered within that zone were disturbed in places and were composed of a red brown gravelly sand with some slag, sandblasting material and paint chips. The upper few inches of soil were stained red in a very small area found in the vicinity of sample points 27-001-S001, 27-002-S001,and 27-005-S001 shown in Figure 4-10. The sediments within the drainage consisted of loose, silty sand ranging in color from reddish brown to dark yellow brown.

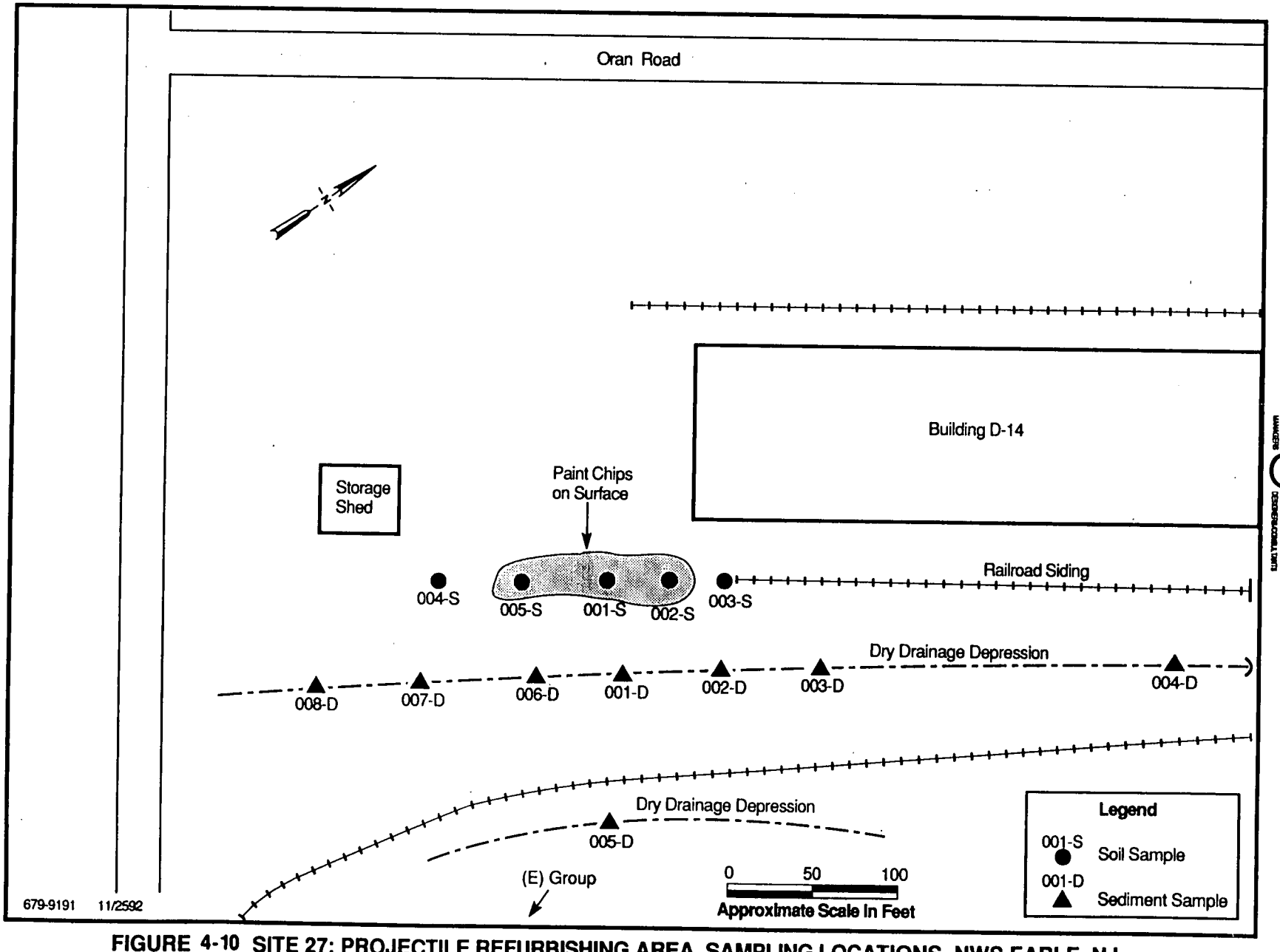


FIGURE 4-10 SITE 27: PROJECTILE REFURBISHING AREA, SAMPLING LOCATIONS, NWS EARLE, NJ

4.11.1.2 Drainage

Site 27 is partially paved and covered by Building D-14. The only non-paved surfaces are located behind the building. Drainage at the site occurs through overland runoff and evaporation. Some infiltration occurs within the non-paved areas. Overland runoff drains across the site to the southeast into a shallow (3 to 4 ft deep) drainage depression which is located behind Building D-14. The drainage flows towards the southeast. The east branch of Mingamahony Brook is located approximately 1200 to 1500 ft east-southeast of the site.

4.11.2 Analysis of Soils

Ten soil samples (two at each of five locations) were collected at Site 27. A summary of the soil sample analytical results for samples collected at Site 27 is shown on Table 4-22. The locations are shown on Figure 4-10 and are identified as 001-S through 005-S. Samples identified with as 00**1**-S were sampled from 0 to 0.5 ft bgs. Samples identified with as 00**2**-S were sampled from 0.5 to 1.5 ft bgs. Samples were analyzed for TAL metals and cyanide, and TCL full scan.

As shown in Table 4-22, elevated concentrations of metals, PCBs and SVOCs were detected in several of the soil samples. The highest concentrations of chromium (1,620 mg/kg), copper (1,450 mg/kg), lead (787 mg/kg), and zinc (774 mg/kg) were detected in sample 27-002-S001 collected 0 to 0.5 ft bgs. Lead was also detected in sample 27-004-S001 at 559 mg/kg.

The highest concentrations of PCBs (Arochlor 1260) were detected in samples 27-002-S001 at (600 ug/kg) and 27-002-S002 at (80 ug/kg). J level concentrations were detected in all of the remaining soil samples with the exception of 27-004-S002.

VOAs, methylene chloride, and acetone were detected at J values. SVOCs, phenol, naphthalene, 2-methylnaphthalene, acenaphthalene, and many others were detected at J values in several samples. A majority of these compounds were detected in sample 27-002-S002.

NWS-EARLTB4-22.WK3

TABLE 4-22
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED DURING ROUND I --
SITE 27: PROJECTILES REFURBISHING AREA

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID >	27-001-S001		27-001-S002		27-002-S001		27-002-S002		27-003-S001		27-003-S002		27-004-S001		27-004-S002		27-005-S001		27-005-S002	
INORGANICS	UNITS																				
Aluminum, Total	MG/KG	1070	=	1670	=	379	B	3050	=	2670	=	2880	=	1010	=	2710	=	6730	=	6990	=
Arsenic, Total	MG/KG	5.6	=	2.4	=	17.1	=	2.4	=	0.98	B	3.1	=	4.5	=	1.4	B	0.62	B	0.73	B
Barium, Total	MG/KG	35.4	B	9.2	B	129	=	17.3	B	16.8	B	15.9	B	37.1	B	9.5	B	13.5	B	12.3	B
Beryllium, Total	MG/KG	0.54	B	0.3	B									0.23	B	0.24	B				
Cadmium, Total	MG/KG	4.7	=			64.4	=	7.4	=	1.4	=	7.5	=	7.5	=	4.9	=	2.1	=	1.2	=
Calcium, Total	MG/KG	207	B	55.4	B	171	B	256	B	364	B	266	B	136	B	91.3	B	97.8	B	91.4	B
Chromium, Total	MG/KG	140	=	21.2	=	1620	=	15	=	16.7	=	71.3	=	256	=	28.5	=	25.8	=	20.9	=
Cobalt, Total	MG/KG	7.7	B	2.8	B	52.4	=					12.2	=	3.3	B	3.8	B	2.8	B	2.3	B
Copper, Total	MG/KG	61.2	=	11.6	=	1450	=	11.3	=	7.4	=	144	=	38.6	=	7.2	=	6.1	=	4.2	B
Iron, Total	MG/KG	7100	=	4750	=	349000	=	5740	=	4630	=	72100	=	4420	=	5430	=	9420	=	6920	=
Lead, Total	MG/KG	184	=	22.9	=	787	=	25.8	=	20.1	=	25.9	=	559	=	63.2	=	36.2	=	21.1	=
Magnesium, Total	MG/KG	90	B	151	B	466	B	223	B	180	B	239	B	99.3	B	132	B	168	B	182	B
Manganese, Total	MG/KG	26.4	=	26.2	=	2560	=	35.1	=	16.3	=	557	=	27.9	=	27.3	=	19.3	=	17.9	=
Mercury, Total	MG/KG					0.41	=											0.07	B		
Nickel, Total	MG/KG	6.8	B			377	=					48.1	=	5.9	B						
Potassium, Total	MG/KG	260	B	265	B			212	B									228	B		
Selenium, Total	MG/KG	2.5	=	0.61	B									0.75	B						
Silver, Total	MG/KG					32.2	=					5.2	=								
Sodium, Total	MG/KG	29.6	B			26.7	B			26	B	26.1	B	32.6	B	28.6	B	33	B	29.9	B
Vanadium, Total	MG/KG	3.9	B	5.1	B			8.9	B	7.3	B			4.9	B	8.7	B	13.4	=	13.8	=
Zinc, Total	MG/KG	314	=	39.6	=	774	=	48.3	=	34.4	=	71.2	=	438	=	215	=	223	=	130	=
Cyanide, Total	MG/KG	1.95	=			1.58	=							2.76	=						
PESTICIDES																					
HEPTACHLOR	UG/KG					0.71	J														
ALDRIN	UG/KG																				
HEPTACHLOR EPOXIDE	UG/KG																				
ENDOSULFAN I	UG/KG	0.75	J			3.2	J			1.8	J			1.9	J						
4,4'-DDE	UG/KG	7.9	R			22	R							0.75	J					0.72	J
4,4'-DDD	UG/KG	5.6	R			5.6	R	1.8	R					1.5	R			2.5	R		
4,4'-DDT	UG/KG	16	R			22	R	12	R												
PCB's																					
AROCHLOR-1260	UG/KG	400	J			600	=	80	=	33	J	25	J	21	J			57	=	10	J
ORGANICS																					
CHLOROMETHANE	UG/KG																				
BROMOMETHANE	UG/KG																				
VINYL CHLORIDE	UG/KG																				
CHLOROETHANE	UG/KG																				
METHYLENE CHLORIDE	UG/KG	1	J					4	J	4	J	11				31					
ACETONE	UG/KG	10	J	6	J			20		23	J	18	J			24	J				
CARBON DISULFIDE	UG/KG																				
1,1-DICHLOROETHYLENE	UG/KG																				
1,1-DICHLOROETHANE	UG/KG																				
1,2-DICHLOROETHENE (TOTAL)	UG/KG																				
CHLOROFORM	UG/KG																				
1,2-DICHLOROETHANE	UG/KG																				
2-BUTANONE	UG/KG																				
1,1,1-TRICHLOROETHANE	UG/KG																				
CARBON TETRACHLORIDE	UG/KG																				
BROMODICHLOROMETHANE	UG/KG																				
1,2-DICHLOROPROPANE	UG/KG																				
CIS-1,3-DICHLOROPROPENE	UG/KG																				
TRICHLOROETHYLENE	UG/KG																				
DIBROMOCHLOROMETHANE	UG/KG																				

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.
R - Data rejected by validators.

NWS-EARLTB4-22.WK3

TABLE 4-22
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
SAMPLES COLLECTED DURING ROUND I --
SITE 27: PROJECTILES REFURBISHING AREA

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-S001		27-001-S002		27-002-S001		27-002-S002		27-003-S001		27-003-S002		27-004-S001		27-004-S002		27-005-S001		27-005-S002	
1,1,2-TRICHLOROETHANE	UG/KG																				
BENZENE	UG/KG																				
TRANS-1,3-DICHLOROPROPENE	UG/KG																				
BROMOFORM	UG/KG																				
4-METHYL-2-PENTANONE	UG/KG																				
2-HEXANONE	UG/KG																				
TETRACHLOROETHYLENE	UG/KG									3	J										
1,1,2,2-TETRACHLOROETHANE	UG/KG																				
TOLUENE	UG/KG																				
CHLOROBENZENE	UG/KG																				
ETHYLBENZENE	UG/KG																				
STYRENE	UG/KG																				
XYLENES (TOTAL)	UG/KG																				
PHENOL	UG/KG															21	J	27	J	24	J
NAPHTHALENE	UG/KG	150	J	25	J									46	J						
2-METHYLNAPHTHALENE	UG/KG	67	J																		
ACENAPHTHYLENE	UG/KG									47	J										
PHENANTHRENE	UG/KG									16	J			50	J						
ANTHRACENE	UG/KG									41	J										
DI-N-BUTYLPHTHALATE	UG/KG					51	J	30	J	30	J	26	J	34	J	39	J	44	J		
FLUORANTHENE	UG/KG									120	J			64	J						
PYRENE	UG/KG									130	J			49	J						
BENZO(A)ANTHRACENE	UG/KG									88	J										
CHRYSENE	UG/KG									130	J										
BENZO(B)FLUORANTHENE	UG/KG									130	J										
BENZO(K)FLUORANTHENE	UG/KG									120	J										
BENZO(A)PYRENE	UG/KG									130	J										
INDENO(1,2,3-CD)PYRENE	UG/KG									150	J										
DIBENZ(A,H)ANTHRACENE	UG/KG									61	J										
BENZO(G,H,I)PERYLENE	UG/KG									190	J										

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.
R - Data rejected by validators.

4.11.3 Analysis of Sediments

Eight sediment samples were collected within the drainages at Site 27. The locations are shown on Figure 4-10 and are identified as 27-001-D through 27-008-D. A summary of sediment sample analytical results for samples collected at Site 27 is shown in Table 4-23. The sediments were sampled from 0 to 0.5 ft bgs. Samples 27-001-D and 27-003-D were analyzed for TAL metals and cyanide; samples 004-D and 008-D were analyzed for TCL full scan. The remaining samples, 002-D and 004-D through 008-D, were analyzed for specific inorganic compounds (Cr, Cu, Pb, and Zn) that are constituents of the paint residues disposed of at the site.

As shown in Table 4-23, low concentrations of metals and trace levels of SVOCs were detected in several of the sediment samples. The highest concentrations of chromium (311 mg/kg) and copper (434 mg/kg) were found in sample 27-002-D001. The highest concentrations of lead (786 mg/kg) and zinc (840 mg/kg) were detected in sample 27-006-D001. Lead and zinc were also detected in sample 27-002-D001 at 743 mg/kg and 528 mg/kg.

Low concentrations of pesticides were detected in sample 27-008-D001.

VOAs, methylene chloride, acetone, and toluene were detected at J values. SVOCs, phenanthrene, fluoranthene, pyrene, and others were detected at J values in sample 27-008-D001.

4.11.4 Summary of Site 27 Characterization

Site 27 contains a small area of stockpiled sandblasting residues which have also washed into the small drainage depression located behind D-14. Sample results indicate that cadmium and mercury may be found at levels of concern. PCBs were found in several samples. No other organic compounds were detected above very low unquantified (J) levels.

NWS-EARL\TB4-23.WK3

TABLE 4-23
SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT
SAMPLES COLLECTED DURING ROUND I - SITE 27:
PROJECTILES REFURBISHING AREA

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-D001		27-002-D001		27-003-D001		27-004-D001		27-005-D001		27-006-D001		27-007-D001		27-008-D001	
INORGANICS	UNITS																
Aluminum, Total	MG/KG	1190	=			785	=										
Antimony, Total	MG/KG	15.9	=														
Arsenic, Total	MG/KG	4.3	=			2.5	=										
Barium, Total	MG/KG	199	=			86.1	=										
Beryllium, Total	MG/KG	0.31	B			0.23	B										
Cadmium, Total	MG/KG	36.3	=			9.9	=										
Calcium, Total	MG/KG	260	B			270	B										
Chromium, Total	MG/KG		R	311	=	71.4	=	4.6	=	4.8	=	471	=	169	=	5.1	=
Cobalt, Total	MG/KG	9.3	B			2.5	B										
Copper, Total	MG/KG	426	=	434	=	167	=	2.4	B	19.9	=	325	=	82.6	=	32.3	=
Iron, Total	MG/KG	22500	=			8280	=										
Lead, Total	MG/KG	25.2	=	743	=	229	=	2.1	=	23.1	=	786	=	110	=	15.9	=
Magnesium, Total	MG/KG	226	B			89.2	B										
Manganese, Total	MG/KG	165	=			73.5	=										
Mercury, Total	MG/KG	0.2	=			0.15	=										
Nickel, Total	MG/KG	15.8	=			8.4	=										
Selenium, Total	MG/KG	1.6	=														
Silver, Total	MG/KG	2.5	=														
Sodium, Total	MG/KG	25.9	B														
Vanadium, Total	MG/KG					3.1	B										
Zinc, Total	MG/KG		R	528	=	120	=	7.4	=	46.4	=	840	=	320	=	13.6	=
Cyanide, Total	MG/KG	1.84	=														
PESTICIDES																	
4,4'-DDE	UG/KG															7.3	=
4,4'-DDT	UG/KG															21	=
GAMMA CHLORDANE	UG/KG															0.37	J
ORGANICS																	
METHYLENE CHLORIDE	UG/KG							12	=							34	=
ACETONE	UG/KG															20	J
TOLUENE	UG/KG															3	J
PHENANTHRENE	UG/KG															46	J
DI-N-BUTYLPHTHALATE	UG/KG							26	J							32	J
FLUORANTHENE	UG/KG															62	J
PYRENE	UG/KG															57	J
BENZO(A)ANTHRACENE	UG/KG															19	J
CHRYSENE	UG/KG															31	J

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.
R - Data rejected by validators.

4.12 SITE 29: PCB SPILL SITE, BUILDING C-16

4.12.1 Physical Characteristics

Site 29 includes the area within the old storage yard located north of Building C-16. Most of the area surrounding the site is paved or covered with buildings. Soil sampling at Site 29 was limited to the shallow soils in the upper 1.5-ft interval. The shallow soils encountered within that zone were composed of a red brown gravelly sand with some slag material.

4.12.2 Analysis of Soils

Five soil samples were collected at Site 29 from 0.5 to 1.5 ft bgs. The analytical results for the soil samples collected at Site 29 are shown in Table 4-24. The locations are shown on Figure 4-11 and are identified as 001-S through 005-S. Samples were analyzed for pesticides, PCBs, and TPH. Various pesticide compounds were detected in the soils at J and trace levels.

4,4'-DDE, 4,4'-DDD and 4,4'-DDT were detected at trace levels in all five samples. PCBs (Arochlor-1260) were detected in samples S004 and S005 at concentrations of 27J ug/kg and 160 ug/kg, respectively. The highest concentration of TPH was detected in sample S001 at 28,000 mg/kg. Low concentrations of TPH were detected in samples S002 through S005.

4.12.3 Summary of Site 29 Characterization

Site 29 is located within an active DPDO storage area. Five confirmatory soil samples were taken at Site 29 where a soils removal for PCB-contaminated soils had previously been performed. PCBs were detected in two samples below subsurface soil action levels protective of groundwater of 100,000 ug/kg. Elevated TPH was found in only one sample at 28,000 mg/kg, which is above the NJDEPE action level for surface and subsurface soils of 10,000 mg/kg; no PCBs were detected in that sample. Preliminary laboratory results indicated the presence of the pesticide aldrin in sample 29-003-S001. This finding was initially reported in the draft version of the SI report. However, based upon subsequent QA review (including a comparison to

NWS-EARL\TB4-24.WK3

TABLE 4-24
SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED DURING ROUND I -- SITE 29: PCBs SPILL AREA, BUILDING C-16

		10-JUN-92		11-JUN-92		11-JUN-92		11-JUN-92		11-JUN-92	
	SAMPLE ID>	29-001-S001		29-002-S001		29-003-S001		29-004-S001		29-005-S001	
PESTICIDES	UNITS										
ALPHA-BHC	UG/KG	1.8	=								
GAMMA-BHC (LINDANE)	UG/KG	4.7	=								
HEPTACHLOR	UG/KG	5	=								
DIELDRIN	UG/KG	6.1	J								
4,4'-DDE	UG/KG	7.5	J	2.5	J	1.4	J	10	=	1.2	J
ENDRIN	UG/KG							4.4	=		
ENDOSULFAN II	UG/KG	3.6	J								
4,4'-DDD	UG/KG	9.3	J	.36	J			9.1	=	1.2	J
4,4'-DDT	UG/KG			3.3	J	2.5	J	32	=	1.6	J
ALPHA CHLORDANE	UG/KG			.36	J						
PCB's											
AROCHLOR-1260	UG/KG							27	J	160	=
P troleum Hydrocarbons	MG/KG	28000	=	7.8	=	7	=	51	=	60	=

= - Analyte quantified above method detection limit.
J - Estimated value.
B - Analyte also detected in a blank sample.

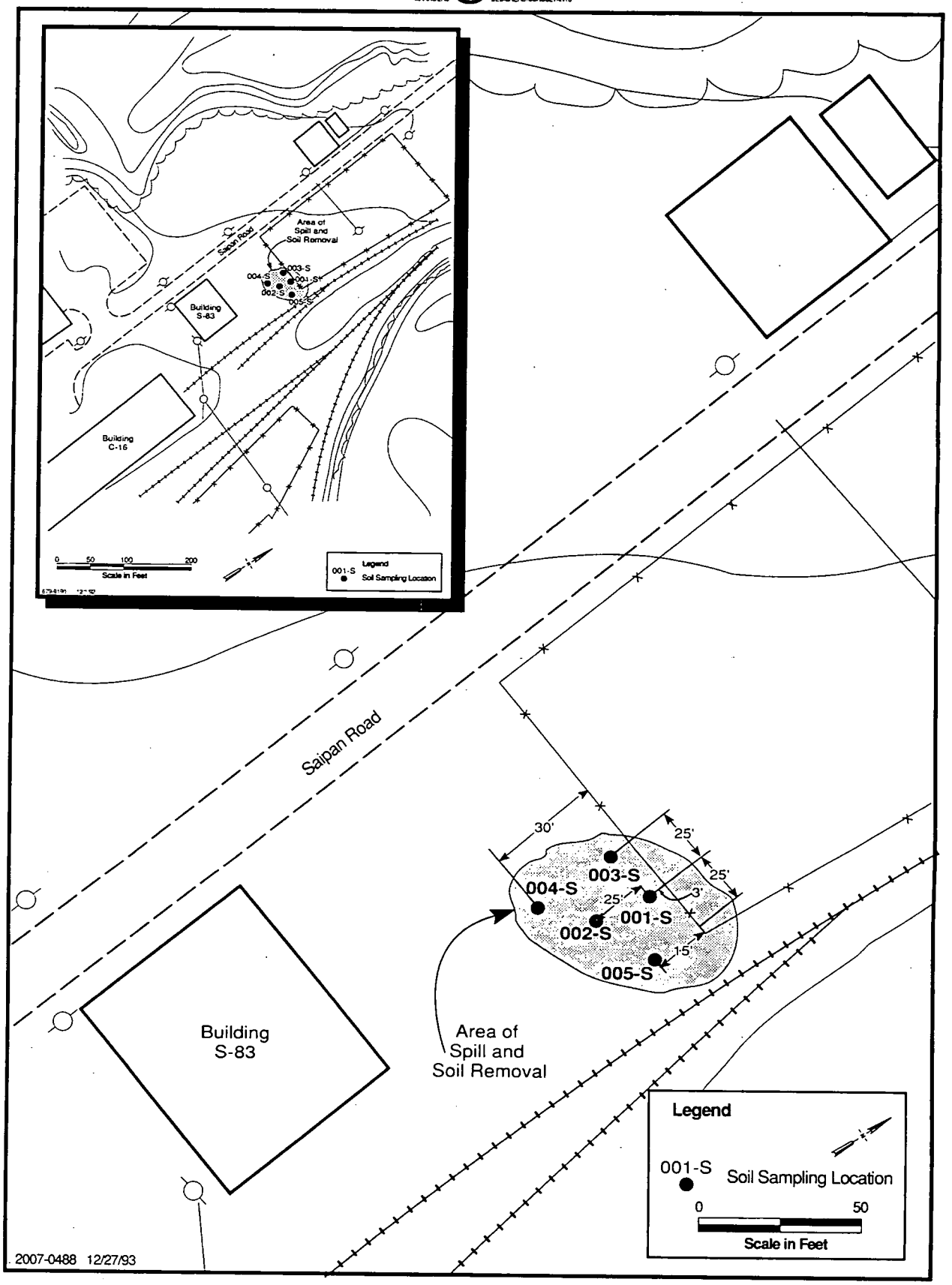


FIGURE 4-11 SITE 29: PCB SPILL SITE ADJACENT TO BUILDING C-16 SAMPLING LOCATIONS, NWS EARLE, NJ

standards and to second column confirmation analysis) conducted by WESTON's laboratory and an independent data validator, the result was not confirmed and aldrin is consequently reported as non-detected in sample 29-003-S001, as well as all the other soil samples collected at Site 29.

SECTION 5

FINDINGS AND RECOMMENDATIONS

5.1 OVERVIEW

This report has intentionally avoided lengthy discussions of possible cleanup standards or action levels, since they are usually site-specific. However, reference to recent proposed NJDEPE cleanup standards in soils are made to provide perspective when discussing the low concentrations of organics and pesticides in soil and sediment samples that were found in many samples. Based on the background data and the results of the Site Investigation described in Section 4, the SI sites are grouped according to what future action may be required based on the results of the SI and other site background information. These groupings include:

5.1.1 Group A

Sites where elevated levels of site-derived contaminants were found in soils, sediments, or groundwater and further sampling is required to fully delineate their extent. These site include Site 1 (Ordnance Demilitarization), Site 16 (Fuel Line Connecting Buildings C-19 and C-50), and Site 23 (Paint Chip Disposal Area).

5.1.2 Group B

Sites where the level of contamination found does not warrant further action other than monitoring, erosion control, or other maintenance type actions include Site 6 (Landfill West of Normandy Road), Site 9 (Landfill Southeast of "P" Barricades), Site 12 (Battery Storage and Handling Area), Site 13 (DPDO Yard), Site 15 (Sludge Disposal Site near Waterfront South Gate), Site 17 (Disposal Area Behind Training Barge, Waterfront Area), and Site 29 (PCB Spill Site).

5.1.3 Group C

Areas where environmental impact appears negligible but some cleanup is warranted to remove small amounts of surficial wastes. These sites include Sites 24 and 25 (Pistol Ranges) and Site 27 (Projectiles Refurbishing Area).

5.1.4 Non Site-Specific Issues

In addition, the results of the SI raised several non site-specific issues which must be resolved. These include the following:

Establishing "Background" Levels for Metals in Soils

Certain metals were detected in soils and sediments in significant concentrations. Although in most cases the levels are not above expected natural background levels based on general sources, no current data were available to establish background levels for specific soil types in the NWS Earle area. Sites where soils or sediments were sampled for metals include Sites 1, 6, 9, 12, 13, 24, 25, and 27. Specific soils of concern are identified in the following site-specific discussions when for that site levels exceed NJDEPE standards for surface soils in residential areas or subsurface soils. It is also recommended that background levels be identified for key metals by use of existing data, if available, or further sampling, if necessary. "Background" sampling should be planned to distinguish soil types, which vary across the base, as well as possible "non-point" sources such as airborne lead.

Determining The Significance of Metals Results For Groundwater

Metals were detected in some unfiltered groundwater samples at elevated levels. Because the samples were not field filtered, these results are inconclusive regarding the solubility or mobility of these metals in groundwater. This was particularly noticeable with the Hydro-Punch© samples. The representative monitor wells should be resampled for metals of concern using field filtering or another field technique, acceptable to EPA and NJDEPE, to minimize sample turbidity as a

factor. Metals of concern should include, at a minimum, those exceeding MCL levels in the initial SI sampling. The Hydro-Punch© sample method should only be used for metals analysis if field filtering is acceptable.

Non-Point Source Impacts to Sediments in Drainage Areas

Sediment and soils samples taken from drainage adjacent to Sites 13, 15,and 23 and near and within the salt marsh area adjacent to Sites 6, 12, and 17 contained low but measurable levels of pesticides, SVOCs, and heavy metals. Rather than be attributable to any individual site, these results appeared to reflect non-point source types of impact such as stormwater runoff from parking areas, equipment storage areas, and buildings. Except for PAH compounds which have relatively low action levels, these contaminants generally were found at levels below NJDEPE standards protective of human health. These samples were obtained in areas where human contact is not a major concern, however, the potential ecological impacts of NWS Earle facility surface water and sediment contaminants to aquatic life at Sites 6, 12, 13, 15, 17, and 23 were assessed by comparing averaged detected site contaminant concentrations to appropriate EPA chronic fresh or marine ambient water quality criteria (AWQC) and NOAA sediment lowest biological effect range values (EPA, 1987; NOAA, 1990). Surface water samples were only taken from Sites 12 and 13. Sediment samples were taken from Sites 6, 12, 13, 15, 17, and 23.

Evaluation of potential impact was based on a ratio comprised of the average concentration for each site contaminant divided by EPA AWQC or NOAA lowest effect values for that contaminant. This ratio was used to determine if values indicative of aquatic toxicity had been exceeded and to what degree. Ambient Water Quality Criteria were developed to provide protection to 95 percent of all aquatic life. NOAA lowest effect values (ER-L) represent a concentration that is the lower tenth percentile of a range of sediment concentrations in which adverse biological effects have been observed. Toxicity ratios greater than unity (i.e., >1) indicate toxicity criteria were exceeded. It is important to note that this methodology is not a measure of and cannot be used to determine quantitative risk (i.e., it does not predict the relative likelihood of adverse effects). If the calculated toxicity ratio exceeds unity, it indicates that

organisms inhabiting that particular medium (surface water or sediment) may be at risk to an adverse effect from that contaminant.

Evaluation of the averaged concentrations for site sediment and surface water contaminants indicated varying degrees of potential ecological impact. AWQC for inorganic surface water contaminants (i.e., beryllium, chromium, iron, lead, nickel, and zinc) were exceeded by two to five orders of magnitude for Sites 12 and 13. However, these two sampling points represent stormwater drainages that are not associated with point-source contamination and probably do not constitute an environment suitable for supporting a sustainable aquatic community.

NOAA lowest effect values were exceeded for sediment inorganics at Sites 6, 12, and 23. Sites 13, 15, and 17 had detected inorganic concentrations which did not exceed their respective NOAA effect values. Organic contaminants, including volatile organics (VOCs), polynuclear aromatic hydrocarbons (PAHs), and pesticides were evaluated as having a potential impact to aquatic life for sediment samples from Sites 6, 12, and 17. In particular, Sites 6, 12, and 17 showed averaged concentrations of pesticides (i.e., chlordane, DDD, DDE, DDT, dieldrin, and endrin aldehyde) which exceeded NOAA effect values by one to four orders of magnitude. However, the presence of pesticides at these locations do not appear to be related to previously known site activities and are more likely an artifact of widespread pesticide spraying and use that was common in coastal areas during the 1960's and early 70's. NOAA effect values were exceeded for averaged organic concentrations at Site 15 for only one compound, the PAH benzo(a)anthracene. Effect values were also exceed for some of the averaged PAH concentrations detected at Sites 6 and 12.

Because the majority of surface water criteria and biological effect levels that were exceeded correspond to contaminants representing non-point sources, it is recommended that additional background samples be systematically obtained from base drainage area sediments and surface soils for analysis of BNA, pesticide and PCB compounds. These additional data would focus future evaluations on point source contamination which may be attributed to prior site activities and not ubiquitous non-point source chemicals.

5.2 SITE-SPECIFIC FINDINGS AND RECOMMENDATIONS

The following sections discuss the major findings and recommendations on a site-by-site basis.

5.2.1 Site 1, Ordnance Demilitarization Site, Secured

Site 1 Findings

The precise boundaries of the areas of activity at Site 1 could not be determined from air photographs or visual inspection of the site. There is no visible waste or other signs of the disposal burning on the ground surface. Most soil samples contained TPH, although concentrations were low. Only one monitor well (MW1-01) contained explosive compounds. Site 1 is included in Group A (Subsection 5.1.1) because of explosive compounds in the groundwater.

Site 1 Recommendations

Although the results of the grid sampling indicate that the contamination is not widespread, more sampling will be required to more precisely delineate the extent of contaminants in the soils and groundwater where they were found. Additional soil sampling should be performed around MW1-02 to determine whether the presence of explosive compounds in groundwater reflects residual contamination in soils. Three samples should be taken at a 25-ft radius around MW1-02. Samples should be taken at a depth of 0.5 to 1.0 ft.

In addition, levels of certain metals detected in the soils should be compared to area-specific background levels which may need to be established in a separate sampling program as discussed in Subsection 5.1.4. These include cadmium, chromium, lead, and mercury. In addition, MW1-01 should be resampled for metals using techniques to minimize sample turbidity. MW1-01 was chosen because it contained the largest number of metals at the highest concentrations of the three site wells. These metals are aluminum, beryllium, chromium, and iron.

5.2.2 Site 6, Landfill West of Normandy Road

Site 6 Findings

Site 6 is an inactive solid waste landfill that was constructed at the edge of the waterfront area and is currently mostly covered by paved areas and a recreation building. This area is "made land" (fill) extending toward the salt water marsh, although boring logs indicate that the fill did not encroach onto marshland. The interior boundary of the landfill merges with the surrounding land surface. The toe of the landfill is soil covered but subject to erosion. Monitor wells placed around the site indicate that the groundwater table flow gradient is toward the marsh area. There are no leachate seeps and the cover reduces infiltration.

Metals concentrations in soils and sediments did not exceed applicable NJDEPE standards for residential or subsurface soils. Sediments contained PAH compounds up to several times the levels set as NJDEPE cleanup levels (0.66 mg/kg). As stated in Subsection 5.1.4, the source of these PAH compounds does not specifically appear to be the landfill. Lead concentrations in several wells exceeded MCLs, however, none of the other monitor well groundwater sample results indicated significant releases of contaminants from Site 6. This shallow groundwater is not potable and does not discharge to a potable aquifer. Site 6 is included in Group B (Subsection 5.1.2).

Site 6 Recommendations

The groundwater, soils, and sediment sampling results were sufficient to characterize potential pathways of contaminant release from the Site 6 landfill. Results indicate no release of contaminants that pose a threat to human health or the environment. Therefore, no further investigation is recommended.

However, the low levels of BNA and pesticide compounds found in sediments at the base of the landfill toe should be addressed in light of potential non-point sources discussed in Subsection 5.1.4.

Because this site is a solid waste landfill, it is also recommended that maintenance be performed to ensure physical stability and prevent future erosion, particularly in the toe area, which merges with the salt marsh. As an additional caution, periodic resampling, at 5-year intervals, of the monitor wells is also recommended for indicator parameters, VOCs, and SVOCs.

5.2.3 Site 9, Landfill Southeast of the "P" Barricades

Site 9 Findings

Site 9 was a site used for shallow burial of relatively small amounts of solid waste, including household trash, construction material, burnt wood, and metal scrap. The area is overgrown and physically stable. Results of the chemical analysis of soils in contact with the waste show only low concentrations of pesticides, TPH and, in one sample, cyanide. Site 9 is included in Group B (Subsection 5.1.2).

Site 9 Recommendations

There are no results that indicate that the Site 9 landfill poses a threat to human health or the environment. Therefore, no further investigation is recommended. Since the area is stable, vegetated, and located in a remote, secure area, no other action is recommended.

5.2.4 Site 12, Battery Storage and Handling Area

Site 12 Findings

This area is a paved area next to a loading dock behind Building R10. Batteries have not been stored there for some years. The stormwater intake box contained no accumulated sediments and was not sampled. A surface water and sediment sample from the culvert outlet to the marshlands contained concentrations of lead slightly higher than other sediment and water samples in the area, plus other metals and a number of PAHs, phthalates, and phenols at low concentrations near

or below quantification limits. These results, as discussed in Subsection 5.1.4, compare to similar analysis of sediments adjacent to nearby Sites 6 and 17 and probably reflect impacts to the drainageway from non-point source stormwater runoff. Site 12 is included in Group B (Subsection 5.1.2).

Site 12 Recommendations

Since there is no longer any source (batteries or waste residue) and no site-specific point source impact to drainage sediments was identified, no further action is recommended for Site 12.

However, the low levels of BNA and pesticide compounds found in sediments of the drainage ditch should be addressed in light of potential non-point sources discussed in Subsection 5.1.4. In addition, levels of certain metals detected in the sediments should be compared to area-specific background levels which may need to be established in a separate sampling program also discussed in Subsection 5.1.4. These metals include lead and mercury.

5.2.5 Site 13, DPDO Yard

Site 13 Findings

Five of seven soil and one of three sediment samples in the DPDO Yard contained low levels of PCBs and pesticide compounds, none of which exceed NJDEPE action levels for residential surface soils. Only one soil sample contained PAH compounds exceeding NJDEPE action levels for surface soils in residential areas. However, these compounds do not exceed action levels for subsurface soils protective of groundwater and were not found at all in sediments along the drainageway. Site 13 is included in Group B (Subsection 5.1.2).

Site 13 Recommendations

The results indicate only limited contamination by PAH compounds. This area is in a secured zone adjacent to a railway yard with no residential areas nearby. Therefore, no further action is recommended.

5.2.6 Site 15, Sludge Disposal Site Near Waterfront South Gate

Site 15 Findings

A number of BNA compounds, phthalates, and PAHs were found below quantification limits in the soils and sediments at this site, which is consistent with its past use as a railroad grade to dump oily bilgewater. No compounds approached NJDEPE action levels for surface soils in residential areas. These compounds were not detected in the Hydro-Punch© groundwater sample. The groundwater sample contained a number of metals at levels generally higher than found in monitor wells, including naturally abundant metals iron and aluminum. Site 15 is included in Group B (Subsection 5.1.2).

Site 15 Recommendations

There is no longer any source of contaminants at this site (bilgewater), and small amounts of hydrocarbons were detected in soils and sediments. No hydrocarbons were found in groundwater. The levels of metals in the Hydro-Punch© sample are at least in part attributable to turbidity and cannot be considered conclusive regarding actual occurrence or mobility of metals in groundwater. This appears inherent in the sampling method. However, metals are not considered a contaminant of concern on the bilgewater and were not the main objective of the groundwater sampling. Therefore, no further action is recommended for Site 15.

However, the low levels of BNA compounds found in sediments of the drainage ditch should be addressed in light of potential non-point sources discussed in Subsection 5.1.4.

5.2.7 Site 16, Fuel Line Connecting Buildings C-19 and C-50

Site 16 Findings

Hydrocarbon contamination was found in all subsurface soil samples, although no specific compound was detected above NJDEPE action levels for subsurface soils that are protective of groundwater. The geophysical survey revealed a number of buried lines in the area of unknown function, and the exact location of the old fuel line was unknown. Because the area has been an active railroad yard for several decades, it is possible that the results indicate a more widely occurring hydrocarbon soil contamination. Therefore, Site 16 is included in Group A (Subsection 5.1.1).

Site 16 Recommendations

Further delineation of subsurface hydrocarbon contamination should be performed to determine whether the occurrence is localized or site-wide. Up to 12 soils borings should be completed throughout the yard after buried utilities have been identified. In addition, up to four monitor wells should be installed within areas of high contamination to determine whether product has reached the subsurface in the dissolved or free product phase. This is an active facility and it is expected that any future remediation prior to deactivation of the yard would emphasize containment of impacted soils and control of potential groundwater impacts.

5.2.8 Site 17, Disposal Area Behind Training Barge, Waterfront Area

Site 17 Findings

Site 17 is an inactive solid waste disposal area that was constructed at the edge of the waterfront area and is currently mostly covered by paved parking areas and the Training Barge. This area is "made land" extending into the salt water marsh; the interior boundary of the disposal area merges with the surrounding land surface. The toe of the landfill is soil covered but is subject to erosion. Monitor wells placed around the site indicate that the groundwater table flow gradient

is toward the marsh area. Although in the past at least one leachate seep was reported in a site inspection, there have been no leachate seeps observed in recent years.

Contaminant levels in soils and sediments did not exceed NJDEPE action levels for residential soils or subsurface soils. None of the monitor well groundwater sample results indicated significant releases of contaminants from Site 17. Site 17 is included in Group B (Subsection 5.1.2).

Site 17 Recommendations

The groundwater, soils, and sediment sampling results were sufficient to determine that no release of contaminants has occurred from the Site 17 disposal area that poses a threat to human health or the environment. Therefore, no further investigation is recommended.

However, because this site is a solid waste landfill it is recommended that maintenance be performed to ensure physical stability and prevent future erosion, particularly in the toe area, which merges with the salt marsh. As an additional caution, periodic resampling, at 5-year intervals, of the monitor wells is also recommended for indicator parameters, VOCs, and SVOCs.

5.2.9 Site 23, Paint Chip Disposal Site

Site 23 Findings

Site 23 soils contained only slight signs of surface staining from paint residues. Lead exceeded NJDEPE action levels of 100 mg/kg in several soil samples. The Hydro-Punch© groundwater sample contained elevated levels of a number of metals, although because of the high turbidity of the sample this is not conclusive. However, metals are a possible contaminant of concern at Site 23, therefore, Site 23 is included in Group A (Subsection 5.1.1).

Site 23 Recommendations

The chemical results of the soils analysis and the lack of visible surficial waste indicate no action regarding surface soils. However, the results of the Hydro-Punch© sample analysis indicate the possibility of groundwater contamination. A monitor well should be installed at the original sampling location and groundwater sample analyzed for metals, VOCs and SVOCs.

5.2.10 Sites 24 and 25, Closed Pistol Ranges

Sites 24 and 25 Findings

Sites 24 and 25 are both out-of-service pistol ranges. Samples of soils at the target berms were analyzed for lead and four other metals. Care was taken when collecting the samples to not collect pieces of slugs. Results indicated detectable cadmium and only low concentrations of copper, zinc, and chromium (all but one copper < 5.3 mg/kg). Lead concentrations were inconclusive because of most samples failing validation criteria. One validated sample contained 113 mg/kg lead. However, the site surface visibly contains spent bullet slugs. Sites 24 and 25 are included in Group C (Subsection 5.1.3).

Sites 24 and 25 Recommendations

Shallow soils around the target berms at Sites 24 and 25 contain visible quantities of spent bullet slugs that may have affected the lead concentrations of surrounding soils. Some cleanup action is recommended to address the waste material on and near the surface. Surficial soils at the berms should be removed and either disposed of off-site with the bullet slugs or separated from that material and returned, with separate disposal of the slugs. Confirmation sampling for lead should be performed on the excavation area for comparison to background or NJDEPE cleanup standards. In addition, the treated wood ties that form the shooting platform structure at Site 25 should be removed and properly disposed of.

5.2.11 Site 27, Projectiles Refurbishing Area

Site 27 Findings

Site 27 contains a small area of stockpiled sandblasting residues which have also washed into a small swale. Sample results indicate that cadmium and mercury may be found at levels of concern. PCBs were found in several samples and one exceeded NJDEPE action levels for residential soils (0.45 mg/kg) but was below non-residential action levels (2 mg/kg). No other organic compounds were detected above very low unquantified (J) levels. Site 27 is included in Group C (Subsection 5.1.3).

Site 27 Recommendations

Visible surficial waste and stained soils should be removed and containerized for off-site disposal. The area should then be resampled to confirm removal to action levels of cadmium, lead, and PCBs.

5.2.12 Site 29, PCB Spill Site, Building C-16

Site 29 Findings

Five confirmatory soil samples were taken at Site 29, where a soils removal for PCB-contaminated soils had previously been performed. PCBs were detected in only two samples at concentrations below NJDEPE action levels for residential surface soils (45 ug/kg) and much below subsurface soil action levels protective of groundwater of 100,000 ug/kg. The pesticide aldrin was detected in one sample at 93 ug/kg, which is above the NJDEPE surface residential standard of 40 ug/kg, but well below subsurface soil action levels protective of groundwater of 50,000 ug/kg. Elevated TPH was found in only one sample at 28,000 mg/kg, which is above the NJDEPE action level for soils of 10,000 mg/kg, however, no PCBs or aldrin were detected in that sample. Site 29 is included in Group B (Subsection 5.1.2).

Site 29 Recommendations

Site 29 is located within an active DPDO storage area. The adequate removal of soils affected by the PCB spill was confirmed and no further action is recommended at Site 29.

APPENDIX A

TECHNICAL MEMORANDA ON FIELD ACTIVITIES

DEPARTMENT OF THE NAVY
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY 07722-5000

IN REPLY REFER TO
18 OCT 1991
5090
096ALH

From: Commanding Officer, Naval Weapons Station Earle
To: Commanding Officer, Northern Division Naval Facilities Engineering Command
Philadelphia, Pa. 19112-5094
Attn: Gerry Hoover Code 142

Subj: DATE CONFIRMATION FOR PCB SPILL AT SITE #29

1. Please be advised that there are conflicting dates relative to the PCB spill at Site #29.

2. The Initial Assessment Study, prepared by Fred C. Hart Associates, Inc., Sept. 1982, indicates that the spill took place in 1977. The soil analysis from Environmental Science Corporation of Middletown, Conn. is dated June 24, 1981, four years after the 1977 time frame.

3. After further investigation it has been determined that the Hart Report is incorrect and the spill actually took place in June 1981.

4. Should there be any questions, do not hesitate to call Mr. Gus Hermanni, who can be reached at (908) 577-2339 or AV 449-2339.

J. P. DELL
By direction

Copy to:
John Williams/Weston
Paul Ingrisano/EPA

ENVIRONMENTAL SCIENCE CORPORATION
P.O. BOX 616
50 WALNUT STREET • MIDDLETOWN, CONN. 06457
TELEPHONE: 347-6961

Laboratory Report

LAB. REPORT NO. C-0520

State Certification No. PH-0476

CLIENT
Supply Officer
Naval Weapons Station Earl
Colts Neck, New Jersey 07722
Attn: Ms. D. Penkul
P.O. #N-60478-81-M-0550

DATE June 24, 1981

CLIENT PHONE NO. (201) 462-9500 x 202, 458

SPECIAL INSTRUCTIONS
Site 29 - PCB SPILL SITE BUILDING C-16

SAMPLE DESCRIPTION	TEST	RESULTS
Soil Sample From Transformer Storage Area.	PCB	35 ppm

MATERIAL (SOIL) DUG UP AND PACKAGED APPROX 6" BEYOND BORDER OF SPILL STAIN AND 2" DEEPER THAN STAIN, MTL DISPOSED OF AFTER RECEIPT OF ANALYSIS AS NON PCB MTL

3 FIFTY FIVE DRUMS (OPEN HEAD) WERE FILLED WITH SOILS FROM THE SITE. APPROX 22 CU FT, NON PCB SPILL DEBRIS

7.57 CU FT PER DRUM

REMARKS

July 24, 1981

APPENDIX B

BORING LOGS AND WELL CONSTRUCTION LOGS

BOREHOLE ID : MW1-1 SITE NAME/NO: EARLE
BEGIN DATE : 04/29/92 END DATE : 04/29/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 17.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 17.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	93.010	93.010
N. COORDINATE :	525529.8200	525529.8200
E. COORDINATE :	2143136.3800	2143136.3800

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27901

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

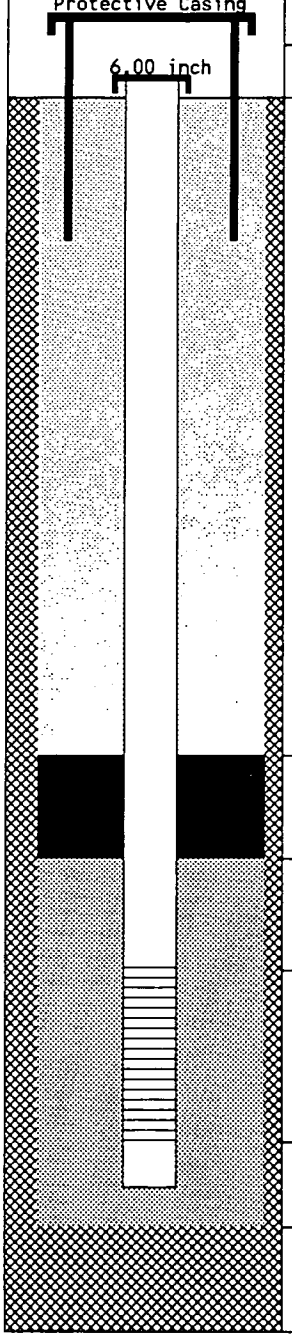
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW1-1
START DATE	04/29/92
COMPLETION DATE	04/29/92

WATER LEVELS



DEPTH		ELEV.
1.75	TC	94.76
0.00	GS	93.01
0.00	BN	93.01
2.00	SP	91.01
3.00	SC	90.01
16.00	BS	77.01
16.00	TD	77.01

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 6.00 *inch* *Interval:* -2.50 to 1.00 *ft.*
Type : LOW CARBON

Stick Up Inner Casing: 1.75 *ft.* *Protective Casing:* 2.18 *ft.*

Casing Grout: *Interval:* 0.00 to 0.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* 0.00 to 2.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.00 to 17.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND MORIE #1 *Interval:* 16.00 to 17.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
DTW = 4.5' bgs. Used modified well const. for shallow water level.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/08/92

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525529.8200 surveyed	DRILLING RIG	: CME-850
EASTING	: 2143136.3800 surveyed	DATE STARTED	: 04/29/92
ELEVATION	: 93.010 surveyed	DATE COMPLETED	: 04/29/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Poorly graded sand, SP	DK YLLWISH BRN	LSE	DRY	1 2 3 5	HNU 2.0	1" band of dark gray fine sand at 1 ft. (possible burn stain.
92	1									
91	2		80	Poorly graded sand, SP	BROWNISH YELLOW	LSE	MST	6 5 6 6	HNU 8.6	
90	3									
89	4		65	Poorly graded sand, SP	YELLOWISH BROWN	LSE	WET	1 3 4 5	HNU 8.0	One coarse cobble fragment.
88	5									
				No Sample Recovered						
87	6		65	Poorly graded sand, SP	YELLOWISH BROWN	LSE	SAT	1 1 2 6	HNU 2.0	Some Fe staining.
86	7									
				No Sample Recovered						
85	8		65	Poorly graded sand with silt, SP-SM	BROWNISH YELLOW	LSE	SAT	1 4 5 4	HNU 4.2	
84	9									
				No Sample Recovered						
83	10		100	Poorly graded sand with silt, SP-SM	LT OLIVE BROWN	LSE	SAT	1 5 7 8	HNU 4.0	1/4" band of orange sand (fine) @11.7 ft.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525529.8200 surveyed	DRILLING RIG	: CME-850
EASTING	: 2143136.3800 surveyed	DATE STARTED	: 04/29/92
ELEVATION	: 93.010 surveyed	DATE COMPLETED	: 04/29/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand with silt, SP-SM	LT OLIVE BROWN	LSE	SAT		HNU 4.0	1/4" band of orange sand (fine) @11.7 ft.
82	11									
81	12		60	Silt, ML	YELLOWISH BROWN		SAT	3 5 7 9		HNu not working - Fe staining sporadically.
80	13									
79	14		90	Poorly graded sand, SP	YELLOWISH BROWN		SAT	2 3 4 6		
78	15									
77	16			Interval Not Sampled						
76	17									
75	18									
74	19									
73	20									

Borehole Location Data **ROY F. WESTON, Inc.**

BOREHOLE ID : MW1-2 SITE NAME/NO: EARLE
BEGIN DATE : 04/29/92 END DATE : 04/29/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 17.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 10.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2: 10.00
INTERVAL: 10.00 ft. to 17.00 ft. BGS
METHOD : FLUID : WATER
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	91.810	91.810
N. COORDINATE :	525382.3800	525382.3800
E. COORDINATE :	2142963.3500	2142963.3500

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27902

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

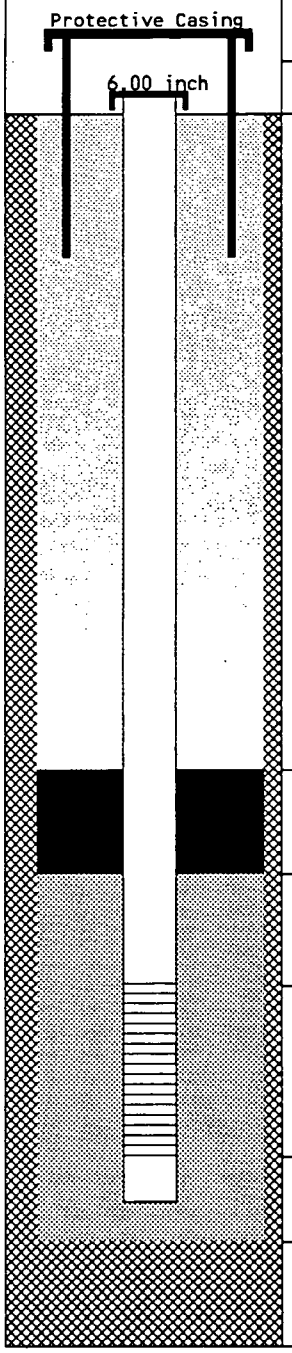
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW1-2
START DATE	04/29/92
COMPLETION DATE	04/29/92

WATER LEVELS



DEPTH		ELEV.
1.76	TC	93.57
0.00	GS	91.81
-1.50	BN	93.31
2.00	SP	89.81
3.00	SC	88.81
16.00	BS	75.81
16.00	TD	75.81

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid WATER
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 6.00 *inch* *Interval:* -2.40 to 1.10 *ft.*
Type : LOW CARBON

Stick Up Inner Casing: 1.76 *ft.* *Protective Casing:* 2.05 *ft.*

Casing Grout: *Interval:* 0.00 to 0.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* -1.50 to 2.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.00 to 17.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND PACK *Interval:* 16.00 to 17.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
Used modified well construction for elevated water table.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/08/92

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525382.3800 surveyed	DRILLING RIG	: CME-850
EASTING	: 2142963.3500 surveyed	DATE STARTED	: 04/29/92
ELEVATION	: 91.810 surveyed	DATE COMPLETED	: 04/29/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Poorly graded sand, SP	YELLOWISH BROWN	LSE	MST	2 2 4 5	HNU 6.3	
90	1									
				No Sample Recovered						
89	2		85	Poorly graded sand with silt, SP-SM	DK YLLOWISH BRN	LSE	MST	6 6 5 5	HNU 6.4	
88	3									
87	4		65	Poorly graded sand, SP	LT OLIVE BROWN	LSE	WET	2 3 4 4	HNU 8.0	
86	5									
85	6		75	Poorly graded sand with silt, SP-SM	LT OLIVE BROWN	LSE	SAT	2 3 2 2	HNU 2.2	Slight Fe staining possible.
84	7									
83	8		65	Poorly graded sand with silt, SP-SM	LT OLIVE BROWN	LSE	SAT	1 2 3 5	HNU 7.4	
82	9									
				No Sample Recovered						
81	10		80	Poorly graded sand, SP	LT OLIVE BROWN	LSE	SAT	1 3 4 9	HNU 7.4	Qtz w/trace dk grains.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525382.3800 surveyed	DRILLING RIG	: CME-850
EASTING	: 2142963.3500 surveyed	DATE STARTED	: 04/29/92
ELEVATION	: 91.810 surveyed	DATE COMPLETED	: 04/29/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	LT OLIVE BROWN	LSE	SAT		HNU 7.4	Qtz w/trace dk grains.
80	11									
79	12		95	Poorly graded sand, SP	LT OLIVE BROWN	LSE	SAT	2 6 9 9	HNU 8.2	Band of 10YR5/8 (yellowish brown sand at 13.8 ft. (.08 ft. width)) fine sand.
78	13									
77	14		85	Poorly graded sand, SP	OLIVE BROWN	LSE	SAT	2 4 6 8	HNU 2.1	
76	15									
75	16			Interval Not Sampled						
74	17									
73	18									
72	19									
71	20									

BOREHOLE ID : MW1-3 *SITE NAME/NO:* EARLE
BEGIN DATE : 04/28/92 *END DATE :* 04/28/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 17.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 17.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	91.940	91.940
N. COORDINATE :	525194.3100	525194.3100
E. COORDINATE :	2143081.8900	2143081.8900

WELL PERMIT.....(Y)es (N)o: Y *PERMIT # :* 29-27903

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

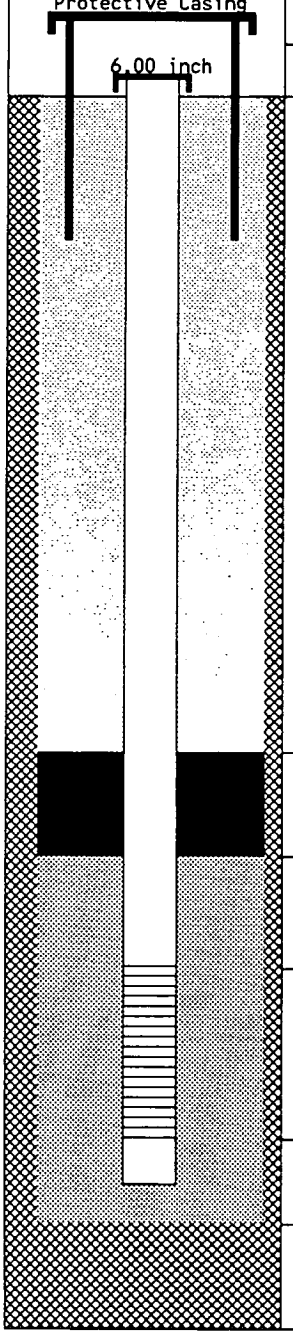
COMMENTS :

Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW1-3	*WATER LEVELS*	
START DATE	04/28/92	7.30 FT (TOC) ON 04/28/92	
COMPLETION DATE	04/28/92		



DEPTH		ELEV.
2.54	TC	94.48
0.00	GS	91.94
0.00	BN	91.94
2.00	SP	89.94
3.00	SC	88.94
16.00	BS	75.94
16.00	TD	75.94

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 6.00 *inch* *Interval:* -30.00 to 2.00 *ft.*
Type : LOW CARBON

Stick Up Inner Casing: 2.54 *ft.* *Protective Casing:* 3.53 *ft.*

Casing Grout: *Interval:* -1.50 to 0.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* 0.00 to 2.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.00 to 16.50 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND *Interval:* 16.00 to 16.50 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

After siting for 1 hr. DTW is 4.5' bgs. Therefore a modified well construction for shallow water tables was used.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/08/92

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525194.3100 surveyed	DRILLING RIG	: CME-850
EASTING	: 2143081.8900 surveyed	DATE STARTED	: 04/28/92
ELEVATION	: 91.940 surveyed	DATE COMPLETED	: 04/28/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			90	Poorly graded sand, SP	OLIVE BROWN	LSE	MST	2 3 7 8	HNU 5.2	
90	1									
89	2		95	Silty sand, SM	OLIVE YELLOW	LSE	MST	8 8 9 9	HNU 5.4	Becoming more glauconitic
88	3									
87	4		90	Silty sand, SM	YELLOW	LSE	WET	3 4 3 3	HNU 4.0	
86	5									
				No Sample Recovered						
85	6		75	Silty sand, SM	OLIVE YELLOW	LSE	WET	1 2 1 2	HNU 6.8	
84	7									
83	8		85	Silty sand, SM	LT OLIVE BROWN	FRM	WET	3 4 4 4	HNU 6.5	
82	9									
81	10		75	Silty sand, SM	LT OLIVE BROWN	SFT	SAT	1 1 1 2	HNU 4.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW1-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 525194.3100 surveyed	DRILLING RIG	: CME-850
EASTING	: 2143081.8900 surveyed	DATE STARTED	: 04/28/92
ELEVATION	: 91.940 surveyed	DATE COMPLETED	: 04/28/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	LT OLIVE BROWN	SFT	SAT		HNU 4.0	
80	11									
79	12		75	Silty sand, SM	LT OLIVE BROWN	SFT	SAT	3 4 7 7	HNU 3.2	Trace dark mineral in sand. Bands of 1.5 wide very fine sand 7.5YR6/8 12.5 and 13 ft.
78	13									
77	14		85	Silty sand, SM	LT OLIVE BROWN	SFT	SAT	1 3 4 5		
76	15									
75	16			Interval Not Sampled						
74	17									
73	18									
72	19									
71	20									

BOREHOLE ID : MW6-1 SITE NAME/NO: EARLE
BEGIN DATE : 05/01/92 END DATE : 05/04/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 21.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 18.00 ft. BGS
METHOD : FLUID : NONE
BOREHOLE DIAMETER #2: 10.00
INTERVAL: 18.00 ft. to 21.00 ft. BGS
METHOD : FLUID : WATER
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	17.710	17.710
N. COORDINATE :	176257.5910	176257.5910
E. COORDINATE :	186452.9030	186452.9030

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27893

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Add H2O at 18 ft. due to running sands.

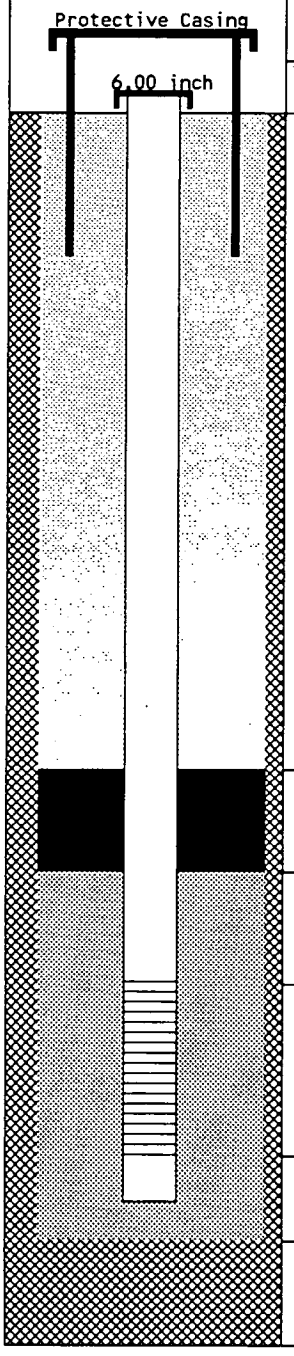
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW6-1
START DATE	05/01/92
COMPLETION DATE	05/04/92

WATER LEVELS



DEPTH		ELEV.
1.28	TC	18.99
0.00	GS	17.71
2.50	BN	15.21
3.50	SP	14.21
5.00	SC	12.71
20.00	BS	-2.29
20.00	TD	-2.29

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid WATER
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 6.00 *inch* *Interval:* -1.50 to 2.00 *ft.*
Type : LOW CARBON

Stick Up Inner Casing: 1.28 *ft.* *Protective Casing:* 1.48 *ft.*

Casing Grout: *Interval:* 0.00 to 0.00 *ft.*

Seal Type: BENTONITE *Interval:* 2.50 to 3.50 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 3.50 to 21.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 5.00 to 20.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND *Interval:* 20.00 to 21.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/08/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 21.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176257.5910 surveyed	DRILLING RIG	: CME-850
EASTING	: 186452.9030 surveyed	DATE STARTED	: 05/01/92
ELEVATION	: 17.710 surveyed	DATE COMPLETED	: 05/04/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Not Classified - Incomplete Data	BROWN	SFT	DRY	2 5 6 5	HNU 0.0	Fill material.
16	1									
				No Sample Recovered						
15	2		90	Clayey sand, SC	STRONG BROWN	SFT	MST	3 3 5 4		Fill material.
14	3									
				Elastic silt, MH	V. DK GRAY	SFT	MST		HNU 0.0	Fill material.
13	4		60	Silty sand, SM	DK GRAYISH BRN	LSE	MST	1 2 2 2	HNU 2.3	Fill material.
				Elastic silt, MH	DK GRAYISH BRN	SFT	MST			Fill material.
12	5			Silt with sand, ML		LSE	MST		HNU 2.2	Clay (dk grayish brown 10YR4/2) interbedded with sand (brownish yellow 10YR6/8). Fill material.
				No Sample Recovered						
11	6		80	Sandy silt, ML	BROWN	LSE	MST	1 2 2 3	HNU 4.8	Interbedded sand silt & clay.
10	7									
9	8		80	Fill	OLIVE GRAY	LSE	MST	1 1 1 1	HNU 0.0	1" sand lenses at 9, 9.3, 9.5.
8	9									
7	10		60	Clayey sand, SC	OLIVE BROWN	SFT	WET	1 1 3 3	HNU 6.2	1" clay lenses.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 21.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176257.5910 surveyed	DRILLING RIG	: CME-850
EASTING	: 186452.9030 surveyed	DATE STARTED	: 05/01/92
ELEVATION	: 17.710 surveyed	DATE COMPLETED	: 05/04/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Clayey sand, SC	OLIVE BROWN	SFT	WET		HNU 6.2	1" clay lenses.
				Silty sand, SM		LSE	WET			Root matter grades from black to 7.5YR4/2.
6	11									
				No Sample Recovered						
5	12		65	Silty sand, SM	PALE OLIVE	LSE	WET	2 3 3 4	HNU 0.2	
4	13									
				No Sample Recovered						
3	14		75	Silty sand, SM	GRAY BROWN	LSE	SAT	2 3 4 2	HNU 0.2	
2	15									
1	16		75	Poorly graded sand, SP		LSE	SAT	3 3 4 2	HNU 0.2	Uniform Fe staining at 18 ft.
0	17									
0	18		75	Poorly graded sand, SP	LT GRAY	LSE	SAT	2 3 4 2	HNU 0.4	Fe staining.
-1	19									
-2	20									

BOREHOLE ID : MW6-2 SITE NAME/NO: EARLE
BEGIN DATE : 05/06/92 END DATE : 05/06/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 16.50 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 16.50 ft. BGS
METHOD : SSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	12.190	12.190
N. COORDINATE :	176291.5150	176291.5150
E. COORDINATE :	186350.0310	186350.0310

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27894

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

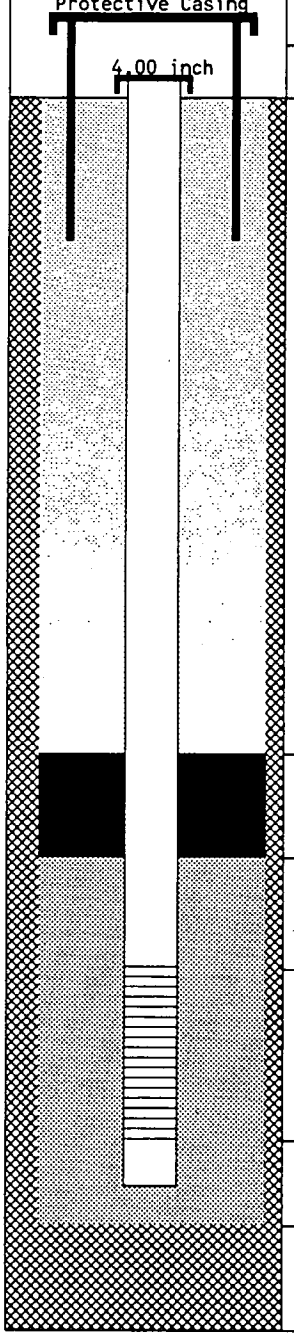
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW6-2
START DATE	05/06/92
COMPLETION DATE	05/06/92

WATER LEVELS



DEPTH		ELEV.
1.68	TC	13.87
0.00	GS	12.19
1.00	BN	11.19
2.00	SP	10.19
4.00	SC	8.19
16.00	BS	-3.81
16.00	TD	-3.81

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* -2.00 to 16.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 1.68 *ft.* *Protective Casing:* 1.88 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 1.00 *ft.*

Seal Type: BENTONITE *Interval:* 1.00 to 2.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.00 to 16.50 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 4.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND *Interval:* 16.00 to 16.50 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth
= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
DTW = 7.5 ft. (in augers)

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/08/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 16.50
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176291.5150 surveyed	DRILLING RIG	: CME-850
EASTING	: 186350.0310 surveyed	DATE STARTED	: 05/06/92
ELEVATION	: 12.190 surveyed	DATE COMPLETED	: 05/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	Poorly graded sand, SP	BROWNISH YELLOW	LSE	DRY	1 1 1 1	HNU 0.0	0-0.3 topsoil. Fill material.
11	1									
10	2		65	Poorly graded sand with silt, SP-SM		SFT	MST	1 1 2 1	HNU 0.0	Fill material.
9	3									
				No Sample Recovered						
8	4		19	Silty sand, SM	YELLOWISH BROWN	SFT	WET	3 4 1 1	HNU 6.5	
				No Sample Recovered						
7	5									
6	6			No Sample Recovered				1 1 1 2		
5	7									
4	8		65	Silty sand, SM	OLIVE BROWN		WET	3 2 1 1	HNU 5.2	
				Silty sand, SM	OLIVE BROWN	SFT	WET		HNU 5.2	
3	9									
				No Sample Recovered						
2	10		65	Clayey sand, SC	GRAYISH BROWN	SFT	SAT	1 3 4 3	HNU 4.6	Alternating sandy clay and silty sandy layer.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 16.50
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176291.5150 surveyed	DRILLING RIG	: CME-850
EASTING	: 186350.0310 surveyed	DATE STARTED	: 05/06/92
ELEVATION	: 12.190 surveyed	DATE COMPLETED	: 05/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Clayey sand, SC	GRAYISH BROWN	SFT	SAT		HNU 4.6	Alternating sandy clay and silty sandy layer.
1	11									
				No Sample Recovered						
0	12		80	Silty sand, SM		LSE	SAT	1 1 1 3	HNU 6.4	Analytes metals (TAC) and TCL organics (VOCs, BNA, Pes/PCB) 1/4" sandy clay lenses @ 12.4 and 12.6.
0	13									
-1	14		80	Poorly graded sand, SP	YELLOWISH BROWN	LSE	SAT	5 5 3 4	HNU 3.4	Med, sandstone gravel 14.4 ft.
-2	15									
				Elastic silt, MH	V. DK GRAY	FRM	SAT			
-3	16									
-4	17									
-5	18									
-6	19									
-7	20									

BOREHOLE ID : MW6-3 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/05/92 *END DATE :* 05/06/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 23.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 23.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	12.610	12.610
N. COORDINATE :	176334.2300	176334.2300
E. COORDINATE :	186386.8160	186386.8160

WELL PERMIT.....(Y)es (N)o: Y *PERMIT # :* 29-27896

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	*DEPTH*
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

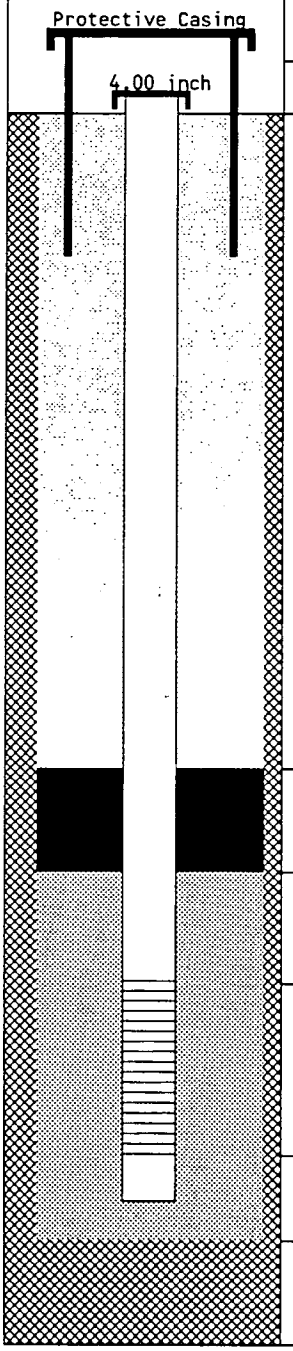
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW6-3
START DATE	05/06/92
COMPLETION DATE	05/07/92

WATER LEVELS



DEPTH		ELEV.
2.21	TC	14.82
0.00	GS	12.61
7.00	BN	5.61
10.00	SP	2.61
12.00	SC	0.61
22.00	BS	-9.39
22.00	TD	-9.39

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 22.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.21 *ft.* *Protective Casing:* 2.41 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 7.00 *ft.*

Seal Type: BENTONITE *Interval:* 7.00 to 10.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 10.00 to 23.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 12.00 to 22.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : MORIE #1 SAND *Interval:* 22.00 to 23.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/09/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 23.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176334.2300 surveyed	DRILLING RIG	: CME-850
EASTING	: 186386.8160 surveyed	DATE STARTED	: 05/05/92
ELEVATION	: 12.610 surveyed	DATE COMPLETED	: 05/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			80	Silty sand, SM	DK YLLWISH BRN	FRM	DRY	4 3 5 5	HNU 0.2	0 to .6 topsoil (silty sandy gravelly loam). Fill material.
11	1									
10	2		55	Poorly graded sand, SP	DK YLLWISH BRN	LSE	DRY	3 3 22 7	HNU 0.0	1 inch clay lense (med plastic) w/ sand at 2.5 ft, gravel is at 3 ft. Fill material.
9	3			No Sample Recovered						
8	4		40	Poorly graded sand with clay and gravel, SP-S	DK YLLWISH BRN	LSE	WET	2 12 1 2		Qtz gravel fragments from 4.5 to 4.8 ft. clay lenses (1/4") x 2 at 4.3 ft. Fill material.
7	5			No Sample Recovered						
6	6		40	Organic soil, OL/OH		FRM	WET	1 1 1 3	HNU 0.3	Clay w/sand lenses, .35 feet of burnt organics. Fill material.
5	7			No Sample Recovered						
4	8		90	Elastic silt, MH	LT BROWNISH GRY	SFT	WET	1 1 3 9	HNU 0.0	
3	9									
				Poorly graded sand, SP	LT YLLWISH BRN	LSE	WET		HNU 0.0	Analytes: VOC, BNA, Pest/ PCB, Metals/CN.
2	10		75	Poorly graded sand, SP	LT YELLOW BROWN	LSE	SAT	3 6 11 14	HNU 0.0	DTW = 9.07

Borehole Log

ROY F. WESTON, Inc.

CLIENT :	EARLE	TOTAL DEPTH :	23.00
SITE NAME :	NWS EARLE	LOGGER :	T. MCCANN
WELL ID :	MW6-3	DRILLING COMPANY :	EMPIRE SOILS
NORTHING :	176334.2300 surveyed	DRILLING RIG :	CME-850
EASTING :	186386.8160 surveyed	DATE STARTED :	05/05/92
ELEVATION :	12.610 surveyed	DATE COMPLETED :	05/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	LT YELLOW BROWN	LSE	SAT		HNU 0.0	DTW = 9.07
1	11									
0	12		80	Poorly graded sand, SP	LT GRAY	LSE	SAT	3 7 11 15	HNU 0.0	
0	13									
-1	14		80	Poorly graded sand, SP	LT GRAY	LSE	SAT	7 9 2 3	HNU 1.7	
-2	15									
-3	16		70	Poorly graded sand, SP	LT GRAY	LSE	SAT	2 4 8 8	HNU 0.4	Dark staining from 16.7 to 17.0 and iron like stajning from 17.0 to 17.4. Yellow.
-4	17									
				No Sample Recovered						
-5	18		60	Poorly graded sand, SP	LT GRAY	LSE	SAT	2 2 1 1	HNU 1.2	
-6	19									
				No Sample Recovered						
-7	20		95	Poorly graded sand, SP	LT GRAY	LSE	SAT	1 1 1 1	HNU 0.0	Fe staining from 21.45 to 21.7 ft. Two 1mm lenses of dark sand at 21.7 ft.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 23.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176334.2300 surveyed	DRILLING RIG	: CME-850
EASTING	: 186386.8160 surveyed	DATE STARTED	: 05/05/92
ELEVATION	: 12.610 surveyed	DATE COMPLETED	: 05/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	LT GRAY	LSE	SAT		HNU 0.0	Fe staining from 21.45 to 21.7 ft. Two 1mm lenses of dark sand at 21.7 ft.
-8	21									
-9	22									
-10	23									
-11	24									
-12	25									
-13	26									
-14	27									
-15	28									
-16	29									
-17	30									

BOREHOLE ID : MW6-4 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/04/92 *END DATE :* 05/05/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) :

TOTAL DEPTH : 0.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 16.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2: 10.00
INTERVAL: 16.00 ft. to 19.00 ft. BGS
METHOD : HSA *FLUID :* WATER
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	14.010	14.010
N. COORDINATE :	176354.6810	176354.6810
E. COORDINATE :	186448.1240	186448.1240

WELL PERMIT.....(Y)es (N)o: Y *PERMIT # :* 89-27895

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

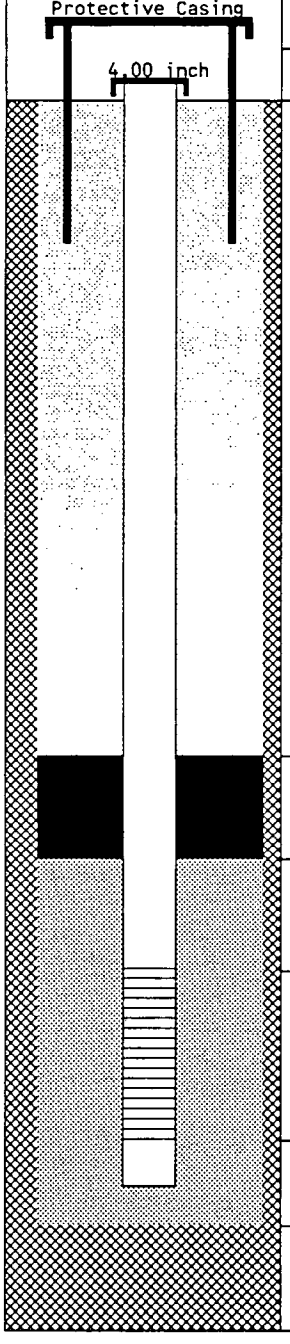
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW6-4
START DATE	05/04/92
COMPLETION DATE	05/05/92

WATER LEVELS



DEPTH		ELEV.
1.76	TC	15.77
0.00	GS	14.01
1.00	BN	13.01
2.00	SP	12.01
3.00	SC	11.01
18.00	BS	-3.99
18.00	TD	-3.99

DRILLING SUMMARY

Driller BRIAN WAGERN
Drilling Fluid WATER
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 18.00 *ft.*
Type : PVC SCH 20

Stick Up Inner Casing: 1.76 *ft.* *Protective Casing:* 1.92 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 0.00 *ft.*

Seal Type: BENTONITE *Interval:* 1.00 to 2.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.00 to 19.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.00 to 18.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : MORIE #1 SAND *Interval:* 18.00 to 19.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
DTW in augers = 8.4 ft.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/09/92

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 0.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-4	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176354.6810 surveyed	DRILLING RIG	: CME-850
EASTING	: 186448.1240 surveyed	DATE STARTED	: 05/04/92
ELEVATION	: 14.010 surveyed	DATE COMPLETED	: 05/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Poorly graded sand, SP	STRONG BROWN	LSE	MST	5 5 2 4	HNU 0.0	Fill material.
13	1									
				No Sample Recovered						
12	2		80	Poorly graded sand, SP	STRONG BROWN	LSE	MST	3 2 2 4	HNU 0.2	Fill material. Burnt wood fragments.
11	3									
10	4		35	Well-graded sand, SW	DK YLLWISH BRN	SFT	MST	1 2 4 4	HNU 0.2	Fill material. Wood fragments.
				No Sample Recovered						
9	5									
8	6		25	Well-graded sand, SW	YELLOWISH BROWN	LSE	MST	7 6 7 3	HNU 0.0	Fill material. Burnt organics.
				No Sample Recovered						
7	7									
6	8		20	Silty sand, SM	DK YLLWISH BRN	SFT	MST	4 3 4 3	HNU 0.0	Fill material.
				No Sample Recovered						
5	9									
4	10		60	Well-graded sand, SW	GRAYISH BROWN	LSE	WET	1 3 4 3	HNU 0.0	Asphalt fragment - fill material- constitues gravel.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 0.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW6-4	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176354.6810 surveyed	DRILLING RIG	: CME-850
EASTING	: 186448.1240 surveyed	DATE STARTED	: 05/04/92
ELEVATION	: 14.010 surveyed	DATE COMPLETED	: 05/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Well-graded sand, SW	GRAYISH BROWN	LSE	WET		HNU 0.0	Asphalt fragment - fill material- constitues gravel.
3	11									
				No Sample Recovered						
2	12		60	Poorly graded sand, SP	LT GRAY	LSE	SAT	4 1 1 1	HNU 0.0	
1	13									
				No Sample Recovered						
0	14		75	Poorly graded sand, SP	LT GRAY	LSE	SAT	1 1 2 2	HNU 0.0	
0	15									
-1	16		80	Poorly graded sand, SP	LT GRAY	LSE	SAT	2 3 8 9	HNU 0.0	Some Fe staining.
-2	17									
-3	18									
-4	19									
-5	20									

BOREHOLE ID : TP9-01 SITE NAME/NO: EARLE
BEGIN DATE : 05/15/92 END DATE : 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) :

TOTAL DEPTH : 7.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : FLUID :
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : BACK HOE

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Upgradient test pit. Sample taken: 09-001-T007 (MS/MSD) 4-7ft.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 7.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-01	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	BROWN YELLOW	LSE	MST		HNU 0.0	
-1	1									
-2	2			Clayey sand, SC	YELLOW BROWN	LSE	MST		HNU 0.0	Slight clay/cohesiveness increasing with depth.
-3	3									
-4	4									
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

BOREHOLE ID : TP9-02 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/15/92 *END DATE :* 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 10.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : *FLUID :*
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : JOHN DEERE BACKHOE

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
TP9-02 is in central area of landfill. Sample taken: 09-002-T010, 6-10 ft.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 10.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-02	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: JOHN DEERE BACKHOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand with clay, SP-SC		FRM	MST			Fill material? Topsoil.
-1	1			Clayey sand, SC	DK YELLOW BRN	SFT	MST		HNU 0.0	Fill material. Clay lenses.
-2	2									
-3	3									
-4	4									
-5	5									
-6	6			Clayey sand, SC	BROWN	SFT			HNU 0.0	Fill material. Piece of cement. Trace brick fragments. No water in hole.
-7	7									
-8	8									
-9	9									
-10	10									

BOREHOLE ID : TP9-03 SITE NAME/NO: EARLE
BEGIN DATE : 05/15/92 END DATE : 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 9.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : FLUID :
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : BACK HOE

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Sample taken: 09-003-T009 (6 - 9 ft).

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 9.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-03	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Poorly graded sand, SP	BROWN YELLOW	LSE	MST		HNU 0.0	0-0.8' surface soil (silty sandy loam).
-1	1									
-2	2									
-3	3									
-4	4			Silty sand, SM	V DK GRAY BRN	SFT	MST		HNU 0.0	Iron veins surrounded by iron staining. "Bog Iron" 6-8'.
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

BOREHOLE ID : TP9-04 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/15/92 *END DATE :* 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) :

TOTAL DEPTH : 9.50 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : *FLUID :*
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : BACK HOE

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Sample taken: 09-004-T005 (3 to 5 ft).

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 9.50
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-04	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	YELLOW BROWN	LSE	MST		HNU 0.0	Fill material. Steel sheeting, metal bands, burnt wood and timber.
-1	1									
-2	2									
-3	3									
-4	4									
				Silty sand, SM	DK YELLOW BRN	SFT	MST		HNU 0.0	Less silt and clay with depth; fine sand.
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

BOREHOLE ID : TP9-05 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/15/92 *END DATE :* 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 8.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : *FLUID :*
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : BACK HOE

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
4" "I" bar, steel banding and sheeting, wood beams on ground surface. Sample taken: 09-005-T006 (3-6 ft.).

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 8.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-05	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	DK YELLOW-BRN	SFT	MST		HNU 0.0	Fill material. Some roots systems garbage bag. Plaster sheeting, wood.
-1	1									
-2	2									
-3	3									
-4	4									
				Silty sand, SM	DK YELLOW-BRN	FRM	MST		HNU 0.0	
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

BOREHOLE ID : TP9-06 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/15/92 *END DATE :* 05/15/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 0.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 0.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : *FLUID :*
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : KEVIN HIGGINS
DRILL RIG TYPE : BACK HOE

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Sample taken: 09-006-T008 (5-8 ft.).

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 0.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-06	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	BROWN YELLOW	FRM	MST		HNU 0.0	0 to 0.8' topsoil sandy loam. One block of 4"x4" wood. Fill material.
-1	1									
-2	2									
-3	3			Silty sand, SM	OLIVE BROWN	SFT	MST		HNU 0.0	1' band iron staining at 6-7': "Bog Iron".
-4	4									
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 0.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: TP9-06	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: BACK HOE
EASTING	: 0.0000 estimated	DATE STARTED	: 05/15/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/15/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	OLIVE BROWN	SFT	MST		HNU 0.0	1' band iron staining at 6-7': "Bog Iron".
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

BOREHOLE ID : HP15-1 SITE NAME/NO: EARLE
BEGIN DATE : 05/07/92 END DATE : 05/07/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 16.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 12.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2: 2.50
INTERVAL: 12.00 ft. to 16.00 ft. BGS
METHOD : HYDRO PUNCH FLUID : NONE
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	DEPTH
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
HP = Hydro punch.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 16.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: HP15-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/07/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1									
-2	2									
-3	3									
-4	4									
-5	5		85	Silty sand, SM	DK YLLOW BROWN	SFT	MST	3 4 6 5		
-6	6									
-7	7			Interval Not Sampled						
-8	8									
-9	9									
-10	10		60	Silty sand, SM	DK GRAYISH BRN	SFT	WET	3 2 1 1		

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 16.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: HP15-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/07/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	DK GRAYISH BRN	SFT	WET			
-11	11			Elastic silt, MH	BLACK	SFT	WET			
				No Sample Recovered						
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

BOREHOLE ID : BH15-1 SITE NAME/NO: EARLE
BEGIN DATE : 05/07/92 END DATE : 05/07/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 12.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 6.00
INTERVAL: 10.00 ft. to 12.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 12.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH15-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/07/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered				3 4 4 5		
-1	1									
-2	2		85	Silty sand, SM	DK YLLWISH BRN	FRM	MST	7 10 15 13	HNU 0.0	Fill material.
-3	3									
-4	4		60	Silty sand, SM	STRONG BROWN	FRM	MST	5 6		Fill material.
				Poorly graded sand, SP	STRONG BROWN	LSE	MST	6 5		Fill material.
-5	5			No Sample Recovered						
-6	6		95	Fill	STRONG BROWN	LSE	MST	8 5 5	HNU 0.0	
				Clayey sand, SC	DK YLLOWISH BRN	SFT	MST	3	HNU 0.0	
-7	7									
-8	8			No Sample Recovered						
-9	9									
-10	10		85	Elastic silt, MH	DK GRAY	SFT	MST	1 1 1 2	HNU 0.0	Clay - some mottling - Fe staining.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 12.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH15-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/07/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Elastic silt, MH	DK GRAY	SFT	MST		HNU 0.0	Clay - some mottling - Fe staining.
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

BOREHOLE ID : BH15-2 SITE NAME/NO: EARLE
BEGIN DATE : 05/07/92 END DATE : 05/07/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 8.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 6.00
INTERVAL: 0.00 ft. to 8.00 ft. BGS
METHOD : FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 8.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH15-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/07/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Silty sand, SM	YELLOWISH BROWN	SFT	MST	4 4 7 8	HNU 0.0	0-0.4 is topsoil/gravel (black). Fill material.
-1	1									
-2	2		60	Silty sand, SM	YELLOWISH BROWN	FRM	MST	7 7 9 8	HNU 0.0	Fill material. Mottled Fe staining.
-3	3									
				No Sample Recovered						
-4	4		50	Sandy silt, ML	DK YLLWISH BRN	FRM	MST	2 2 2 3	HNU 0.0	Fill material.
-5	5			No Sample Recovered						
-6	6		50	Poorly graded sand, SP		LSE	WET		HNU 0.0	Fill material.
-7	7			No Sample Recovered						
-8	8									
-9	9									
-10	10									

BOREHOLE ID : MW17-1 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/13/92 *END DATE :* 05/13/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 20.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 20.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	17.950	17.950
N. COORDINATE :	176068.6420	176068.6420
E. COORDINATE :	186279.5990	186279.5990

WELL PERMIT.....(Y)es (N)o: Y *PERMIT # :* 29-27300

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

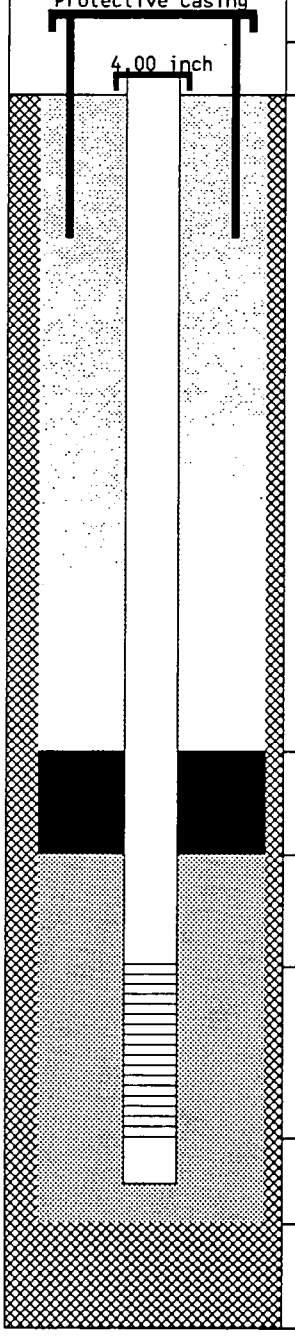
COMMENTS :

Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW17-1	*WATER LEVELS*
START DATE	05/13/92	
COMPLETION DATE	05/13/92	



DEPTH		ELEV.
1.85	*TC*	19.80
0.00	*GS*	17.95
5.00	*BN*	12.95
8.00	*SP*	9.95
9.00	*SC*	8.95
19.00	*BS*	-1.05
19.00	*TD*	-1.05

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 8.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 1.85 *ft.* *Protective Casing:* 2.05 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 5.00 *ft.*

Seal Type: BENTONITE *Interval:* 5.00 to 8.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 8.00 to 19.50 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 9.00 to 19.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : MORIE #1 SAND *Interval:* 19.00 to 19.50 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
DTW (in augers 11.5').

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/10/92

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 20.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176068.6420 surveyed	DRILLING RIG	: CME-850
EASTING	: 186279.5990 surveyed	DATE STARTED	: 05/13/92
ELEVATION	: 17.950 surveyed	DATE COMPLETED	: 05/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	Well graded sand with silt, SW-SM	VY DK GRAY	LSE	MST	4 4 6 5	HNU 0.0	0-0.4' topsoil (silty sandy loam). Fill material.
16	1			Poorly graded sand, SP	LT YELLOW BRN	LSE	WET		HNU 0.0	Fill material.
15	2		95	Poorly graded sand with silt, SP-SM	DK YELLOW BRN	LSE	WET	3 4 6 6	HNU 0.0	Fill material.
				Elastic silt, MH	BROWN	FRM	MST		HNU 0.0	
14	3									
13	4		100	Elastic silt, MH	DK GRAY BROWN	FRM	MST	3 2 3 5		Periodic sand seams.
12	5									
11	6		75	Elastic silt, MH	DK GRAY	FRM	WET	2 14 6 4		Fill material.
10	7			Well-graded gravel, GW	BROWN	LSE	SAT		HNU 0.0	Sandstone fractured by spoon.
9	8		90	Poorly graded sand, SP	YELLOW BROWN	LSE	WET	3 2 6 4		
				Elastic silt, MH	VY DK GRAY	FRM	MST		HNU 0.2	Clay with sand seams at 8 per foot.
8	9									
7	10		75	Silty sand, SM	RED YELLOW	LSE	SAT	1 3 4 5	HNU 0.0	Sand with sandy clay (very low plasticity) lenses.

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 20.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-1	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176068.6420 surveyed	DRILLING RIG	: CME-850
EASTING	: 186279.5990 surveyed	DATE STARTED	: 05/13/92
ELEVATION	: 17.950 surveyed	DATE COMPLETED	: 05/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	RED YELLOW	LSE	SAT		HNU 0.0	Sand with sandy clay (very low plasticity) lenses.
6	11									
5	12		75	Clayey sand, SC	VY PALE BROWN	LSE	SAT	2 3 3 5	HNU 0.0	1 Sand clay 1" thick (v. low plast.) 12.4-12.5'; 1 Med plast. clay 13.3'. Overlain by 1.5" orng snd
4	13									
3	14		60	Poorly graded sand with silt, SP-SM	YELLOW	LSE	SAT	2 1 2 3	HNU 0.0	.075' clay lense (med plast. @15' BGS). Underlying orange sands w/dk gray sand seams.DTW-11.4'
2	15									
				No Sample Recovered						
1	16		65	Poorly graded sand with silt, SP-SM	LT GRAY	LSE	SAT		HNU 0.0	Orng/tan snd grading to lt gray w/increasing sand seams of black w/depth. Sandy clay lense @16.4'.
0	17									
				No Sample Recovered						
0	18		75	Poorly graded sand, SP	GRAY	LSE	SAT	1 2 4 6	HNU 0.0	Medium plastic clay lense from 18.5-18.6', 0.2' dk clay in spoon tip.
-1	19									
-2	20									

BOREHOLE ID : MW17-2 SITE NAME/NO: EARLE
BEGIN DATE : 05/11/92 END DATE : 05/11/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 17.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 17.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	12.77	12.77
N. COORDINATE :	176049.9930	176049.9930
E. COORDINATE :	186236.0960	186236.0960

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27897

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Flushmount Casing

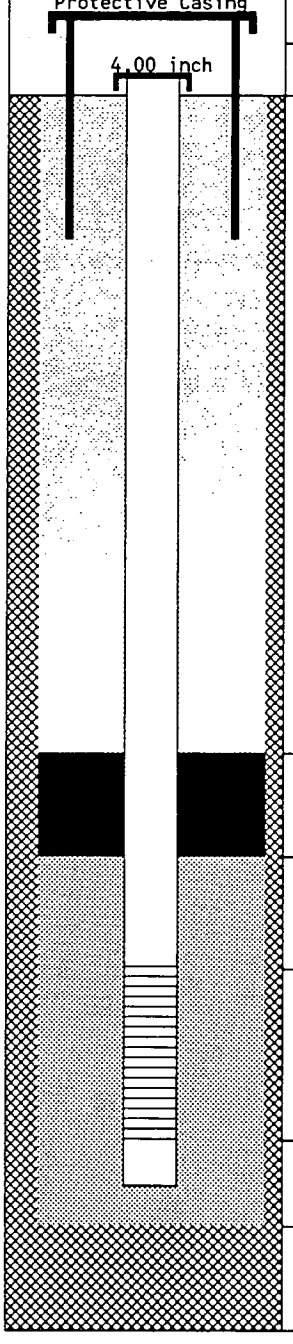
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW17-2
START DATE	05/11/91
COMPLETION DATE	05/11/92

WATER LEVELS



DEPTH		ELEV.
0.00	TC	0.00
0.00	GS	0.00
6.00	BN	-6.00
9.00	SP	-9.00
11.00	SC	-11.00
16.00	BS	-16.00
16.00	TD	-16.00

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 16.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 0.00 *ft.* *Protective Casing:* 0.00 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 6.00 *ft.*

Seal Type: BENTONITE *Interval:* 6.00 to 9.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 9.00 to 17.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 11.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : SAND *Interval:* 16.00 to 17.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:

Use 5 ft. screen due to upper clay and clay in 16-18'. DTW 7.5 ft. Flush mount protective casing.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/09/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176049.9930 surveyed	DRILLING RIG	: CME-850
EASTING	: 186236.0960 surveyed	DATE STARTED	: 05/11/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Poorly graded sand, SP	STRONG BROWN	LSE	MST	1 2 4 4	HNU 0.0	0 to 0.4 is topsoil. Fill material.
-1	1									
-2	2		90	Poorly graded sand, SP	STRONG BROWN	LSE	MST	2 2 3 5	HNU 0.0	Fill material.
				Clayey sand, SC	DK YLLWISH BRN	FRM	MST		HNU 0.0	
-3	3									
-4	4		85	Sandy elastic silt, MH	BROWNISH YELLOW	SFT	WET	2 1 1 2	HNU 0.0	Some silty sand lenses. Fill material.
-5	5									
				Silty sand, SM	BLACK	LSE	WET		HNU 0.0	Fill material.
-6	6		95	Elastic silt, MH	GRAYISH BROWN	SFT	MST	1 1 1 1	HNU 0.0	Send lense at 7.8 ft.
-7	7									
-8	8		95	Lean clay, CL	BROWN	FRM	WET	1 1 1 2	HNU 0.0	High plastic clay to sandy clay @ 9.3 ft. (mod plast).
-9	9									
-10	10			Silt, ML	OLIVE BROWN	SFT	SAT	1 1 1 1	HNU 0.0	Sandy clay.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 17.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-2	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176049.9930 surveyed	DRILLING RIG	: CME-850
EASTING	: 186236.0960 surveyed	DATE STARTED	: 05/11/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silt, ML	OLIVE BROWN	SFT	SAT		HNU 0.0	Sandy clay.
-11	11			Silty sand, SM	OLIVE BROWN	SFT	SAT		HNU 0.0	
-12	12		95	Clayey sand, SC	OLIVE BROWN	LSE	SAT	1 1 1 7		
-13	13									
-14	14		100	Silty sand, SM	DK RAY	LSE	SAT	1 1 2 2	HNU 0.0	
-15	15									
-16	16		95	Poorly graded sand, SP	V. DK GRAY	LSE	SAT	2 2 3 4	HNU 0.0	Clay lense high plastic from 16.9 to 17.2.
-17	17									
-18	18									
-19	19									
-20	20									

BOREHOLE ID : MW17-3 SITE NAME/NO: EARLE
BEGIN DATE : 05/11/92 END DATE : 05/12/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 18.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 18.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	13.080	13.080
N. COORDINATE :	176098.7790	176098.7790
E. COORDINATE :	186244.1240	186244.1240

WELL PERMIT.....(Y)es (N)o: Y PERMIT # : 29-27898

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

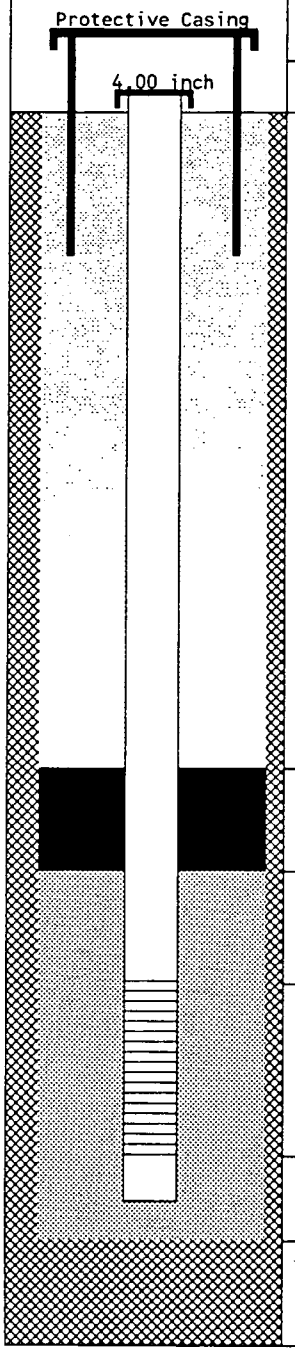
COMMENTS :

Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW17-3	*WATER LEVELS*
START DATE	05/11/92	
COMPLETION DATE	05/12/92	



DEPTH		ELEV.
2.23	TC	15.31
0.00	GS	13.08
8.00	BN	5.08
10.00	SP	3.08
11.00	SC	2.08
16.00	BS	-2.92
16.00	TD	-2.92

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid NONE
Well Type SINGLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 *inch* *Interval:* 0.00 to 16.00 *ft.*
Type : PVC SCH 40

Stick Up Inner Casing: 2.23 *ft.* *Protective Casing:* 2.34 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 8.00 *ft.*

Seal Type: BENTONITE *Interval:* 8.00 to 10.00 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 10.00 to 17.50 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 11.00 to 16.00 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : BENTONITE SAND *Interval:* 18.00 to 16.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
BH = borehole TD
DTW (5-11-92) 7.2 ft. (aquifer beneath clay).

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/09/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 18.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176098.7790 surveyed	DRILLING RIG	: CME-850
EASTING	: 186244.1240 surveyed	DATE STARTED	: 05/11/92
ELEVATION	: 13.080 surveyed	DATE COMPLETED	: 05/12/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	Silty sand, SM	DK BROWN	SFT	MST	6 5 3 1	HNU 0.0	0-0.9 = topsoil (silty gravelly sand). Fill material.
12	1									
11	2		65	Silty sand, SM	V DK GRYISH BRN	SFT	MST	1 1 2 4	HNU 1.0	Fill material.
10	3									
				No Sample Recovered						
9	4		90	Poorly graded sand, SP	DK YLLWISH BRN	LSE	MST	6 5 4 4	HNU 3.0	Fill material.
				Silty sand, SM	LT YLLWISH BRN	FRM	DRY			Fill material.
8	5			No Sample Recovered						
7	6		80	Elastic silt, MH	PALE BROWN	FRM	MST	1 3 2 2	HNU 2.2	Sand klense 6.5 to 6.8. HNu reading on sand lense
6	7									
5	8		80	Fat clay, CH	V DK GRAY	FRM	WET	1 2 3 3	HNU 2.2	4 orange sand seams 1/2mm DTW.
4	9									
3	10		90	Silty sand, SM	V DK GRAY	LSE	SAT	2 5 5 6	HNU 2.6	Silty sand w/some (4) 1/2 inch clay (high plast) lenses.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 18.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-3	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176098.7790 surveyed	DRILLING RIG	: CME-850
EASTING	: 186244.1240 surveyed	DATE STARTED	: 05/11/92
ELEVATION	: 13.080 surveyed	DATE COMPLETED	: 05/12/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	V DK GRAY	LSE	SAT		HNU 2.6	Silty sand w/some (4) 1/2 inch clay (high plast) lenses.
2	11									
1	12		85	Silty sand, SM	DK GRAY	LSE	SAT	1 3 4 5	HNU 2.2	1" clay (med plast) @13.2 and 13.5. DTW 7.2
0	13									
0	14		95	Silty sand, SM	DK GRAY	LSE	SAT	1 3 2 3	HNU 0.0	.5mm seams of dk gray sand at 15.4 ft.
-1	15									
				Elastic silt, MH	V. DK GRAY	FRM	WET			Grades to med. plast clay.
-2	16		45	Clayey sand, SC		SFT	SAT	1 4 7 8	HNU 0.0	Silty clay and grading to varved (interbedded) sandy clay and then med clay.
-3	17			No Sample Recovered						
-4	18									
-5	19									
-6	20									

BOREHOLE ID : MW17-4 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/08/92 *END DATE :* 05/08/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 16.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 10.00
INTERVAL: 0.00 ft. to 16.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	14.080	14.080
N. COORDINATE :	176136.6020	176136.6020
E. COORDINATE :	186223.4630	186223.4630

WELL PERMIT.....(Y)es (N)o: Y *PERMIT # :* 29-27899

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: Y
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N

	TYPE	*DEPTH*
PURGE :		0.00
SAMPLE :		0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

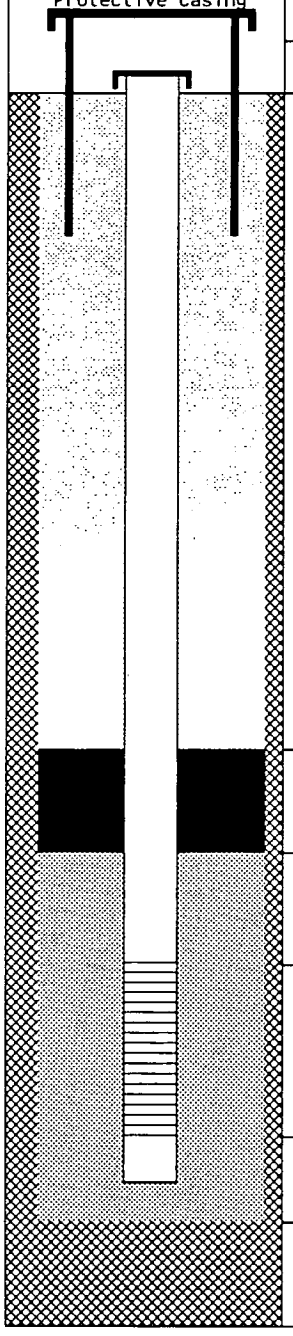
Well Completion Summary

ROY F. WESTON, Inc.

CLIENT	EARLE	*DRILLING FIRM*	EMPIRE SOILS
SITE NAME	NWS EARLE	*INSPECTOR*	T. MCCANN

WELL ID	MW17-4
START DATE	05/08/92
COMPLETION DATE	05/08/92

WATER LEVELS



DEPTH		ELEV.
2.00	TC	2.00
0.00	GS	0.00
1.50	BN	-1.50
2.50	SP	-2.50
3.80	SC	-3.80
15.80	BS	-15.80
15.80	TD	0.00

DRILLING SUMMARY

Driller BRIAN WAGNER
Drilling Fluid
Well Type

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 6.00 *inch* *Interval:* -2.50 to 1.00 *ft.*
Type : LOW CARBON

Stick Up Inner Casing: 2.00 *ft.* *Protective Casing:* 2.50 *ft.*

Casing Grout: CEMT/BENT *Interval:* 0.00 to 0.00 *ft.*

Seal Type: BENTONITE PELLETS *Interval:* 1.50 to 2.50 *ft.*

Sand Pack Type : MORIE #1 *Interval:* 2.50 to 16.00 *ft.*
Grain Size : UNIFORM *Median Diameter:*
Screen Diameter: 4.00 *Interval:* 3.80 to 15.80 *ft.*
Type : PVC *Slots:* 0.020 *inches*

Silt Trap Interval: 0.00 to 0.00 *ft.*
Backfill Type : *Interval:* 0.00 to 0.00 *ft.*

WELL DEVELOPMENT

Date / /
Method
Yield *Purged Volume*

COMMENTS

TC = Top of Casing
GS = Ground Surface
BN = Top Seal
SP = Top Sand Pack
SC = Top Screen
BS = Bottom Screen
TD = Total Depth

= Grout
= Seal
= Sand Pack
= Formation

Additional Comments:
Used 18" high concrete forms around protective case to limit vehicle drainage to _____.

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

07/09/92

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 16.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-4	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176136.6020 surveyed	DRILLING RIG	: CME-850
EASTING	: 186223.4630 surveyed	DATE STARTED	: 05/08/92
ELEVATION	: 14.080 surveyed	DATE COMPLETED	: 05/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Fill	YELLOWISH BROWN	LSE	DRY	1 1 1 5	HNU 1.6	
13	1									
				No Sample Recovered						
12	2		20	Fill	YELLOWISH BROWN	LSE	DRY	6 4 2 3	HNU 0.8	Gravel is qtz.
				No Sample Recovered						
11	3									
10	4			Interval Not Sampled						Not sampled due to rebar, metal sheeting and concrete.
9	5									
8	6		40	Fill	YELLOWISH BROWN	LSE	MST	23 50 0 0	HNU 1.8	Gravel = concrete organics are burnt wood.
				Interval Not Sampled						
7	7									
6	8			Interval Not Sampled						Not sampled due to concrete fragments rod is already wet.
5	9									
4	10		50	Fill	LT OLIVE BROWN	SFT	SAT	1 3 5 6	HNU 0.0	

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 16.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: MW17-4	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 176136.6020 surveyed	DRILLING RIG	: CME-850
EASTING	: 186223.4630 surveyed	DATE STARTED	: 05/08/92
ELEVATION	: 14.080 surveyed	DATE COMPLETED	: 05/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill	LT OLIVE BROWN	SFT	SAT		HNU 0.0	
3	11			No Sample Recovered						
2	12		85	Poorly graded sand with silt, SP-SM	BROWN	LSE	SAT	5 5 2 3	HNU 0.0	
1	13			Silty sand, SM	DK GRAY	SFT	SAT		HNU 0.0	
0	14		90	Silty sand, SM	DK BLUE GRAY	SFT	SAT	1 1 2 3	HNU 0.0	Sand and clay lenses alternating. Clay is 5B4/1. Sand is 10YR6/8.
0	15									
-1	16			Elastic silt, MH	V. DK GRAY	FRM	SAT		HNU 0.0	.2 med to high plast clay in spoon tip.
-2	17									
-3	18									
-4	19									
-5	20									

BOREHOLE ID : BH17-5 *SITE NAME/NO:* EARLE
BEGIN DATE : 05/12/92 *END DATE :* 05/12/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 10.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 6.00
INTERVAL: 0.00 ft. to 10.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2:
INTERVAL:
METHOD : *FLUID :*
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS
DRILLER : PAUL KEENEY
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: N
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
BH17-5 is the first of four scheduled borings for Site 17.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 10.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH17-5	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/12/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/12/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	Fill		LSE	DRY	8 9 32 6	HNU 3.8	0-.25 top (tan) fill sand
-1	1									
				No Sample Recovered						
-2	2			No Sample Recovered				6 9 11 2		Asphalt coming up augers threads.
-3	3									
-4	4		55	Fill	DK GRAYISH BRN	LSE	DRY	6 5 4 7	HNU 3.8	Gravel = asphalt and corsite.
-5	5			No Sample Recovered						
-6	6		75	Fill	DARK BROWN	LSE	MST	3 4 4 6	HNU 3.2	Clay layer 6.8 to 6.9 (sandy clay med plastic) remaining interval increas.asphalt/concrete
-7	7									
-8	8		85	Elastic silt with sand, MH		SFT	WET	1 1 1 1	HNU 3.0	Low plast silt q/sand grading med plastic clay trace sand.
-9	9									
-10	10									

BOREHOLE ID : BH17-6 SITE NAME/NO: EARLE
BEGIN DATE : 05/13/92 END DATE : 05/13/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 10.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 6.00
INTERVAL: 0.00 ft. to 8.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2: 2.00
INTERVAL: 8.00 ft. to 10.00 ft. BGS
METHOD : SPLIT SPOON FLUID : NONE
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 10.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH17-6	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/13/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	Poorly graded sand, SP	DK OLIVE GRAY	FRM	MST	9 8 7 5	HNU 0.0	Fill material.
-1	1			No Sample Recovered						
-2	2		95	Poorly graded sand, SP	LT OLIVE BRN	LSE	MST	4 5 4 4	HNU 0.0	Fill material.
				Silt, ML	GRAYISH BROWN	FRM	MST		HNU 0.0	Fill material, Iron staining in clay.
-3	3									
-4	4		85	Elastic silt, MH	GRAYISH BROWN	FRM	MST	3 4 4 4	HNU 0.0	Fill material? Iron stain return in and around sandy clay (0.2'). Lense at 5.2'.
-5	5									
-6	6		80	Clayey sand, SC	YELLOW BROWN	LSE	SAT	5 4 2 3	HNU 0.0	Alternating clay & sand lenses 6-6.2'; clay (mat) 6.2-6.9'; sand (f, non-pl orng iron staing)6.9-7.1'
-7	7									
-8	8		10	Elastic silt, MH	BLACK	FRM	WET	2 3 5 2	HNU 0.0	
				No Sample Recovered						
-9	9									
-10	10									

BOREHOLE ID : BH17-7 SITE NAME/NO: EARLE
BEGIN DATE : 05/13/92 END DATE : 05/13/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) : O

TOTAL DEPTH : 10.00 DEPTH TO BEDROCK : 0.00

BOREHOLE DIAMETER #1: 8.00
INTERVAL: 0.00 ft. to 10.00 ft. BGS
METHOD : HSA FLUID : NONE
BOREHOLE DIAMETER #2: 2.00
INTERVAL: 0.00 ft. to 0.00 ft. BGS
METHOD : FLUID :
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : FLUID :

DRILLING COMPANY : EMPIRE SOILS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	SURVEYED
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N PERMIT # :

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N No. OF WELLS : 0
WELL NEST.....(Y)es (N)o: N No. OF WELLS : 0
PUMPS INSTALLED..(Y)es (N)o: N TYPE DEPTH
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 10.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: BH17-7	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 05/13/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			80	Poorly graded sand, SP	STR BROWN	LSE	MST	17 18 13 10	HNU 0.0	0-0.6' Sandy gravel. Fill material.
-1	1									
-2	2		95	Poorly graded sand, SP	STR BROWN	LSE	MST	10 9 7 10	HNU 0.0	Fill material. HNu battery needed.
				Well-graded sand, SW	DK YELLOW GRN	SFT	MST		HNU 0.0	Fill material.
-3	3									
				Silty sand, SM	V DK GRAY	FRM	WET			Fill material.
-4	4			No Sample Recovered				1 1 2 1		
-5	5									
-6	6		15	Silty sand, SM	LT YELLOW BRN	SFT	SAT	2 1 1 1		
				No Sample Recovered						
-7	7									
-8	8		35	Elastic silt with sand, MH	BROWN	SFT	SAT	1 2 2 3		
				No Sample Recovered						
-9	9									
-10	10									

BOREHOLE ID : HP23-1 *SITE NAME/NO:* EARLE
BEGIN DATE : 04/30/92 *END DATE :* 05/01/92

LOGGER/COMPANY : T. MCCANN

BOREHOLE COMPLETED IN (<O>verburden <B>edrock) :

TOTAL DEPTH : 29.00 *DEPTH TO BEDROCK :* 0.00

BOREHOLE DIAMETER #1: 6.00
INTERVAL: 0.00 ft. to 25.00 ft. BGS
METHOD : HSA *FLUID :* NONE
BOREHOLE DIAMETER #2: 2.25
INTERVAL: 25.00 ft. to 29.00 ft. BGS
METHOD : HYDROPUNCH *FLUID :* NONE
BOREHOLE DIAMETER #3:
INTERVAL:
METHOD : *FLUID :*

DRILLING COMPANY : EMPIRE SOILS INVESTIGATIONS
DRILLER : BRIAN WAGNER
DRILL RIG TYPE : CME-850

	ESTIMATED	*SURVEYED*
SURFACE ELEVATION :	0.000	
N. COORDINATE :	0.0000	
E. COORDINATE :	0.0000	

WELL PERMIT.....(Y)es (N)o: N *PERMIT # :*

HOLE ABANDONED...(Y)es (N)o: Y
WELL INSTALLED...(Y)es (N)o: N
WELL CLUSTER.....(Y)es (N)o: N *No. OF WELLS :* 0
WELL NEST.....(Y)es (N)o: N *No. OF WELLS :* 0
PUMPS INSTALLED..(Y)es (N)o: N *TYPE* *DEPTH*
PURGE : 0.00
SAMPLE : 0.00

BOREHOLE TESTING
BOREHOLE GEOPHYSICS.....(Y)es (N)o: N
SLUG TESTS.....(Y)es (N)o: N
PACKER TESTS.....(Y)es (N)o: N
PUMPING TESTS.....(Y)es (N)o: N

COMMENTS :
Purpose of boring is Hydro Punch (HP) water sampling.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 29.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: HP23-1	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 04/30/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/01/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	Elastic silt, MH		SFT	SAT		HNU 5.2	Standing water in vaciniity of borehole. 0-0.3' is topsoil. HydroPunch taken at surface-no water.
				Poorly graded sand, SP		LSE	SAT		HNU 5.2	
-1	1			No Sample Recovered						
-2	2			Interval Not Sampled						Auger interval. Hydro Punches taken at 5' and 10' - no water yield in either.
-3	3									
-4	4									
-5	5									
-6	6									
-7	7									
-8	8									
-9	9									
-10	10									

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: EARLE	TOTAL DEPTH	: 29.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: HP23-1	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 04/30/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/01/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						Auger interval. Hydro Punches taken at 5' and 10' - no water yield in either.
-11	11									
-12	12									
-13	13									
-14	14									
-15	15		80	Silty sand, SM	OLIVE	FRM	MST	3 5 5 6	HNU 0.0	
-16	16									
-17	17			Interval Not Sampled						
-18	18									
-19	19									
-20	20		75	Silty sand, SM	OLIVE	SFT	WET		HNU 0.0	V. fine sand w/silt. Wet, no saturated. Color grades to 5 G 4/1 (dark green-gray) at 21' bgs.

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: EARLE	TOTAL DEPTH	: 29.00
SITE NAME	: NWS EARLE	LOGGER	: T. MCCANN
WELL ID	: HP23-1	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-850
EASTING	: 0.0000 estimated	DATE STARTED	: 04/30/92
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 05/01/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Silty sand, SM	OLIVE	SFT	WET		HNU 0.0	V. fine sand w/silt. Wet, no saturated. Color grades to 5 G 4/1 (dark green-gray) at 21' bgs.
-21	21									
-22	22			Interval Not Sampled						
-23	23									
-24	24									
-25	25			Not Classified - Incomplete Data						Hydro Punch taken 25' to 29'.
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									

DATE: 09/21/92 **** LITHOLOGICAL DATA FOR - CLIENT ID: NWS1 *** PAGE: 1

BOREHOLE /WELL ID	SMP NUM	LTH NUM	LITHOLOGY INT. (FT BGS)		SAMPLING METHOD	SIZE GRAVEL	GRAVEL PCT.	SIZE SAND	SAND PCT	SILT PCT	CLAY PCT	ORGANIC PCT	ROCK TYPE	PLAST	SORT	STRENGTH	MOISTURE	STRAT UNIT
HP23-1	1	1	0.00	0.40	SSS		0	F	10	65	25	0		MOD	WEL	SFT	SAT	
HP23-1	1	2	0.40	1.00	SSS		0	MF	100	0	0	0		NA	WEL	LSE	SAT	
HP23-1	1	3	1.00	2.00	SSS		0		0	0	0	0						
HP23-1	2	1	2.00	15.00	NS		0		0	0	0	0						
HP23-1	3	1	15.00	17.00	SSS		0		60	35	5	0		LOW	WEL	FRM	MST	
HP23-1	4	1	17.00	20.00	NS		0		0	0	0	0						
HP23-1	5	1	20.00	22.00	SSS		0	F	70	30	0	0		NA	WEL	SFT	WET	
HP23-1	6	1	22.00	25.00	NS		0		0	0	0	0						
HP23-1	7	1	25.00	29.00			0		0	0	0	0						

APPENDIX C

ANALYTICAL DATA AND QA/QC EVALUATION RESULTS

SISOIL01.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS(JUNE 1992):NWS EARLE,SITE 1 (ORDNANCE DEMILITARIZATION SITE)

		SAMPLE ID>	09-JUN-92 01-001-S001		09-JUN-92 01-002-S001		09-JUN-92 01-003-S001		09-JUN-92 01-004-S001		09-JUN-92 01-005-S001		09-JUN-92 01-006-S001	
INORGANICS														
Silver, Total	MG/KG		4.500	=					2.600	=			5.400	=
Aluminum, Total	MG/KG		2590.000	=					1210.000	=			2980.000	=
Arsenic, Total	MG/KG		2.800	=					1.900	B			4.000	=
Barium, Total	MG/KG		132.000	=					11.500	B			277.000	=
Beryllium, Total	MG/KG		0.450	B					0.210	U			0.450	B
Calcium, Total	MG/KG		54.900	B					278.000	B			200.000	B
Cadmium, Total	MG/KG		2.200	=					0.820	U			1.300	=
Cobalt, Total	MG/KG		3.100	B					2.000	B			3.200	B
Chromium, Total	MG/KG		56.000	=					25.400	=			65.700	=
Copper, Total	MG/KG		73.500	=					13.800	=			119.000	=
Iron, Total	MG/KG		11100.000	=					5210.000	=			11200.000	=
Mercury, Total	MG/KG		0.110	=					0.050	U			0.750	=
Potassium, Total	MG/KG		750.000	B					401.000	B			1130.000	=
Magnesium, Total	MG/KG		299.000	B					154.000	B			446.000	B
Manganes , Total	MG/KG		34.800	=					12.900	=			36.600	=
Sodium, Total	MG/KG		26.300	B					24.100	U			25.700	B
Nickel, Total	MG/KG		3.700	U					3.710	U			3.700	B
Lead, Total	MG/KG		95.600	=					64.200	=			143.000	=
Antimony, Total	MG/KG		7.390	U					7.430	U			7.390	U
Selenium, Total	MG/KG		0.420	U					0.410	U			0.420	U
Thallium, Total	MG/KG		0.420	U					0.410	U			0.420	U
Vanadium, Total	MG/KG		27.200	=					12.300	=			43.800	=
Zinc, Total	MG/KG		71.500	=					18.000	=			204.000	=
Cyanide, Total	MG/KG													
EXPLOSIVES														
HMX	UG/KG		1.220	U	1.420	U	1.280	U	1.220	U	1.350	U	1.310	U
RDX	UG/KG		0.945	U	1.100	U	0.988	U	0.941	U	1.040	U	1.010	U
1,3,5-TNB	UG/KG		2.020	U	2.340	U	2.110	U	2.010	U	2.220	U	2.150	U
1,3-DNB	UG/KG		0.569	U	0.661	U	0.595	U	0.566	U	0.630	U	0.608	U
NITROBENZENE	UG/KG		0.405	U	0.471	U	0.423	U	0.403	U	0.450	U	0.433	U
TETRYL	UG/KG		4.820	U	5.600	U	5.040	U	4.800	U	5.310	U	5.150	U
2,4,6-TNT	UG/KG		1.850	U	2.150	U	1.940	U	1.840	U	2.040	U	1.980	U
2,6-DNT	UG/KG		0.386	U	0.448	U	0.403	U	0.384	U	0.420	U	0.412	U
2,4-DNT	UG/KG		0.405	U	0.471	U	0.423	U	0.403	U	0.450	U	0.433	U
PICRIC ACID	UG/KG		1070.000	U	1110.000	U	1070.000	U	1040.000	U	1070.000	U	1160.000	U
Ncellulose/Nglycerine	UG/G		0.130	U	0.140	U	0.130	U	0.130	U	0.140	U	0.140	U
Nitrite, as N	MG-N/KG		0.520	U	0.570	U	0.540	U	0.520	U	0.540	U	0.540	U
Nitrate, as N	MG-N/KG		2.000	=	1.500	=	2.600	=	0.520	U	1.200	=	0.960	=
Petroleum Hydrocarbons	MG/KG		6.500	=	3.600	J	16.000	=	450.000	=	5.800	=	40.000	=

SISOIL01.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS(JUNE 1992):NWS EARLE,SITE 1 (ORDNANCE DEMILITARIZATION SITE)

SAMPLE ID>		09-JUN-92 01-007-S001		09-JUN-92 01-008-S001		09-JUN-92 01-009-S001		09-JUN-92 01-009-S101		11-JUN-92 01-010-S001		09-JUN-92 01-011-S001	
INORGANICS													
Silver, Total	MG/KG	5.900	=			1.550	U	1.670	U	6.800	=		
Aluminum, Total	MG/KG	1330.000	=			1390.000	=	1150.000	=	1830.000	=		
Arsenic, Total	MG/KG	3.300	=			0.890	B	1.000	B	0.810	B		
Barium, Total	MG/KG	290.000	=			1.600	B	1.600	B	19.300	B		
Beryllium, Total	MG/KG	0.240	B			0.210	B	0.210	U	0.210	U		
Calcium, Total	MG/KG	106.000	B			17.000	B	17.800	B	65.600	B		
Cadmium, Total	MG/KG	1.900	=			0.770	U	0.830	U	0.850	U		
Cobalt, Total	MG/KG	2.500	B			1.500	B	1.500	B	1.480	U		
Chromium, Total	MG/KG	34.800	=			32.100	=	25.800	=	50.200	=		
Copper, Total	MG/KG	136.000	=			4.100	B	4.700	B	6.900	=		
Iron, Total	MG/KG	6600.000	=			6880.000	=	5190.000	=	8680.000	=		
Mercury, Total	MG/KG	0.960	=			0.050	U	0.500	U	0.110	U		
Potassium, Total	MG/KG	493.000	B			657.000	B	444.000	B	489.000	B		
Magnesium, Total	MG/KG	196.000	B			231.000	B	143.000	B	288.000	B		
Manganese, Total	MG/KG	45.800	=			4.700	=	4.000	=	7.000	=		
Sodium, Total	MG/KG	25.200	U			22.600	U	24.400	U	27.200	B		
Nickel, Total	MG/KG	3.880	U			3.480	U	3.760	U	3.820	U		
Lead, Total	MG/KG	179.000	=			8.460	=	14.900	=	15.200	=		
Antimony, Total	MG/KG	7.750	U			6.960	U	7.510	U	7.640	U		
Selenium, Total	MG/KG	0.410	U			0.410	U	0.390	U	0.430	U		
Thallium, Total	MG/KG	0.410	U			0.410	U	0.390	U	0.430	U		
Vanadium, Total	MG/KG	17.600	=			14.300	=	12.000	=	20.000	=		
Zinc, Total	MG/KG	183.000	=			6.600	=	6.200	=	23.500	=		
Cyanide, Total	MG/KG	1.100	U							1.100	U		
EXPLOSIVES													
HMX	UG/KG	1.290	U	1.280	U	1.290	U	1.310	U	1.340	U	1.300	U
RDX	UG/KG	0.999	U	0.991	U	0.993	U	1.010	U	1.040	U	1.000	U
1,3,5-TNB	UG/KG	2.130	U	2.110	U	2.120	U	2.140	U	2.210	U	2.140	U
1,3-DNB	UG/KG	0.601	U	0.596	U	0.598	U	0.610	U	0.624	U	0.605	U
NITROBENZENE	UG/KG	0.428	U	0.425	U	0.425	U	0.434	U	0.445	U	0.431	U
TETRYL	UG/KG	5.100	U	5.060	U	5.060	U	5.130	U	5.290	U	5.130	U
2,4,6-TNT	UG/KG	1.960	U	1.940	U	1.940	U	1.970	U	2.030	U	1.970	U
2,6-DNT	UG/KG	0.408	U	0.404	U	0.405	U	0.414	U	0.423	U	0.410	U
2,4-DNT	UG/KG	0.428	U	0.425	U	0.425	U	0.434	U	0.445	U	0.431	U
PICRIC ACID	UG/KG	975.000	U	1150.000	U	1050.000	U	989.000	U	1100.000	U	1090.000	U
Ncellulose/Nglycerine	UG/G	0.130	U	0.130	U	0.130	U	0.130	U	0.140	U	0.130	U
Nitrite, as N	MG-N/KG	0.530	U	0.540	U	0.520	U	0.520	U	0.540	U	0.520	U
Nitrate, as N	MG-N/KG	1.000	=	0.790	=	1.200	=	0.750	=	1.100	=	1.000	=
Petroleum Hydrocarbons	MG/KG	9.400	=	4.300	U	5.200	=	3.300	J	3.400	J	2.200	J

SISOIL01.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS(JUNE 1992):NWS EARLE,SITE 1 (ORDNANCE DEMILITARIZATION SITE)

SAMPLE ID>		09-JUN-92 01-012-S001		09-JUN-92 01-013-S001		09-JUN-92 01-014-S001		09-JUN-92 01-015-S001		09-JUN-92 01-015-S201 WATER µg/L		09-JUN-92 01-016-S001	
INORGANICS													
Silver, Total	MG/KG	26.900	=			1.690	U	1.710	U				
Aluminum, Total	MG/KG	1610.000	=			538.000	=	2060.000	=	109.000	B		
Arsenic, Total	MG/KG	0.750	B			0.800	B	0.980	B	2.000	U		
Barium, Total	MG/KG	22.500	B			1.600	B	45.400	=	7.000	U		
Beryllium, Total	MG/KG	0.340	B			0.210	U	0.340	B	1.000	U		
Calcium, Total	MG/KG	52.100	B			14.200	B	19.400	B	732.000	B		
Cadmium, Total	MG/KG	0.840	U			0.850	U	0.860	U	4.000	U		
Cobalt, Total	MG/KG	2.100	B			1.480	U	1.800	B	7.000	U		
Chromium, Total	MG/KG	53.400	=			12.400	=	46.500	=	7.000	U		
Copper, Total	MG/KG	29.000	=			4.300	B	9.600	=	7.000	U		
Iron, Total	MG/KG	8880.000	=			2590.000	=	9170.000	=	57.400	B		
Mercury, Total	MG/KG	0.100	U			0.060	U	0.050	U	0.100	U		
Potassium, Total	MG/KG	711.000	B			190.000	U	752.000	B	896.000	U		
Magnesium, Total	MG/KG	255.000	B			54.300	B	256.000	B	192.000	B		
Manganese, Total	MG/KG	11.100	=			2.200	B	10.500	=	2.000	U		
Sodium, Total	MG/KG	24.600	U			24.800	U	25.000	U	1310.000	B		
Nickel, Total	MG/KG	3.790	U			3.810	U	3.850	U	18.000	U		
Lead, Total	MG/KG	41.900	=			3.500	=	5.300	=	2.000	U		
Antimony, Total	MG/KG	7.580	U			7.620	U	7.700	U	36.000	U		
Selenium, Total	MG/KG	0.430	U			0.430	U	0.420	U	2.000	U		
Thallium, Total	MG/KG	0.490	B			0.430	U	0.420	U	2.000	U		
Vanadium, Total	MG/KG	24.000	=			8.300	U	18.700	=	9.300	B		
Zinc, Total	MG/KG	36.400	=			3.700	U	21.100	=	7.900	B		
Cyanide, Total	MG/KG												
EXPLOSIVES													
HMX	UG/KG	1.330	U	1.380	U	1.370	U	1.370	U	1.300	U	1.370	U
RDX	UG/KG	1.030	U	1.070	U	1.050	U	1.060	U	0.630	U	1.060	U
1,3,5-TNB	UG/KG	2.190	U	2.280	U	2.250	U	2.250	U	0.560	U	2.250	U
1,3-DNB	UG/KG	0.619	U	0.642	U	0.635	U	0.636	U	0.610	U	0.636	U
NITROBENZENE	UG/KG	0.440	U	0.457	U	0.452	U	0.453	U	1.130	U	0.453	U
TETRYL	UG/KG	5.240	U	5.440	U	5.380	U	5.390	U	0.660	U	5.390	U
2,4,6-TNT	UG/KG	2.010	U	2.090	U	2.070	U	2.070	U	0.780	U	2.070	U
2,6-DNT	UG/KG	0.419	U	0.435	U	0.431	U	0.431	U	0.550	U	0.431	U
2,4-DNT	UG/KG	0.440	U	0.457	U	0.452	U	0.453	U	0.600	U	0.453	U
PICRIC ACID	UG/KG	1130.000	U	1160.000	U	1110.000	U	1140.000	U	0.900	U	1150.000	U
Ncellulose/Nglycerine	UG/G	0.140	U	0.140	U	0.140	U	0.140	U	0.140	U	0.140	U
Nitrite, as N	MG-N/KG	0.540	U	0.560	U	0.550	U	0.540	U	0.320	=	0.550	U
Nitrate, as N	MG-N/KG	1.900	=	1.000	=	1.900	=	0.620	=			1.300	=
Petroleum Hydrocarbons	MG/KG	4.400	U	4.000	J	2.400	J	2.300	J	1.100	U	9.600	=

SIGW01.WK3

SUMMARY OF GROUNDWATER SAMPLE RESULTS (JUNE 1992); NWS EARLE, SITE 1, (ORDNANCE DEMILITARIZATION SITE)

		24-JUN-92		16-JUN-92		16-JUN-92		24-JUN-92		24-JUN-92	
SAMPLE ID >		01-001-M001		01-002-M001		01-002-M201		01-003-M001		01-003-M101	
WELL # >		MW-01		MW-02		MW-02(Equip. Blk)		MW-03		MW-03(Duplicate)	
INORGANICS	UNITS										
Silver, Total	UG/L	8	U	8	U	8	U	6	U	6	U
Aluminum, Total	UG/L	31000	=	2310	=	46	U	16800	=	8610	=
Arsenic, Total	UG/L	2	U	2	U	2	U	2	U	2.8	B
Barium, Total	UG/L	220	=	7	U	7	U	7	U	37.9	B
Beryllium, Total	UG/L	6	=	1	U	1	U	1	U	1.7	B
Calcium, Total	UG/L	62	U	62	U	62	U	62	U	62	U
Cadmium, Total	UG/L	4	U	4	U	4	U	4	U	4	U
Cobalt, Total	UG/L	7	U	7	U	7	U	6	U	6	U
Chromium, Total	UG/L	538	=	33.1	=	7	U	245	=	122	=
Copper, Total	UG/L	26.7	=	7	U	7	U	7	U	5.4	U
Iron, Total	UG/L	75700	=	5030	=	30	U	40400	=	21300	=
Mercury, Total	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Potassium, Total	UG/L	13700	=	896	U	896	U	7130	=	3920	B
Magnesium, Total	UG/L	6200	=	69	U	69	U	69	U	2430	B
Manganese, Total	UG/L	110	=	20.4	=	2	U	45.4	=	29.6	=
Sodium, Total	UG/L	117	U	117	U	117	U	117	U	3420	B
Nickel, Total	UG/L	18	U	18	U	18	U	18	U	18	U
Lead, Total	UG/L	12.5	=	2	U	2	U	7.2	=	5.3	=
Antimony, Total	UG/L	44	U	36	U	36	U	44	U	44	U
Selenium, Total	UG/L	2	U	2	U	2	U	2	U	2	U
Thallium, Total	UG/L	2	U	2	U	2	U	2	U	2	U
Vanadium, Total	UG/L	172	=	5	U	5	U	88.9	=	472	B
Zinc, Total	UG/L	652	=	192	=	6	U	66.7	=	50.4	=
PESTICIDES											
ALPHA-BHC	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
BETA-BHC	UG/L	0.051	U	0.051	U		U	0.052	U	0.051	U
DELTA-BHC	UG/L	0.051	U	0.051	U		U	0.052	U	0.051	U
GAMMA-BHC (LINDANE)	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
HEPTACHLOR	UG/L	0.051	U	0.051	U	0.034	J	0.052	U	0.051	U
ALDRIN	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
HEPTACHLOR EPOXIDE	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
ENDOSULFAN I	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
DIELDRIN	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
4,4'-DDE	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
ENDRIN	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
ENDOSULFAN II	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
4,4'-DDD	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
ENDOSULFAN SULFATE	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
4,4'-DDT	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
METHOXYCHLOR	UG/L	0.51	U	0.51	U	0.58	U	0.52	U	0.51	U
ENDRIN KETONE	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
ENDRIN ALDEHYDE	UG/L	0.1	U	0.1	U	0.12	U	0.1	U	0.1	U
ALPHA CHLORDANE	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
GAMMA CHLORDANE	UG/L	0.051	U	0.051	U	0.058	U	0.052	U	0.051	U
TOXAPHENE	UG/L	5.1	U	5.1	U	5.8	U	5.2	U	5.1	U

SIGW01.WK3

SUMMARY OF GROUNDWATER SAMPLE RESULTS (JUNE 1992); NWS EARLE, SITE 1, (ORDNANCE DEMILITARIZATION SITE)

		24-JUN-92		16-JUN-92		16-JUN-92		24-JUN-92		24-JUN-92	
SAMPLE ID>		01-001-M001		01-002-M001		01-002-M201		01-003-M001		01-003-M101	
WELL #>		MW-01		MW-02		MW-02(Equip. Blk)		MW-03		MW-03(Duplicate)	
PCB's											
AROCHLOR-1016	UG/L	1	U	1	U	1.2	U	1	U	1	U
AROCHLOR-1221	UG/L	2	U	2	U	2.3	U	2.1	U	2	U
AROCHLOR-1232	UG/L	1	U	1	U	1.2	U	1	U	1	U
AROCHLOR-1242	UG/L	1	U	1	U	1.2	U	1	U	1	U
AROCHLOR-1248	UG/L	1	U	1	U	1.2	U	1	U	1	U
AROCHLOR-1254	UG/L	1	U	1	U	1.2	U	1	U	1	U
AROCHLOR-1260	UG/L	1	U	1	U	1.2	U	1	U	1	U
ORGANICS											
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	12	U	10	U	10	U
ACETONE	UG/L	7	J	10	U	17	U	10	U	6	J
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	4	J	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIBROMOCHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
XYLENES (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL	UG/L	10	U	10	U	10	U	10	U	10	U

SIGW01.WK3

SUMMARY OF GROUNDWATER SAMPLE RESULTS (JUNE 1992); NWS EARLE, SITE 1, (ORDNANCE DEMILITARIZATION SITE)

		24-JUN-92		16-JUN-92		16-JUN-92		24-JUN-92		24-JUN-92	
	SAMPLE ID >	01-001-M001		01-002-M001		01-002-M201		01-003-M001		01-003-M101	
	WELL # >	MW-01		MW-02		MW-02(Equip. Blk)		MW-03		MW-03(Duplicate)	
BIS(2-CHLOROETHYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
N-NITROSO-DI-N-PROPYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
ISOPHORONE	UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
2-CHLORONAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	26	U	26	U	26	U	26	U	26	U
DIMETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	26	U	26	U	26	U	26	U	26	U
ACENAPHTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
4-NITROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
DIBENZOFURAN	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYLPHTHALATE	UG/L	10	U	10	U	10	U	1	J	1	J
4-CHLOROPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	26	U	26	U	26	U	26	U	26	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
N-NITROSODIPHENYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U

SIGW01.WK3

SUMMARY OF GROUNDWATER SAMPLE RESULTS (JUNE 1992); NWS EARLE, SITE 1, (ORDNANCE DEMILITARIZATION SITE)

		24-JUN-92		16-JUN-92		16-JUN-92		24-JUN-92		24-JUN-92	
SAMPLE ID >		01-001-M001		01-002-M001		01-002-M201		01-003-M001		01-003-M101	
WELL # >		MW-01		MW-02		MW-02(Equip. Blk)		MW-03		MW-03(Duplicate)	
PENTACHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
PHENANTHRENE	UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE	UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	10	U	10	U	10	U	20	U	13	U
DI-N-OCTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
EXPLOSIVES											
HMX	UG/L	1.3	U	1.2	U	1.3	U	1.3	U	1.3	U
RDX	UG/L	0.63	U	8.98	=	0.63	U	0.63	U	0.63	U
1,3,5-TNB	UG/L	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
1,3-DNB	UG/L	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
TETRYL	UG/L	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
2,4,6-TNT	UG/L	0.78	U	0.78	U	0.78	U	0.78	U	0.78	U
2,6-DNT	UG/L	0.55	U	0.55	U	0.55	U	0.55	U	0.55	U
2,4-DNT	UG/L	0.6	U	0.82	=	0.6	U	0.6	U	0.6	U
PICRIC ACID	UG/L	0.86	U	0.86	U	1.03	U	0.86	U	0.86	U
Nitrate Nitrite	MG-N/L	1.4	=	1.2	=	0.1	U	0.15	=	0.16	=
Ncellulose/Nglycerine	UG/L	5	U	5	U	5	U	5	U	5	U

SISOIL06.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-002-B014		06-002-B114		06-003-B010	
INORGANICS	UNITS						
Aluminum, Total	MG/KG	3090	=	2360	=	2390	=
Antimony, Total	MG/KG	8.52	U	8.52	U	8.27	U
Arsenic, Total	MG/KG	3.7	=	2.5	=	1.5	B
Barium, Total	MG/KG	10.5	B	8.5	B	11.7	B
Beryllium, Total	MG/KG	0.26	B	0.38	B	0.25	B
Cadmium, Total	MG/KG	0.95	U	0.95	U	0.92	U
Calcium, Total	MG/KG	145	B	145	B	2240	=
Chromium, Total	MG/KG	14.4	=	8	=	8.5	=
Cobalt, Total	MG/KG	2.2	B	1.66	U	2.2	B
Copper, Total	MG/KG	3.6	B	4	B	5.5	B
Iron, Total	MG/KG	123000	=	7000	=	8900	=
Lead, Total	MG/KG	6.9	=	8.6	B	11.6	=
Magnesium, Total	MG/KG	327	B	213	=	372	B
Manganese, Total	MG/KG	37.5	=	14.7	=	36.8	=
Mercury, Total	MG/KG	0.06	U	0.06	U	0.06	U
Nickel, Total	MG/KG	4.26	U	4.26	U	4.13	U
Potassium, Total	MG/KG	854	B	603	B	533	B
Selenium, Total	MG/KG	0.46	U	0.46	U	0.46	U
Silver, Total	MG/KG	1.89	U	1.89	U	3	=
Sodium, Total	MG/KG	61.5	B	57	B	72.7	B
Thallium, Total	MG/KG	0.46	U	0.46	U	0.46	U
Vanadium, Total	MG/KG	11	B	7.6	B	13.3	=
Zinc, Total	MG/KG	12	=	10.3	=	25.7	=
Cyanide, Total	MG/KG	1.23	U	1.22	U	1.15	U
PESTICIDES							
ALPHA-BHC	UG/KG	2	U	2.1	U	2	U
BETA-BHC	UG/KG	2	U	2.1	U	2	U
DELTA-BHC	UG/KG	2	U	2.1	U	2	U
GAMMA-BHC (LINDANE)	UG/KG	2	U	2.1	U	2	U
HEPTACHLOR	UG/KG	2	U	2.1	U	2	U
ALDRIN	UG/KG	2	U	2.1	U	2	U
HEPTACHLOR EPOXIDE	UG/KG	2	U	2.1	U	2	U
ENDOSULFAN I	UG/KG	2	U	2.1	U	2	U
DIELDRIN	UG/KG	4	U	4.2	U	4	U
4,4'-DDE	UG/KG	0.81	J	0.85	J	4	U
ENDRIN	UG/KG	4	U	4.2	U	4	U
ENDOSULFAN II	UG/KG	4	U	4.2	U	4	U
4,4'-DDD	UG/KG	4	U	4.2	U	4	U
ENDOSULFAN SULFATE	UG/KG	4	U	4.2	U	4	U
4,4'-DDT	UG/KG	0.81	J	1.7	J	10	J
METHOXYCHLOR	UG/KG	20	U	21	U	20	U
ENDRIN KETONE	UG/KG	4	U	4.2	U	4	U
ENDRIN ALDEHYDE	UG/KG	4	U	4.2	U	4	U
ALPHA CHLORDANE	UG/KG	2	U	2.1	U	44	U
GAMMA CHLORDANE	UG/KG	2	U	2.1	U	20	U
TOXAPHENE	UG/KG	200	U	210	U	200	U

SISOIL06.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-002-B014		06-002-B114		06-003-B010	
	UG/KG						
PCB's	UG/KG						
AROCHLOR-1016	UG/KG	40	U	42	U	40	U
AROCHLOR-1221	UG/KG	81	U	85	U	79	U
AROCHLOR-1232	UG/KG	40	U	42	U	40	U
AROCHLOR-1242	UG/KG	40	U	42	U	40	U
AROCHLOR-1248	UG/KG	40	U	42	U	40	U
AROCHLOR-1254	UG/KG	40	U	42	U	32	J
AROCHLOR-1260	UG/KG	40	U	42	U	40	U
ORGANICS							
CHLOROMETHANE	UG/KG	12	U	12	U	11	U
BROMOMETHANE	UG/KG	12	U	12	U	11	U
VINYL CHLORIDE	UG/KG	12	U	12	U	11	U
CHLOROETHANE	UG/KG	12	U	12	U	11	U
METHYLENE CHLORIDE	UG/KG	12	U	12	U	11	U
ACETONE	UG/KG	34	B	28	B	17	B
CARBON DISULFIDE	UG/KG	12	U	12	U	11	U
1,1-DICHLOROETHYLENE	UG/KG	12	U	12	U	11	U
1,1-DICHLOROETHANE	UG/KG	12	U	12	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	12	U	11	U
CHLOROFORM	UG/KG	12	U	12	U	11	U
1,2-DICHLOROETHANE	UG/KG	12	U	12	U	11	U
2-BUTANONE	UG/KG	12	=	12	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	12	U	12	U	11	U
CARBON TETRACHLORIDE	UG/KG	12	U	12	U	11	U
BROMODICHLOROMETHANE	UG/KG	12	U	12	U	11	U
1,2-DICHLOROPROPANE	UG/KG	12	U	12	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	12	U	11	U
TRICHLOROETHYLENE	UG/KG	12	U	12	U	11	U
DIBROMOCHLOROMETHANE	UG/KG	12	U	12	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	12	U	11	U
BENZENE	UG/KG	12	U	12	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	12	U	11	U
BROMOFORM	UG/KG	12	U	12	U	11	U
4-METHYL-2-PENTANONE	UG/KG	12	U	12	U	11	U
2-HEXANONE	UG/KG	12	U	12	U	11	U
TETRACHLOROETHYLENE	UG/KG	12	U	12	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	12	U	11	U
TOLUENE	UG/KG	12	U	12	U	11	U
CHLOROBENZENE	UG/KG	12	U	12	U	11	U
ETHYLBENZENE	UG/KG	12	U	12	U	11	U
STYRENE	UG/KG	12	U	12	U	11	U
XYLENES (TOTAL)	UG/KG	12	U	12	U	11	U
PHENOL	UG/KG	24	J	410	U	390	U

SISOIL06.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 6 (LANDFILL WEST NORMANDY ROAD)

SAMPLE ID>		16-JUN-92 06-002-B014		16-JUN-92 06-002-B114		16-JUN-92 06-003-B010	
BIS(2-CHLOROETHYL)ETHER	UG/KG	410	U	410	U	390	U
2-CHLOROPHENOL	UG/KG	410	U	410	U	390	U
1,3-DICHLOROBENZENE	UG/KG	410	U	410	U	390	U
1,4-DICHLOROBENZENE	UG/KG	410	U	410	U	390	U
1,2-DICHLOROBENZENE	UG/KG	410	U	410	U	390	U
2-METHYLPHENOL	UG/KG	410	U	410	U	390	U
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG	410	U	410	U	390	U
4-METHYLPHENOL	UG/KG	410	U	410	U	390	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	410	U	410	U	390	U
HEXACHLOROETHANE	UG/KG	410	U	410	U	390	U
NITROBENZENE	UG/KG	410	U	410	U	390	U
ISOPHORONE	UG/KG	410	U	410	U	390	U
2-NITROPHENOL	UG/KG	410	U	410	U	390	U
2,4-DIMETHYLPHENOL	UG/KG	410	U	410	U	390	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	410	U	410	U	390	U
2,4-DICHLOROPHENOL	UG/KG	410	U	410	U	390	U
1,2,4-TRICHLOROBENZENE	UG/KG	410	U	410	U	390	U
NAPHTHALENE	UG/KG	410	U	410	U	390	U
4-CHLOROANILINE	UG/KG	410	U	410	U	390	U
HEXACHLOROBUTADIENE	UG/KG	410	U	410	U	390	U
4-CHLORO-3-METHYLPHENOL	UG/KG	410	U	410	U	390	U
2-METHYLNAPHTHALENE	UG/KG	410	U	410	U	390	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	410	U	410	U	390	U
2,4,6-TRICHLOROPHENOL	UG/KG	410	U	410	U	390	U
2,4,5-TRICHLOROPHENOL	UG/KG	1000	U	1000	U	980	U
2-CHLORONAPHTHALENE	UG/KG	410	U	410	U	390	U
2-NITROANILINE	UG/KG	1000	U	1000	U	980	U
DIMETHYLPHTHALATE	UG/KG	410	U	410	U	390	U
ACENAPHTHYLENE	UG/KG	410	U	410	U	390	U
2,6-DINITROTOLUENE	UG/KG	410	U	410	U	390	U
3-NITROANILINE	UG/KG	1000	U	1000	U	980	U
ACENAPHTHENE	UG/KG	410	U	410	U	390	U
2,4-DINITROPHENOL	UG/KG	1000	U	1000	U	980	U
4-NITROPHENOL	UG/KG	1000	U	1000	U	980	U
DIBENZOFURAN	UG/KG	410	U	410	U	390	U
2,4-DINITROTOLUENE	UG/KG	410	U	410	U	390	U
DIETHYLPHTHALATE	UG/KG	410	U	410	U	390	JB
4-CHLOROPHENYL-PHENYLETHER	UG/KG	410	U	410	U	390	U
FLUORENE	UG/KG	410	U	410	U	390	U
4-NITROANILINE	UG/KG	1000	U	1000	U	980	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1000	U	1000	U	980	U
N-NITROSODIPHENYLAMINE	UG/KG	410	U	410	U	390	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	410	U	410	U	390	U
HEXACHLOROBENZENE	UG/KG	410	U	410	U	390	U

SISOIL06.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-002-B014		06-002-B114		06-003-B010	
PENTACHLOROPHENOL	UG/KG	1000	U	1000	U	980	U
PHENANTHRENE	UG/KG	410	J	410	U	28	J
ANTHRACENE	UG/KG	410	U	410	U	390	U
CARBAZOLE	UG/KG	410	U	410	U	390	U
DI-N-BUTYLPHTHALATE	UG/KG	76	J	28	J	120	J
FLUORANTHENE	UG/KG	410	U	410	U	39	J
PYRENE	UG/KG	410	U	410	U	41	J
BUTYLBENZYLPHTHALATE	UG/KG	410	U	410	U	23	J
3,3'-DICHLOROBENZIDINE	UG/KG	410	U	410	U	390	U
BENZO(A)ANTHRACENE	UG/KG	410	U	410	U	29	J
CHRYSENE	UG/KG	410	U	410	U	27	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	140	J	23	J	160	J
DI-N-OCTYLPHTHALATE	UG/KG	410	U	410	U	390	U
BENZO(B)FLUORANTHENE	UG/KG	410	U	410	U	28	J
BENZO(K)FLUORANTHENE	UG/KG	410	U	410	U	22	J
BENZO(A)PYRENE	UG/KG	410	U	410	U	21	J
INDENO(1,2,3-CD)PYRENE	UG/KG	410	U	410	U	390	U
DIBENZ(A,H)ANTHRACENE	UG/KG	410	U	410	U	390	U
BENZO(G,H,I)PERYLENE	UG/KG	410	U	410	U	390	U

SISE06.WK3

SUMMARY OF SEDIMENT SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

	SAMPLE ID>	16-JUN-92 06-001-D001		16-JUN-92 06-002-D001		16-JUN-92 06-003-D001		16-JUN-92 06-004-D001		16-JUN-92 06-004-D101 (DUPLICATE)	
INORGANICS	UNITS										
Aluminum, Total	MG/KG	2320	=	2710	=	3100	=				
Antimony, Total	MG/KG	8.86	U	8.49	U	7.86	U				
Arsenic, Total	MG/KG	1.5	B	4.7	=	5.1	=				
Barium, Total	MG/KG	22.2	B	24.3	B	25	B				
Beryllium, Total	MG/KG	0.27	B	0.33	B	0.55	B				
Cadmium, Total	MG/KG	0.98	U	0.94	U	1.3	=				
Calcium, Total	MG/KG	886	B	2120	=	3630	=				
Chromium, Total	MG/KG	7.3	=	16.1	=	16.1	=				
Cobalt, Total	MG/KG	2.9	B	3.4	B	4.3	B				
Copper, Total	MG/KG	16	=	29.6	=	21.8	=				
Iron, Total	MG/KG	8770	=	14700	=	16400	=				
Lead, Total	MG/KG	29.5	=	59	=	66.7	=				
Magnesium, Total	MG/KG	628	B	801	B	1350	=				
Manganese, Total	MG/KG	27	=	112	=	98.1	=				
Mercury, Total	MG/KG	0.06	U	0.32	=	0.1	B				
Nickel, Total	MG/KG	4.43	U	5.2	B	4.9	B				
Potassium, Total	MG/KG	306	B	792	B	748	B				
Selenium, Total	MG/KG	0.49	U	0.48	U	0.44	U				
Silver, Total	MG/KG	1.97	U	2.1	B	1.75	U				
Sodium, Total	MG/KG	140	B	332	B	65.8	B				
Thallium, Total	MG/KG	0.49	U	0.48	U	0.44	U				
Vanadium, Total	MG/KG	6.8	B	18.3	=	14.1	=				
Zinc, Total	MG/KG	97	=	121	=	139	=				
Cyanide, Total	MG/KG	1.23	U	1.21	U	1.1	U				
PESTICIDES											
ALPHA-BHC	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
BETA-BHC	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
DELTA-BHC	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
GAMMA-BHC (LINDANE)	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
HEPTACHLOR	UG/KG	1.2	J	20	U	9.1	J	3.8	U	3.8	U
ALDRIN	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
HEPTACHLOR EPOXIDE	UG/KG	4.1	U	20	U	1.1	J	3.8	U	3.8	U
ENDOSULFAN I	UG/KG	4.1	U	20	U	9.1	U	3.8	U	3.8	U
DIELDRIN	UG/KG	8.2	U	40	U	23	J	10	U	7.7	U
4,4'-DDE	UG/KG	7	J	18	J	34	=	30	=	16	=
ENDRIN	UG/KG	8.2	U	40	U	18	U	7.6	U	7.7	U
ENDOSULFAN II	UG/KG	8.2	U	2.4	U	18	U	7.6	U	7.7	U
4,4'-DDD	UG/KG	17	=	21	J	13	J	22	J	6.5	J
ENDOSULFAN SULFATE	UG/KG	8.2	U	40	U	18	U	7.6	U	7.7	U
4,4'-DDT	UG/KG	6.6	J	95	=	93	=	100	=	62	=
METHOXYCHLOR	UG/KG	41	U	200	U	91	U	38	U	38	U
ENDRIN KETONE	UG/KG	8.2	U	40	U	18	U	7.6	U	7.7	U
ENDRIN ALDEHYDE	UG/KG	8.2	U	40	U	18	U	7.6	U	7.7	U
ALPHA CHLORDANE	UG/KG	12	=	14	U	9.1	U	3.8	U	3.8	U
GAMMA CHLORDANE	UG/KG	13	=	4.8	U	9.1	U	3.8	U	3.8	U
TOXAPHENE	UG/KG	410	U	2000	U	910	U	380	U	380	U

SISE06.WK3

SUMMARY OF SEDIMENT SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

	SAMPLE ID>	16-JUN-92 06-001-D001		16-JUN-92 06-002-D001		16-JUN-92 06-003-D001		16-JUN-92 06-004-D001		16-JUN-92 06-004-D101 (DUPLICATE)	
PCB's											
AROCHLOR-1016	UG/KG	82	U	400	U	180	U	76	U	77	U
AROCHLOR-1221	UG/KG	160	U	800	U	370	U	150	U	150	U
AROCHLOR-1232	UG/KG	82	U	400	U	180	U	76	U	77	U
AROCHLOR-1242	UG/KG	82	U	400	U	180	U	76	U	77	U
AROCHLOR-1248	UG/KG	82	U	400	U	180	U	76	U	77	U
AROCHLOR-1254	UG/KG	82	U	400	U	180	U	76	U	77	U
AROCHLOR-1260	UG/KG	82	U	150	J	180	U	76	U	77	U
ORGANICS											
CHLOROMETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
BROMOMETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
VINYL CHLORIDE	UG/KG	12	U	12	U	11	U	12	U	12	U
CHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
METHYLENE CHLORIDE	UG/KG	18	B	20	B	23	B	29	B	28	B
ACETONE	UG/KG	36	B	12	U	11	U	12	U	12	U
CARBON DISULFIDE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,1-DICHLOROETHYLENE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,1-DICHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	12	U	11	U	12	U	12	U
CHLOROFORM	UG/KG	12	U	12	U	11	U	12	U	12	U
1,2-DICHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
2-BUTANONE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,1,1-TRICHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
CARBON TETRACHLORIDE	UG/KG	12	U	12	U	11	U	12	U	12	U
BROMODICHLOROMETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,2-DICHLOROPROPANE	UG/KG	12	U	12	U	11	U	12	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	12	U	11	U	12	U	12	U
TRICHLOROETHYLENE	UG/KG	12	U	12	U	11	U	12	U	12	U
DIBROMOCHLOROMETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
BENZENE	UG/KG	12	U	12	U	11	U	12	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	12	U	11	U	12	U	12	U
BROMOFORM	UG/KG	12	U	12	U	11	U	12	U	12	U
4-METHYL-2-PENTANONE	UG/KG	12	U	12	U	11	U	12	U	12	U
2-HEXANONE	UG/KG	12	U	12	U	11	U	12	U	12	U
TETRACHLOROETHYLENE	UG/KG	12	U	12	U	11	U	12	U	12	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	12	U	11	U	12	U	12	U
TOLUENE	UG/KG	12	U	12	U	11	U	12	U	12	U
CHLOROBENZENE	UG/KG	12	U	12	U	11	U	12	U	12	U
ETHYLBENZENE	UG/KG	12	U	12	U	11	U	12	U	12	U
STYRENE	UG/KG	12	U	12	U	11	U	12	U	12	U
XYLENES (TOTAL)	UG/KG	12	U	12	U	11	U	12	U	12	U
PHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U

SISE06.WK3

SUMMARY OF SEDIMENT SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-001-D001		06-002-D001		06-003-D001		06-004-D001		06-004-D101 (DUPLICATE)	
BIS(2-CHLOROETHYL)ETHER	UG/KG	410	U	400	U	360	U	400	U	370	U
2-CHLOROPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
1,3-DICHLOROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U
1,4-DICHLOROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U
1,2-DICHLOROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U
2-METHYLPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG	410	U	400	U	360	U	400	U	370	U
4-METHYLPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	410	U	400	U	360	U	400	U	370	U
HEXACHLOROETHANE	UG/KG	410	U	400	U	360	U	400	U	370	U
NITROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U
ISOPHORONE	UG/KG	410	U	400	U	360	U	400	U	370	U
2-NITROPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
2,4-DIMETHYLPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	410	U	400	U	360	U	400	U	370	U
2,4-DICHLOROPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
1,2,4-TRICHLOROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U
NAPHTHALENE	UG/KG	410	U	400	U	360	U	400	U	370	U
4-CHLOROANILINE	UG/KG	410	U	400	U	360	U	400	U	370	U
HEXACHLOROBUTADIENE	UG/KG	410	U	400	U	360	U	400	U	370	U
4-CHLORO-3-METHYLPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
2-METHYLNAPHTHALENE	UG/KG	410	U	400	U	22	J	400	U	370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	410	U	400	U	360	U	400	U	370	U
2,4,6-TRICHLOROPHENOL	UG/KG	410	U	400	U	360	U	400	U	370	U
2,4,5-TRICHLOROPHENOL	UG/KG	1000	U	990	U	910	U	990	U	940	U
2-CHLORONAPHTHALENE	UG/KG	410	U	400	U	360	U	400	U	370	U
2-NITROANILINE	UG/KG	1000	U	990	U	910	U	990	U	940	U
DIMETHYLPHTHALATE	UG/KG	410	U	400	U	360	U	400	U	370	U
ACENAPHTHYLENE	UG/KG	24	J	23	J	200	J	89	J	100	J
2,6-DINITROTOLUENE	UG/KG	410	U	400	U	360	U	400	U	370	U
3-NITROANILINE	UG/KG	1000	U	990	U	910	U	990	U	940	U
ACENAPHTHENE	UG/KG	410	U	400	U	28	J	400	U	370	U
2,4-DINITROPHENOL	UG/KG	1000	U	990	U	910	U	990	U	940	U
4-NITROPHENOL	UG/KG	1000	U	990	U	910	U	990	U	940	U
DIBENZOFURAN	UG/KG	410	U	400	U	360	U	400	U	370	U
2,4-DINITROTOLUENE	UG/KG	410	U	400	U	360	U	400	U	370	U
DIETHYLPHTHALATE	UG/KG	410	U	400	U	360	U	400	U	370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	410	U	400	U	360	U	400	U	370	U
FLUORENE	UG/KG	410	U	400	U	41	J	400	U	22	J
4-NITROANILINE	UG/KG	1000	U	990	U	910	U	990	U	940	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1000	U	990	U	910	U	990	U	940	U
N-NITROSODIPHENYLAMINE	UG/KG	410	U	400	U	360	U	400	U	370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	410	U	400	U	360	U	400	U	370	U
HEXACHLOROBENZENE	UG/KG	410	U	400	U	360	U	400	U	370	U

SISE06.WK3

SUMMARY OF SEDIMENT SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-001-D001		06-002-D001		06-003-D001		06-004-D001		06-004-D101 (DUPLICATE)	
PENTACHLOROPHENOL	UG/KG	1000	U	990	U	910	U	990	U	30	J
PHENANTHRENE	UG/KG	190	J	120	J	590	=	270	J	300	J
ANTHRACENE	UG/KG	62	J	38	J	360	=	170	J	180	J
CARBAZOLE	UG/KG	23	J	400	U	110	J	49	J	52	J
DI-N-BUTYLPHTHALATE	UG/KG	410	U	30	J	360	U	400	U	370	U
FLUORANTHENE	UG/KG	460	=	810	=	1600	=	790	=	710	=
PYRENE	UG/KG	430	=	950	=	1500	=	700	=	690	=
BUTYLBENZYLPHTHALATE	UG/KG	410	U	400	U	360	U	400	U	370	U
3,3'-DICHLOROBENZIDINE	UG/KG	410	U	400	U	360	U	400	U	370	U
BENZO(A)ANTHRACENE	UG/KG	220	J	480	=	950	=	380	J	380	=
CHRYSENE	UG/KG	270	J	520	=	1200	=	510	=	510	=
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	410	U	39	J	360	U	480	U	370	U
DI-N-OCTYLPHTHALATE	UG/KG	410	U	400	U	360	U	400	U	370	U
BENZO(B)FLUORANTHENE	UG/KG	230	J	640	=	1100	=	430	=	470	=
BENZO(K)FLUORANTHENE	UG/KG	190	J	470	=	890	=	390	J	400	=
BENZO(A)PYRENE	UG/KG	190	J	380	J	900	=	380	J	360	J
INDENO(1,2,3-CD)PYRENE	UG/KG	150	J	220	J	600	=	230	J	240	J
DIBENZ(A,H)ANTHRACENE	UG/KG	77	J	96	J	240	J	110	J	130	J
BENZO(G,H,I)PERYLENE	UG/KG	160	J	180	J	620	=	290	J	280	J

SIGW06.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-001-M001		06-002-M001		06-003-M001		06-004-M001	
	WELL #>	MW-01		MW-02		MW-03		MW-04	
INORGANICS	UNITS								
Aluminum, Total	UG/L	3110	=	2420	=	1800	=	2580	=
Antimony, Total	UG/L	36	U	36	U	36	U	36	U
Arsenic, Total	UG/L	2.6	B	2	U	2	U	6.6	U
Barium, Total	UG/L	74	B	112	B	63.6	B	130	U
Beryllium, Total	UG/L	1	U	1	U	1	U	1	U
Cadmium, Total	UG/L	4	U	4	U	4	U	4	U
Calcium, Total	UG/L	32800	=	8810	=	11100	=	102000	=
Chromium, Total	UG/L	9.9	B	7	U	7.8	B	8.3	B
Cobalt, Total	UG/L	7	U	7	U	7	U	7.1	B
Copper, Total	UG/L	9	B	8.3	B	11.1	B	18.9	B
Iron, Total	UG/L	49800	=	16800	=	35000	=	46900	=
Lead, Total	UG/L	2.9	B	2	U	2.5	B	20.7	=
Magnesium, Total	UG/L	14500	=	6620	=	4070	B	42400	=
Manganese, Total	UG/L	1650	=	322	=	105	=	1120	=
Mercury, Total	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
Nickel, Total	UG/L	18	U	18	U	18	U	18	U
Potassium, Total	UG/L	7060	=	2980	=	2580	B	9450	=
Selenium, Total	UG/L	2	U	2	U	2	U	2	U
Silver, Total	UG/L	8	U	8	U	8	U	8	U
Sodium, Total	UG/L	60800	=	37400	=	40300	=	13200	=
Thallium, Total	UG/L	20	U	20	U	2	U	2	U
Vanadium, Total	UG/L	5	U	5	U	5	U	13.6	B
Zinc, Total	UG/L	35.3	=	69	=	118	=	216	=
Cyanide, Total	UG/L		NR						
PESTICIDES									
ALPHA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
BETA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
DELTA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
GAMMA-BHC (LINDANE)	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
HEPTACHLOR	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
ALDRIN	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
HEPTACHLOR EPOXIDE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
ENDOSULFAN I	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
DIELDRIN	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
ENDRIN	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
ENDOSULFAN II	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDD	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
ENDOSULFAN SULFATE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDT	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
METHOXYCHLOR	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
ENDRIN KETONE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
ENDRIN ALDEHYDE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U
ALPHA CHLORDANE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
GAMMA CHLORDANE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U
TOXAPHENE	UG/L	5	U	5	U	5	U	5	U

SIGW06.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-001-M001		06-002-M001		06-003-M001		06-004-M001	
	WELL #>	MW-01		MW-02		MW-03		MW-04	
PCB's									
AROCHLOR-1016	UG/L	1	U	1	U	1	U	1	U
AROCHLOR-1221	UG/L	2	U	2	U	2	U	2	U
AROCHLOR-1232	UG/L	1	U	1	U	1	U	1	U
AROCHLOR-1242	UG/L	1	U	1	U	1	U	1	U
AROCHLOR-1248	UG/L	1	U	1	U	1	U	1	U
AROCHLOR-1254	UG/L	1	U	1	U	1	U	1	U
AROCHLOR-1260	UG/L	1	U	1	U	1	U	1	U
ORGANICS									
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	8	JB	8	JB	7	JB	8	JB
ACETONE	UG/L	82	B	33	B	22	B	55	B
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U
1,1-DICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	27	=	10	U	20	=	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U
TRICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U
DIBROMOCHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U
TETRACHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U
XYLENES (TOTAL)	UG/L	10	U	10	U	10	U	10	U
PHENOL	UG/L	11	U	10	U	10	U	10	U

SIGW06.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		06-001-M001		06-002-M001		06-003-M001		06-004-M001	
WELL #>		MW-01		MW-02		MW-03		MW-04	
BIS(2-CHLOROETHYL)ETHER	UG/L	11	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	11	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	11	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	11	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	11	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	11	U	10	U	10	U	10	U
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	11	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	11	U	10	U	10	U	10	U
N-NITROSO-DI-N-PROPYLAMINE	UG/L	11	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	11	U	10	U	10	U	10	U
NITROBENZENE	UG/L	11	U	10	U	10	U	10	U
ISOPHORONE	UG/L	11	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	11	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	11	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	11	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	11	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	11	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	11	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	11	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	11	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	11	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	11	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	11	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	11	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U
2-CHLORONAPHTHALENE	UG/L	11	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	26	U	26	U	26	U	26	U
DIMETHYLPHTHALATE	UG/L	11	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	11	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	11	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	26	U	26	U	26	U	26	U
ACENAPHTHENE	UG/L	11	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	26	U	26	U	26	U	26	U
4-NITROPHENOL	UG/L	26	U	26	U	26	U	26	U
DIBENZOFURAN	UG/L	11	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	11	U	10	U	10	U	10	U
DIETHYLPHTHALATE	UG/L	11	U	10	U	10	U	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	11	U	10	U	10	U	10	U
FLUORENE	UG/L	11	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	26	U	26	U	26	U	26	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	26	U	26	U	26	U	26	U
N-NITROSODIPHENYLAMINE	UG/L	11	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	11	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	11	U	10	U	10	U	10	U

SIGW06.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE
SITE 6 (LANDFILL WEST NORMANDY ROAD)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	06-001-M001		06-002-M001		06-003-M001		06-004-M001	
	WELL #>	MW-01		MW-02		MW-03		MW-04	
PENTACHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U
PHENANTHRENE	UG/L	11	U	10	U	10	U	10	U
ANTHRACENE	UG/L	11	U	10	U	10	U	10	U
CARBAZOLE	UG/L	11	U	10	U	10	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	11	U	10	U	2	JB	10	U
FLUORANTHENE	UG/L	11	U	10	U	10	U	10	U
PYRENE	UG/L	11	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	11	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	11	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	11	U	10	U	10	U	10	U
CHRYSENE	UG/L	11	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	15	U	22	U	7	JB	14	U
DI-N-OCTYLPHTHALATE	UG/L	11	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	11	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	11	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	11	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	11	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	11	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	11	U	10	U	10	U	10	U
TYPICAL LANDFILL PARAMETERS									
BOD 5 Day	MG/L	3.5	=	1	U	1.1	=	2	=
Chloride	MG/L	155	=	98.8	=	72.5	=	17.8	=
Chemical Oxygen Demand	MG/L	62.9	=	12.8	=	28.1	=	158	=
Nitrate Nitrite	MG-N/L	0.14	=	0.55	=	0.13	=	0.1	U
Ammonia, as N	MG/L	5.1	=	0.42	=	0.2	=	3.6	=
Total Organic Carbon	MG/L	18.4	=	2.4	=	5.8	=	17.5	=
Phosphate, as P	MG/L	0.42	=	0.045	=	0.098	=	0.51	=
Sulfate	MG/L	53.8	=	29	=	75.7	=	10.2	=
Turbidity	NTU	1440	=	128	=	219	=	552	=

SITP09.WK3

SUMMARY OF SOIL (TEST PIT) SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 9, (LANDFILL SOUTHEAST OF P BARRICADES)

		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92	
	SAMPLE ID>	09-001-T007		09-002-T010		09-003-T009		09-004-T005		09-005-T006		09-006-T008	
INORGANICS	UNITS												
Aluminum, Total	MG/KG	2320	=	9070	=	6090	=	7350	=	6280	=	9220	=
Antimony, Total	MG/KG	8.41	U	9.04	U	8.87	U	7.47	U	8.4	U	9.03	U
Arsenic, Total	MG/KG	6	=	7.9	=	13.2	=	6.5	=	6.3	=	8.8	=
Barium, Total	MG/KG	5	B	13.5	B	7.7	B	20.4	B	31.8	B	10.1	B
Beryllium, Total	MG/KG	0.3	B	1.2	B	0.52	B	0.72	B	0.58	B	0.93	B
Cadmium, Total	MG/KG	0.93	U	1.03	U	0.99	=	0.85	U	0.96	U	1.01	U
Calcium, Total	MG/KG	110	B	242	B	141	B	750	B	799	B	89.5	B
Chromium, Total	MG/KG	10.9	=	16.2	=	21	=	19.4	=	16.9	=	25.8	=
Cobalt, Total	MG/KG	2.1	B	4.3	B	2.3	B	4.6	B	3.9	B	4	B
Copper, Total	MG/KG	3	B	4.2	B	4.1	B	4.9	B	6.3	=	3.1	B
Iron, Total	MG/KG	8580	=	36300	=	22300	=	33300	=	27600	=	26600	=
Lead, Total	MG/KG	5.5	=	5.6	=	9.9	=	12.7	=	17.4	=	6.9	=
Magnesium, Total	MG/KG	147	B	1210	B	911	B	1100	=	893	B	1520	=
Manganese, Total	MG/KG	49.2	=	112	=	24.4	=	104	=	168	=	28.1	=
Mercury, Total	MG/KG	0.06	U	0.07	U	0.06	U	0.05	U	0.06	U	0.06	U
Nickel, Total	MG/KG	4.2	U	4.65	U	4.45	U	3.82	U	4.33	U	4.53	U
Potassium, Total	MG/KG	209	U	1840	=	1970	=	2040	=	1420	=	4120	=
Selenium.Total	MG/KG	0.47	U	0.51	U	0.48	U	0.41	U	0.48	U	0.5	U
Silver, Total	MG/KG	1.87	U	2.7	=	1.97	U	2.5	=	2.2	B	2.01	U
Sodium, Total	MG/KG	42.6	B	52.8	B	47.8	B	50.5	B	36.5	B	51.3	B
Thallium, Total	MG/KG	0.47	U	0.51	U	0.48	U	0.41	U	0.48	U	0.5	U
Vanadium, Total	MG/KG	23.2	=	5.7	B	20.8	=	11	=	11.7	B	11.5	B
Zinc, Total	MG/KG	5.3	=	39.8	=	17.5	=	60.3	=	44.6	=	60.1	=
Cyanide, Total	MG/KG	1.17	U	1.31	U	1.27	U	1.07	U	1.21	U	1.57	=
PESTICIDES													
ALPHA-BHC	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
BETA-BHC	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
DELTA-BHC	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
HEPTACHLOR	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
ALDRIN	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
ENDOSULFAN I	UG/KG	1.9	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U
DIELDRIN	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
4,4'-DDE	UG/KG	3.8	U	4.3	U	4.3	U	0.41	J	1.2	J	4.2	U
ENDRIN	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
ENDOSULFAN II	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
4,4'-DDD	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	0.41	J	4.2	U
ENDOSULFAN SULFATE	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
4,4'-DDT	UG/KG	3.8	U	4.3	U	4.3	U	0.82	J	.41	JP	4.2	U
METHOXYCHLOR	UG/KG	19	U	22	U	22	U	93	=	20	U	21	U
ENDRIN KETONE	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
ENDRIN ALDEHYDE	UG/KG	3.8	U	4.3	U	4.3	U	4.1	U	4.1	U	4.2	U
ALPHA CHLORDANE	UG/KG	1.9	U	22	U	22	U	2.1	U	2	U	2.1	U
GAMMA CHLORDANE	UG/KG	1.9	U	22	U	22	U	2.1	U	2	U	2.1	U
TOXAPHENE	UG/KG	190	U	220	U	220	U	210	U	200	U	210	U

SITP09.WK3

SUMMARY OF SOIL (TEST PIT) SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 9, (LANDFILL SOUTHEAST OF P BARRICADES)

		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92	
	SAMPLE ID>	09-001-T007		09-002-T010		09-003-T009		09-004-T005		09-005-T006		09-006-T008	
PCB's													
AROCHLOR-1016	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
AROCHLOR-1221	UG/KG	77	U	87	U	87	U	82	U	81	U	84	U
AROCHLOR-1232	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
AROCHLOR-1242	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
AROCHLOR-1248	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
AROCHLOR-1254	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
AROCHLOR-1260	UG/KG	38	U	43	U	43	U	41	U	41	U	42	U
ORGANICS													
CHLOROMETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
BROMOMETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
VINYL CHLORIDE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
CHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
METHYLENE CHLORIDE	UG/KG	12	U	13	U	17	U	12	U	13	U	21	U
ACETONE	UG/KG	12	U	17	U	22	U	12	U	22	U	34	U
CARBON DISULFIDE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,1-DICHLOROETHYLENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,1-DICHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
CHLOROFORM	UG/KG	1	J	1	J	13	U	11	U	12	U	13	U
1,2-DICHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
2-BUTANONE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,1,1-TRICHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
CARBON TETRACHLORIDE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
BROMODICHLOROMETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,2-DICHLOROPROPANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
TRICHLOROETHYLENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
DIBROMOCHLOROMETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
BENZENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
BROMOFORM	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
4-METHYL-2-PENTANONE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
2-HEXANONE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
TETRACHLOROETHYLENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
TOLUENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
CHLOROBENZENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
ETHYLBENZENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
STYRENE	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
XYLENES (TOTAL)	UG/KG	12	U	13	U	13	U	11	U	12	U	13	U
PHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U

SITP09.WK3

SUMMARY OF SOIL (TEST PIT) SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 9, (LANDFILL SOUTHEAST OF P BARRICADES)

		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92	
	SAMPLE ID>	09-001-T007		09-002-T010		09-003-T009		09-004-T005		09-005-T006		09-006-T008	
BIS(2-CHLOROETHYL)ETHER	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2-CHLOROPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
1,3-DICHLOROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
1,4-DICHLOROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
1,2-DICHLOROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2-METHYLPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-METHYLPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
HEXACHLOROETHANE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
NITROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
ISOPHORONE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2-NITROPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4-DIMETHYLPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4-DICHLOROPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
1,2,4-TRICHLOROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
NAPHTHALENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-CHLOROANILINE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
HEXACHLOROBUTADIENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-CHLORO-3-METHYLPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2-METHYLNAPHTHALENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4,6-TRICHLOROPHENOL	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4,5-TRICHLOROPHENOL	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
2-CHLORONAPHTHALENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2-NITROANILINE	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
DIMETHYLPHTHALATE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
ACENAPHTHYLENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,6-DINITROTOLUENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
3-NITROANILINE	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
ACENAPHTHENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4-DINITROPHENOL	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
4-NITROPHENOL	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
DIBENZOFURAN	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
2,4-DINITROTOLUENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
DIETHYLPHTHALATE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
FLUORENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-NITROANILINE	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
N-NITROSODIPHENYLAMINE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
HEXACHLOROBENZENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U

SITP09.WK3

SUMMARY OF SOIL (TEST PIT) SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 9, (LANDFILL SOUTHEAST OF P BARRICADES)

		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92		15-MAY-92	
	SAMPLE ID>	09-001-T007		09-002-T010		09-003-T009		09-004-T005		09-005-T006		09-006-T008	
PENTACHLOROPHENOL	UG/KG	980	U	1100	U	1100	U	1000	U	1000	U	1000	U
PHENANTHRENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
ANTHRACENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
CARBAZOLE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
DI-N-BUTYLPHTHALATE	UG/KG	23	J	37	J	25	J	28	J	25	J	21	J
FLUORANTHENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
PYRENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BUTYLBENZYLPHTHALATE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
3,3'-DICHLOROBENZIDINE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BENZO(A)ANTHRACENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
CHRYSENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	390	U	35	J	440	J	410	U	26	J	34	J
DI-N-OCTYLPHTHALATE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BENZO(B)FLUORANTHENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BENZO(K)FLUORANTHENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BENZO(A)PYRENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
INDENO(1,2,3-CD)PYRENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
DIBENZ(A,H)ANTHRACENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
BENZO(G,H,I)PERYLENE	UG/KG	390	U	440	U	440	U	410	U	400	U	420	U
Petroleum Hydrocarbons	MG/KG	4.7	J	5.1	U	4.3	J	4.8	U	3.6	J	5.1	U

SISE12.WK3

SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

SAMPLE ID>	16-JUN-92 12-002-D001 RE SEDIMENT				16-JUN-92 12-002-W001 SURFACE WATER				
INORGANICS									
	UNITS				UNITS				
Aluminum, Total	MG/KG	5220	=		MG/L		243	=	
Antimony, Total	MG/KG	13.8	U		MG/L		36	U	
Arsenic, Total	MG/KG	10.2	=		MG/L		2.9	B	
Barium, Total	MG/KG	61.7	B		MG/L		59.3	B	
Beryllium, Total	MG/KG	1.1	B		MG/L		1	U	
Cadmium, Total	MG/KG	1.7	B		MG/L		4	U	
Calcium, Total	MG/KG	2000	=		MG/L		22600	=	
Chromium, Total	MG/KG	45.4	=		MG/L		7	U	
Cobalt, Total	MG/KG	8.2	B		MG/L		7	U	
Copper, Total	MG/KG	58	=		MG/L		7	U	
Iron, Total	MG/KG	19900	=		MG/L		23200	=	
Lead, Total	MG/KG	261	=		MG/L		20.5	=	
Magnesium, Total	MG/KG	1380	B		MG/L		7380	=	
Manganese, Total	MG/KG	71.1	=		MG/L		591	=	
Mercury, Total	MG/KG	0.37	=		MG/L		0.1	U	
Nickel, Total	MG/KG	15.6	=		MG/L		18	U	
Potassium, Total	MG/KG	1010	B		MG/L		3480	B	
Selenium, Total	MG/KG	0.71	U		MG/L		2	U	
Silver, Total	MG/KG	3.5	B		MG/L		8	U	
Sodium, Total	MG/KG	341	B		MG/L		57900	=	
Thallium, Total	MG/KG	0.71	U		MG/L		2	U	
Vanadium, Total	MG/KG	21.2	=		MG/L		5	U	
Zinc, Total	MG/KG	306	=		MG/L		47.3	=	
Cyanide, Total	MG/KG	1.92	U		MG/L		20	U	
PESTICIDES									
ALPHA-BHC	UG/KG	32	U						
BETA-BHC	UG/KG	32	U						
DELTA-BHC	UG/KG	32	U						
GAMMA-BHC (LINDANE)	UG/KG	32	U						
HEPTACHLOR	UG/KG	32	U						
ALDRIN	UG/KG	32	U						
HEPTACHLOR EPOXIDE	UG/KG	32	U						
ENDOSULFAN I	UG/KG	32	U						
DIELDRIN	UG/KG	54	J						
4,4'-DDE	UG/KG	57	J						
ENDRIN	UG/KG	64	U						
ENDOSULFAN II	UG/KG	64	U						
4,4'-DDD	UG/KG	91	=						
ENDOSULFAN SULFATE	UG/KG	64	U						
4,4'-DDT	UG/KG	33	J						
METHOXYCHLOR	UG/KG	320	U						
ENDRIN KETONE	UG/KG	64	U						
ENDRIN ALDEHYDE	UG/KG	64	U						
ALPHA CHLORDANE	UG/KG	87	=						
GAMMA CHLORDANE	UG/KG	90	=						
TOXAPHENE	UG/KG	3200	U						

SISE12.WK3

SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

		16-JUN-92					16-JUN-92			
	SAMPLE ID>	12-002-D001 RE					12-002-W001			
		SEDIMENT					SURFACE WATER			
PCB's										
AROCHLOR-1016	UG/KG	640	U							
AROCHLOR-1221	UG/KG	1300	U							
AROCHLOR-1232	UG/KG	640	U							
AROCHLOR-1242	UG/KG	640	U							
AROCHLOR-1248	UG/KG	640	U							
AROCHLOR-1254	UG/KG	640	U							
AROCHLOR-1260	UG/KG	640	U							
ORGANICS										
CHLOROMETHANE	UG/KG	20	J		UG/L		10	U		
BROMOMETHANE	UG/KG	20	U		UG/L		10	U		
VINYL CHLORIDE	UG/KG	20	U		UG/L		10	U		
CHLOROETHANE	UG/KG	20	U		UG/L		10	U		
METHYLENE CHLORIDE	UG/KG	28	B		UG/L		10	U		
ACETONE	UG/KG	210	B		UG/L		10	U		
CARBON DISULFIDE	UG/KG	20	U		UG/L		10	U		
1,1-DICHLOROETHYLENE	UG/KG	20	U		UG/L		10	U		
1,1-DICHLOROETHANE	UG/KG	20	U		UG/L		10	U		
1,2-DICHLOROETHENE (TOTAL)	UG/KG	20	U		UG/L		10	U		
CHLOROFORM	UG/KG	20	U		UG/L		10	U		
1,2-DICHLOROETHANE	UG/KG	20	U		UG/L		10	U		
2-BUTANONE	UG/KG	59	=		UG/L		10	U		
1,1,1-TRICHLOROETHANE	UG/KG	20	U		UG/L		10	U		
CARBON TETRACHLORIDE	UG/KG	20	U		UG/L		10	U		
BROMODICHLOROMETHANE	UG/KG	20	U		UG/L		10	U		
1,2-DICHLOROPROPANE	UG/KG	20	U		UG/L		10	U		
CIS-1,3-DICHLOROPROPENE	UG/KG	20	U		UG/L		10	U		
TRICHLOROETHYLENE	UG/KG	20	U		UG/L		10	U		
DIBROMOCHLOROMETHANE	UG/KG	20	U		UG/L		10	U		
1,1,2-TRICHLOROETHANE	UG/KG	20	U		UG/L		10	U		
BENZENE	UG/KG	20	U		UG/L		10	U		
TRANS-1,3-DICHLOROPROPENE	UG/KG	20	U		UG/L		10	U		
BROMOFORM	UG/KG	20	U		UG/L		10	U		
4-METHYL-2-PENTANONE	UG/KG	20	U		UG/L		10	U		
2-HEXANONE	UG/KG	20	U		UG/L		10	U		
TETRACHLOROETHYLENE	UG/KG	20	U		UG/L		10	U		
1,1,2,2-TETRACHLOROETHANE	UG/KG	20	U		UG/L		10	U		
TOLUENE	UG/KG	20	U		UG/L		10	U		
CHLOROBENZENE	UG/KG	20	U		UG/L		10	U		
ETHYLBENZENE	UG/KG	20	U		UG/L		10	U		
STYRENE	UG/KG	20	U		UG/L		10	U		
XYLENES (TOTAL)	UG/KG	20	U		UG/L		10	U		
PHENOL	UG/KG	42	J							

SISE12.WK3

SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

	SAMPLE ID>	16-JUN-92 12-002-D001 RE SEDIMENT			
BIS(2-CHLOROETHYL)ETHER	UG/KG	630	U		
2-CHLOROPHENOL	UG/KG	630	U		
1,3-DICHLOROBENZENE	UG/KG	630	U		
1,4-DICHLOROBENZENE	UG/KG	630	U		
1,2-DICHLOROBENZENE	UG/KG	630	U		
2-METHYLPHENOL	UG/KG	630	U		
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG	630	U		
4-METHYLPHENOL	UG/KG	630	U		
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	630	U		
HEXACHLOROETHANE	UG/KG	630	U		
NITROBENZENE	UG/KG	630	U		
ISOPHORONE	UG/KG	630	U		
2-NITROPHENOL	UG/KG	630	U		
2,4-DIMETHYLPHENOL	UG/KG	630	U		
BIS(2-CHLOROETHOXY)METHANE	UG/KG	630	U		
2,4-DICHLOROPHENOL	UG/KG	630	U		
1,2,4-TRICHLOROBENZENE	UG/KG	630	U		
NAPHTHALENE	UG/KG	630	U		
4-CHLOROANILINE	UG/KG	630	U		
HEXACHLOROBUTADIENE	UG/KG	630	U		
4-CHLORO-3-METHYLPHENOL	UG/KG	630	U		
2-METHYLNAPHTHALENE	UG/KG	630	U		
HEXACHLOROCYCLOPENTADIENE	UG/KG	630	U		
2,4,6-TRICHLOROPHENOL	UG/KG	630	U		
2,4,5-TRICHLOROPHENOL	UG/KG	1600	U		
2-CHLORONAPHTHALENE	UG/KG	630	U		
2-NITROANILINE	UG/KG	1600	U		
DIMETHYLPHTHALATE	UG/KG	630	U		
ACENAPHTHYLENE	UG/KG	100	J		
2,6-DINITROTOLUENE	UG/KG	630	U		
3-NITROANILINE	UG/KG	1600	U		
ACENAPHTHENE	UG/KG	100	J		
2,4-DINITROPHENOL	UG/KG	1600	U		
4-NITROPHENOL	UG/KG	1600	U		
DIBENZOFURAN	UG/KG	630	U		
2,4-DINITROTOLUENE	UG/KG	630	U		
DIETHYLPHTHALATE	UG/KG	630	U		
4-CHLOROPHENYL-PHENYLETHER	UG/KG	630	U		
FLUORENE	UG/KG	180	U		
4-NITROANILINE	UG/KG	1600	U		
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1600	U		
N-NITROSODIPHENYLAMINE	UG/KG	630	U		
4-BROMOPHENYL-PHENYLETHER	UG/KG	630	U		
HEXACHLOROBENZENE	UG/KG	630	U		

SISE12.WK3

SUMMARY OF SURFACE WATER AND SEDIMENT
SAMPLE ANALYTICAL RESULTS (JUNE 1992)
NWS EARLE, SITE 12 (BATTERY ACID SPILL SITE)

	SAMPLE ID>	16-JUN-92 12-002-D001 RE SEDIMENT			
PENTACHLOROPHENOL	UG/KG	1600	U		
PHENANTHRENE	UG/KG	1600	=		
ANTHRACENE	UG/KG	520	J		
CARBAZOLE	UG/KG	630	J		
DI-N-BUTYLPHTHALATE	UG/KG	630	U		
FLUORANTHENE	UG/KG	3300	=		
PYRENE	UG/KG	2300	=		
BUTYLBENZYLPHTHALATE	UG/KG	160	J		
3,3'-DICHLOROBENZIDINE	UG/KG	630	U		
BENZO(A)ANTHRACENE	UG/KG	1100	=		
CHRYSENE	UG/KG	1600	=		
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	3700	=		
DI-N-OCTYLPHTHALATE	UG/KG	170	J		
BENZO(B)FLUORANTHENE	UG/KG	1400	=		
BENZO(K)FLUORANTHENE	UG/KG	1300	=		
BENZO(A)PYRENE	UG/KG	1200	=		
INDENO(1,2,3-CD)PYRENE	UG/KG	770	=		
DIBENZ(A,H)ANTHRACENE	UG/KG	300	J		
BENZO(G,H,I)PERYLENE	UG/KG	730	=		

SISOIL13.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE13 (DEFENSE PROPERTY DISPOSAL OFFICE YARD)

	SAMPLE ID>	16-JUN-92 13-001-B001		16-JUN-92 13-002-B001		16-JUN-92 13-002-B101 (DUPLICATE)		16-JUN-92 13-003-B001		16-JUN-92 13-004-B001		13-005-B001		13-006-B001	
INORGANICS	UNITS																			
Aluminum, Total	MG/KG	2050	-	1080	-	1260	-	512	-	816	-	519	-	1790	-					
Antimony, Total	MG/KG	7.8	U	7.33	U	7.41	U	7.39	U	7.68	U	7.7	U	7.7	U					
Arsenic, Total	MG/KG	3	-	0.9	B	1.1	B	0.41	U	0.83	B	0.68	B	1.6	B					
Barium, Total	MG/KG	14.5	B	4.9	B	5.3	B	1.8	B	4.6	B	1.5	U	5.3	B					
Beryllium, Total	MG/KG	0.24	B	0.29	B	0.33	B	0.2	U	0.21	U	0.21	U	0.47	B					
Cadmium, Total	MG/KG	0.87	-	0.81	U	0.82	U	0.82	U	0.85	U	0.86	U	1.1	-					
Calcium, Total	MG/KG	329	B	39.7	B	36.4	B	35.3	B	29.1	B	17.4	B	121	B					
Chromium, Total	MG/KG	14.8	-	21.7	-	22	-	2.8	-	8.8	-	10.3	-	44.1	-					
Cobalt, Total	MG/KG	2.4	B	1.43	U	1.44	U	1.44	U	1.49	U	1.5	U	1.5	U					
Copper, Total	MG/KG	25.2	-	4.2	B	4.4	B	1.44	U	3.5	B	1.5	U	6	U					
Iron, Total	MG/KG	8040	-	3850	-	4110	-	2520	-	2920	-	2400	-	6980	-					
Lead, Total	MG/KG	96.9	-	58	-	25.7	-	1.5	-	5.6	-	3.8	-	22.6	-					
Magnesium, Total	MG/KG	236	B	99.8	B	107	B	43.4	B	54.4	B	26.7	B	170	B					
Manganese, Total	MG/KG	27	-	12.4	-	11.8	-	4.5	-	6.7	-	3.6	-	14.8	-					
Mercury, Total	MG/KG	0.14	U	0.05	U	0.83	-	0.05	U	0.46	-	0.05	U	0.36	-					
Nickel, Total	MG/KG	3.9	U	3.66	U	3.7	U	3.7	U	3.84	U	3.84	U	3.87	U					
Potassium, Total	MG/KG	231	B	246	B	211	B	184	U	195	B	192	U	545	B					
Selenium, Total	MG/KG	0.45	U	0.41	U	0.41	U	0.41	U	0.43	U	0.43	U	0.43	U					
Silver, Total	MG/KG	6.4	-	1.63	U	1.65	U	1.64	U	2.6	-	1.71	U	42.1	-					
Sodium, Total	MG/KG	25.4	U	23.8	U	24.1	U	24.1	B	25	U	25	U	25.2	U					
Thallium, Total	MG/KG	0.45	U	0.41	U	0.41	U	0.41	U	0.43	U	0.43	U	0.43	U					
Vanadium, Total	MG/KG	14.8	-	25.3	-	26.7	-	3.3	B	9.3	B	11.5	-	53.9	-					
Zinc, Total	MG/KG	50.6	-	13.7	-	14.5	-	7.6	-	10.5	-	12.4	-	39.9	-					
Cyanide, Total	MG/KG	1.14	U	1.05	U	1.03	U	1.06	U	1.07	U	1.09	U	1.08	U					
PESTICIDES																				
ALPHA-BHC	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
BETA-BHC	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
DELTA-BHC	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
GAMMA-BHC (LINDANE)	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
HEPTACHLOR	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
ALDRIN	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
HEPTACHLOR EPOXIDE	UG/KG	6.1	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
ENDOSULFAN I	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
DIELDRIN	UG/KG	7.6	U	3.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
4,4'-DDE	UG/KG	4.9	R	11	-	7.6	J	3.5	U	1.4	J	3.6	J	6.5	-					
ENDRIN	UG/KG	7.6	U	3.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
ENDOSULFAN II	UG/KG	4.6	R	2.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
4,4'-DDD	UG/KG	16	R	2.7	U	2.1	U	3.5	U	7.1	U	0.73	U	1.8	R					
ENDOSULFAN SULFATE	UG/KG	7.6	U	3.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
4,4'-DDT	UG/KG	75	R	38	U	16	U	3.5	U	8.2	U	4.4	-	8.3	R					
METHOXYCHLOR	UG/KG	38	U	18	U	17	U	18	U	18	U	18	U	18	U					
ENDRIN KETONE	UG/KG	7.6	U	3.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
ENDRIN ALDEHYDE	UG/KG	7.6	U	3.5	U	3.4	U	3.5	U	3.6	U	3.6	U	3.6	U					
ALPHA CHLORDANE	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
GAMMA CHLORDANE	UG/KG	3.8	U	1.8	U	1.7	U	1.8	U	1.8	U	1.8	U	1.8	U					
TOXAPHENE	UG/KG	380	U	180	U	170	U	180	U	180	U	180	U	180	U					

SISOIL13.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL
RESULTS (JUNE 1992) NWS EARLE, SITE13
(DEFENSE PROPERTY DISPOSAL OFFICE YARD)

		16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92		
	SAMPLE ID>	13-001-B001	13-002-B001	13-002-B101 (DUPLICATE)	13-003-B001	13-004-B001	13-006-B001	13-008-B001
PCB's								
AROCHLOR-1016	UG/KG	76 U	35 U	34 U	35 U	36 U	36 U	36 U
AROCHLOR-1221	UG/KG	150 U	70 U	69 U	70 U	71 U	73 U	72 U
AROCHLOR-1232	UG/KG	76 U	35 U	34 U	35 U	36 U	36 U	36 U
AROCHLOR-1242	UG/KG	76 U	35 U	34 U	35 U	36 U	36 U	36 U
AROCHLOR-1248	UG/KG	76 U	35 U	34 U	35 U	36 U	36 U	36 U
AROCHLOR-1254	UG/KG	76 U	35 U	34 U	35 U	36 U	36 U	36 U
AROCHLOR-1260	UG/KG	300 =	77 =	150 =	35 U	21 J	36 U	180 =
SEMIVOLATILE ORGANICS								
PHENOL	UG/KG	35 J	350 U		350 U	350 U	360 U	360 U
BIS(2-CHLOROETHYL)ETHER	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2-CHLOROPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
1,3-DICHLOROBENZENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
1,4-DICHLOROBENZENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
1,2-DICHLOROBENZENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2-METHYLPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
4-METHYLPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
HEXACHLOROETHANE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
NITROBENZENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
ISOPHORONE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2-NITROPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2,4-DIMETHYLPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2,4-DICHLOROPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
1,2,4-TRICHLOROBENZENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
NAPHTHALENE	UG/KG	61 J	350 U		350 U	350 U	360 U	360 U
4-CHLOROANILINE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
HEXACHLOROBUTADIENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
4-CHLORO-3-METHYLPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2-METHYLNAPHTHALENE	UG/KG	44 J	350 U		350 U	350 U	360 U	360 U
HEXACHLOROCYCLOPENTADIENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2,4,6-TRICHLOROPHENOL	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2,4,5-TRICHLOROPHENOL	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U
2-CHLORONAPHTHALENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
2-NITROANILINE	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U
DIMETHYLPHTHALATE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
ACENAPHTHYLENE	UG/KG	680 J	350 U		350 U	350 U	360 U	360 U
2,6-DINITROTOLUENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
3-NITROANILINE	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U
ACENAPHTHENE	UG/KG	89 J	350 U		350 U	350 U	360 U	360 U
2,4-DINITROPHENOL	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U
4-NITROPHENOL	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U
DIBENZOFURAN	UG/KG	100 J	350 U		350 U	350 U	360 U	360 U
2,4-DINITROTOLUENE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
DIETHYLPHTHALATE	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	380 U	350 U		350 U	350 U	360 U	360 U
FLUORENE	UG/KG	280 J	350 U		350 U	350 U	360 U	360 U
4-NITROANILINE	UG/KG	950 U	870 U		860 U	860 U	900 U	900 U

SISOIL13.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL
RESULTS (JUNE 1992) NWS EARLE, SITE 13
(DEFENSE PROPERTY DISPOSAL OFFICE YARD)

		SAMPLE ID>	16-JUN-92 13-001-B001		16-JUN-92 13-002-B001		16-JUN-92 13-002-B101 (DUPLICATE)		16-JUN-92 13-003-B001		16-JUN-92 13-004-B001		13-005-B001		13-006-B001	
4,6-DINITRO-2-METHYLPHENOL	UG/KG		950	U	870	U			860	U	860	U	900	U	900	U
N-NITROSODIPHENYLAMINE	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
4-BROMOPHENYL-PHENYLETHER	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
HEXACHLOROBENZENE	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
PENTACHLOROPHENOL	UG/KG		950	U	870	U			860	U	860	U	900	U	900	U
PHENANTHRENE	UG/KG			E	350	U			350	U	350	U	360	U	360	U
ANTHRACENE	UG/KG		1800	J	350	U			350	U	350	U	360	U	360	U
CARBAZOLE	UG/KG		260	J	350	U			350	U	350	U	360	U	360	U
DI-N-BUTYLPHTHALATE	UG/KG		380	U	37	J			40	J	27	J	34	J	36	J
FLUORANTHENE	UG/KG			E	350	U			350	U	350	U	24	J	360	U
PYRENE	UG/KG			E	51	J			350	U	350	U	360	U	360	U
BUTYLBENZYLPHTHALATE	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
3,3'-DICHLOROBENZIDINE	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
BENZO(A)ANTHRACENE	UG/KG			E	33	J			350	U	350	U	360	U	360	U
CHRYSENE	UG/KG			E	53	J			350	U	350	U	43	J	360	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG		380	U	2700	-			850	U	490	U	550	U	560	U
DI-N-OCTYLPHTHALATE	UG/KG		380	U	350	U			350	U	350	U	360	U	360	U
BENZO(B)FLUORANTHENE	UG/KG			E	38	J			350	U	350	U	46	J	360	U
BENZO(K)FLUORANTHENE	UG/KG			E	45	J			350	U	350	U	42	J	360	U
BENZO(A)PYRENE	UG/KG		2400	J	47	J			350	U	350	U	23	J	360	U
INDENO(1,2,3-CD)PYRENE	UG/KG		870	J	25	J			350	U	350	U	41	J	360	U
DIBENZ(A,H)ANTHRACENE	UG/KG		880	J	350	U			350	U	350	U	360	U	360	U
BENZO(G,H,I)PERYLENE	UG/KG		1700	J	350	U			350	U	350	U	20	J	360	U

SISE13.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992), NWS EARLE, SITE 13
(DEFENSE PROPERTY DISPOSAL OFFICE YARD)

	SAMPLE ID>	16-JUN-92 13-001-D001		16-JUN-92 13-003-D002			16-JUN-92 13-001-W001		16-JUN-92 13-002-W001		13-003-W001	
		(SEDIMENT)					(SURFACE WATER)					
INORGANICS	UNITS					UNITS						
Aluminum, Total	MG/KG					MG/L	407	=	1350	=	2630	=
Antimony, Total	MG/KG					MG/L	36	U	36	U	36	U
Arsenic, Total	MG/KG					MG/L	2	U	2	U	2	U
Barium, Total	MG/KG					MG/L	41.9	B	43.4	B	41.5	B
Beryllium, Total	MG/KG					MG/L	1.2	B	1	U	1	U
Cadmium, Total	MG/KG					MG/L	4	U	4	U	4	U
Calcium, Total	MG/KG					MG/L	7960	=	2360	B	1890	B
Chromium, Total	MG/KG					MG/L	7	U	9.4	B	35.9	=
Cobalt, Total	MG/KG					MG/L	7	U	7	U	7	U
Copper, Total	MG/KG					MG/L	7	U	7	U	7	U
Iron, Total	MG/KG					MG/L	86.9	B	499	=	5750	=
Lead, Total	MG/KG					MG/L	2	U	16.9	=	13.4	U
Magnesium, Total	MG/KG					MG/L	1330	B	2090	B	2300	B
Manganese, Total	MG/KG					MG/L	62	=	60.5	=	61.6	=
Mercury, Total	MG/KG					MG/L	0.1	U	0.1	U	0.1	U
Nickel, Total	MG/KG					MG/L	18	U	18	U	21.9	B
Potassium, Total	MG/KG					MG/L	896	U	1050	=	2380	B
Selenium, Total	MG/KG					MG/L	2	U	2	U	2	U
Silver, Total	MG/KG					MG/L	8	U	8	U	8	U
Sodium, Total	MG/KG					MG/L	4410	B	3770	B	4270	B
Thallium, Total	MG/KG					MG/L	2	U	2	U	2	U
Vanadium, Total	MG/KG					MG/L	11.8	B	10.7	B	13.9	B
Zinc, Total	MG/KG					MG/L	30.1	=	53.1	=	72.7	=
Cyanide, Total	MG/KG					MG/L	20	U	10	U	10	U
PESTICIDES												
ALPHA-BHC	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
BETA-BHC	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
DELTA-BHC	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
GAMMA-BHC (LINDANE)	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
HEPTACHLOR	UG/KG	2.1	U	0.43	J	UG/L	0.051	U	0.055	U	0.052	U
ALDRIN	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
HEPTACHLOR EPOXIDE	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
ENDOSULFAN I	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
DIELDRIN	UG/KG	4.2	U	4.3	U	UG/L	0.1	U	0.11	U	0.1	U
4,4'-DDE	UG/KG	0.84	J	4.3		UG/L	0.1	U	0.11	U	0.1	U
ENDRIN	UG/KG	4.2	U	4.3		UG/L	0.1	U	0.11	U	0.1	U
ENDOSULFAN II	UG/KG	4.2	U	4.3		UG/L	0.1	U	0.11	U	0.1	U
4,4'-DDD	UG/KG	7.2	U	–	R	UG/L	0.1	U	0.11	U	0.1	U
ENDOSULFAN SULFATE	UG/KG	4.2	U	4.3		UG/L	0.1	U	0.11	U	0.1	U
4,4'-DDT	UG/KG	5.9	U	–	R	UG/L	0.1	U	0.11	U	0.1	U
METHOXYCHLOR	UG/KG	21	U	21	U	UG/L	0.51	U	0.55	U	0.52	U
ENDRIN KETONE	UG/KG	4.2	U	4.3	U	UG/L	0.1	U	0.11	U	0.1	U
ENDRIN ALDEHYDE	UG/KG	4.2	U	4.3	U	UG/L	0.1	U	0.11	U	0.1	U
ALPHA CHLORDANE	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
GAMMA CHLORDANE	UG/KG	2.1	U	2.1	U	UG/L	0.051	U	0.055	U	0.052	U
TOXAPHENE	UG/KG	210	U	210	U	UG/L	5.1	U	5.5	U	5.2	U

SISE13.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992), NWS EARLE, SITE 13
(DEFENSE PROPERTY DISPOSAL OFFICE YARD)

		16-JUN-92		16-JUN-92			16-JUN-92		16-JUN-92					
SAMPLE ID >		13-001-D001		13-003-D002			13-001-W001		13-002-W001		13-003-W001			
		(SEDIMENT)					(SURFACE WATER)							
PCB's														
AROCHLOR-1016	UG/KG	42	U	43	U	UG/L	1	U	1.1	U	1	U		
AROCHLOR-1221	UG/KG	84	U	85	U	UG/L	2	U	2.2	U	2.1	U		
AROCHLOR-1232	UG/KG	42	U	43	U	UG/L	1	U	1.1	U	1	U		
AROCHLOR-1242	UG/KG	42	U	43	U	UG/L	1	U	1.1	U	1	U		
AROCHLOR-1248	UG/KG	42	U	43	U	UG/L	1	U	1.1	U	1	U		
AROCHLOR-1254	UG/KG	42	U	43	U	UG/L	1	U	1.1	U	1	U		
AROCHLOR-1260	UG/KG	27	J	42	J	UG/L	1	U	1.1	U	1	U		
SEMIVOLATILE ORGANICS														
PHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BIS(2-CHLOROETHYL)ETHER	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2-CHLOROPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
1,3-DICHLOROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
1,4-DICHLOROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
1,2-DICHLOROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2-METHYLPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-METHYLPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
HEXACHLOROETHANE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
NITROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
ISOPHORONE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2-NITROPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4-DIMETHYLPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BIS(2-CHLOROETHOXY)METHANE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4-DICHLOROPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
1,2,4-TRICHLOROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
NAPHTHALENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-CHLOROANILINE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
HEXACHLOROBUTADIENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-CHLORO-3-METHYLPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2-METHYLNAPHTHALENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
HEXACHLOROCYCLOPENTADIENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4,6-TRICHLOROPHENOL	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4,5-TRICHLOROPHENOL	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
2-CHLORONAPHTHALENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2-NITROANILINE	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
DIMETHYLPHTHALATE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
ACENAPHTHYLENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,6-DINITROTOLUENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
3-NITROANILINE	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
ACENAPHTHENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4-DINITROPHENOL	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
4-NITROPHENOL	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
DIBENZOFURAN	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
2,4-DINITROTOLUENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
DIETHYLPHTHALATE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-CHLOROPHENYL-PHENYLETHER	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
FLUORENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-NITROANILINE	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1000	U	1900	U	UG/L	24	U	24	U	24	U		
N-NITROSODIPHENYLAMINE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
4-BROMOPHENYL-PHENYLETHER	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
HEXACHLOROBENZENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		

SISE13.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992), NWS EARLE, SITE 13
(DEFENSE PROPERTY DISPOSAL OFFICE YARD)

		16-JUN-92		16-JUN-92			16-JUN-92		16-JUN-92		16-JUN-92			
	SAMPLE ID >	13-001-D001		13-003-D002			13-001-W001		13-002-W001		13-003-W001			
		(SEDIMENT)					(SURFACE WATER)							
PENTACHLOROPHENOL	UG/KG	1000	U	1900	U	UG/L	26	U	26	U	26	U		
PHENANTHRENE	UG/KG	21	J	740	U	UG/L	10	U	10	U	10	U		
ANTHRACENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
CARBAZOLE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
DI-N-BUTYLPHTHALATE	UG/KG	48	J	740	U	UG/L	10	U	10	U	10	U		
FLUORANTHENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
PYRENE	UG/KG	22	J	740	U	UG/L	10	U	10	U	10	U		
BUTYLBENZYLPHTHALATE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
3,3'-DICHLOROBENZIDINE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BENZO(A)ANTHRACENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
CHRYSENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	720	U	940	U	UG/L	24	U	14	U	20	U		
DI-N-OCTYLPHTHALATE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BENZO(B)FLUORANTHENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BENZO(K)FLUORANTHENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BENZO(A)PYRENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
INDENO(1,2,3-CD)PYRENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
DIBENZ(A,H)ANTHRACENE	UG/KG	420	U	740	U	UG/L	10	U	10	U	10	U		
BENZO(G,H,I)PERYLENE	UG/KG	420	U	740	U	IFLR	10	U	10	U	10	U		

SISOIL15.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

	SAMPLE ID>	07-MAY-92 15-001-B008			07-MAY-92 15-002-B007	
BNA's	UNITS					
PHENOL	UG/KG		380	U	24	J
BIS(2-CHLOROETHYL)ETHER	UG/KG		380	U	390	U
2-CHLOROPHENOL	UG/KG		380	U	390	U
1,3-DICHLOROBENZENE	UG/KG		380	U	390	U
1,4-DICHLOROBENZENE	UG/KG		380	U	390	U
1,2-DICHLOROBENZENE	UG/KG		380	U	390	U
2-METHYLPHENOL	UG/KG		380	U	390	U
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG		380	U	390	U
4-METHYLPHENOL	UG/KG		380	U	390	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG		380	U	390	U
HEXACHLOROETHANE	UG/KG		380	U	390	U
NITROBENZENE	UG/KG		380	U	390	U
ISOPHORONE	UG/KG		380	U	390	U
2-NITROPHENOL	UG/KG		380	U	390	U
2,4-DIMETHYLPHENOL	UG/KG		380	U	390	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG		380	U	390	U
2,4-DICHLOROPHENOL	UG/KG		380	U	390	U
1,2,4-TRICHLOROBENZENE	UG/KG		380	U	390	U
NAPHTHALENE	UG/KG		380	U	390	U
4-CHLOROANILINE	UG/KG		380	U	390	U
HEXACHLOROBUTADIENE	UG/KG		380	U	390	U
4-CHLORO-3-METHYLPHENOL	UG/KG		380	U	390	U
2-METHYLNAPHTHALENE	UG/KG		380	U	390	U
HEXACHLOROCYCLOPENTADIENE	UG/KG		380	U	390	U
2,4,6-TRICHLOROPHENOL	UG/KG		380	U	390	U
2,4,5-TRICHLOROPHENOL	UG/KG		960	U	960	U
2-CHLORONAPHTHALENE	UG/KG		380	U	390	U
2-NITROANILINE	UG/KG		960	U	960	U
DIMETHYLPHTHALATE	UG/KG		380	U	390	U
ACENAPHTHYLENE	UG/KG		380	U	390	U
2,6-DINITROTOLUENE	UG/KG		380	U	390	U
3-NITROANILINE	UG/KG		960	U	960	U
ACENAPHTHENE	UG/KG		380	U	390	U
2,4-DINITROPHENOL	UG/KG		960	U	960	U
4-NITROPHENOL	UG/KG		960	U	960	U
DIBENZOFURAN	UG/KG		380	U	390	U
2,4-DINITROTOLUENE	UG/KG		380	U	390	U
DIETHYLPHTHALATE	UG/KG		380	U	390	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG		380	U	390	U
FLUORENE	UG/KG		380	U	390	U
4-NITROANILINE	UG/KG		960	U	960	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG		960	U	960	U
N-NITROSODIPHENYLAMINE	UG/KG		380	U	390	U
4-BROMOPHENYL-PHENYLETHER	UG/KG		380	U	390	U
HEXACHLOROBENZENE	UG/KG		380	U	390	U

SISOIL15.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

			07-MAY-92		07-MAY-92	
SAMPLE ID>			15-001-B008		15-002-B007	
PENTACHLOROPHENOL	UG/KG		960	U	960	U
PHENANTHRENE	UG/KG		380	U	390	U
ANTHRACENE	UG/KG		380	U	390	U
CARBAZOLE	UG/KG		380	U	390	U
DI-N-BUTYLPHTHALATE	UG/KG		150	J	110	J
FLUORANTHENE	UG/KG		380	U	390	U
PYRENE	UG/KG		380	U	390	U
BUTYLBENZYLPHTHALATE	UG/KG		47	J	22	J
3,3'-DICHLOROBENZIDINE	UG/KG		380	U	390	U
BENZO(A)ANTHRACENE	UG/KG		380	U	390	U
CHRYSENE	UG/KG		380	U	390	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG		530	J	190	J
DI-N-OCTYLPHTHALATE	UG/KG		380	U	390	U
BENZO(B)FLUORANTHENE	UG/KG		380	U	390	U
BENZO(K)FLUORANTHENE	UG/KG		380	U	390	U
BENZO(A)PYRENE	UG/KG		380	U	390	U
INDENO(1,2,3-CD)PYRENE	UG/KG		380	U	390	U
DIBENZ(A,H)ANTHRACENE	UG/KG		380	U	390	U
BENZO(G,H,I)PERYLENE	UG/KG		380	U	390	U

SISE15.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

		SAMPLE ID>	07-MAY-92 15-001-D001		07-MAY-92 15-002-D001		07-MAY-92 15-003-D001		07-MAY-92 15-004-D001	
BNA's	UNITS									
PHENOL	UG/KG	230	J	430	U	420	U	410	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	420	U	430	U	420	U	410	U
2-CHLOROPHENOL	UG/KG	420	U	430	U	420	U	410	U
1,3-DICHLOROBENZENE	UG/KG	420	U	430	U	420	U	410	U
1,4-DICHLOROBENZENE	UG/KG	420	U	430	U	420	U	410	U
1,2-DICHLOROBENZENE	UG/KG	420	U	430	U	420	U	410	U
2-METHYLPHENOL	UG/KG	420	U	430	U	420	U	410	U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	420	U	430	U	420	U	410	U
4-METHYLPHENOL	UG/KG	420	U	430	U	420	U	410	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	420	U	430	U	420	U	410	U
HEXACHLOROETHANE	UG/KG	420	U	430	U	420	U	410	U
NITROBENZENE	UG/KG	420	U	430	U	420	U	410	U
ISOPHORONE	UG/KG	420	U	430	U	420	U	410	U
2-NITROPHENOL	UG/KG	420	U	430	U	420	U	410	U
2,4-DIMETHYLPHENOL	UG/KG	420	U	430	U	420	U	410	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	420	U	430	U	420	U	410	U
2,4-DICHLOROPHENOL	UG/KG	420	U	430	U	420	U	410	U
1,2,4-TRICHLOROBENZENE	UG/KG	420	U	430	U	420	U	410	U
NAPHTHALENE	UG/KG	420	U	430	U	420	U	410	U
4-CHLOROANILINE	UG/KG	420	U	430	U	420	U	410	U
HEXACHLOROBUTADIENE	UG/KG	420	U	430	U	420	U	410	U
4-CHLORO-3-METHYLPHENOL	UG/KG	420	U	430	U	420	U	410	U
2-METHYLNAPHTHALENE	UG/KG	420	U	430	U	420	U	410	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	420	U	430	U	420	U	410	U
2,4,6-TRICHLOROPHENOL	UG/KG	420	U	430	U	420	U	410	U
2,4,5-TRICHLOROPHENOL	UG/KG	420	U	430	U	420	U	410	U
2-CHLORONAPHTHALENE	UG/KG	1000	U	1100	U	1000	U	1000	U
2-NITROANILINE	UG/KG	420	U	430	U	420	U	410	U
DIMETHYLPHTHALATE	UG/KG	1000	U	1100	U	1000	U	1000	U
ACENAPHTHYLENE	UG/KG	420	U	430	U	420	U	410	U
2,6-DINITROTOLUENE	UG/KG	420	U	430	U	420	U	410	U
3-NITROANILINE	UG/KG	420	U	430	U	420	U	410	U
ACENAPHTHENE	UG/KG	1000	U	1100	U	1000	U	1000	U
2,4-DINITROPHENOL	UG/KG	420	U	430	U	420	U	410	U
4-NITROPHENOL	UG/KG	1000	U	1100	U	1000	U	1000	U
DIBENZOFURAN	UG/KG	1000	U	1100	U	1000	U	1000	U
2,4-DINITROTOLUENE	UG/KG	420	U	430	U	420	U	410	U
DIETHYLPHTHALATE	UG/KG	420	U	430	U	420	U	410	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	23000	=	430	U	420	U	410	U
FLUORENE	UG/KG	420	U	430	U	420	U	410	U
4-NITROANILINE	UG/KG	420	U	430	U	420	U	410	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1000	U	1100	U	1000	U	1000	U
N-NITROSODIPHENYLAMINE	UG/KG	1000	U	1100	U	1000	U	1000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	420	U	430	U	420	U	410	U
HEXACHLOROBENZENE	UG/KG	420	U	430	U	420	U	410	U
	UG/KG	420	U	430	U	420	U	410	U

SISE15.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

		07-MAY-92		07-MAY-92		07-MAY-92		07-MAY-92	
SAMPLE ID>		15-001-D001		15-002-D001		15-003-D001		15-004-D001	
PENTACHLOROPHENOL	UG/KG	1000	U	1100	U	1000	U	1000	U
PHENANTHRENE	UG/KG	420	U	58	J	420	U	48	J
ANTHRACENE	UG/KG	420	U	36	J	420	U	36	J
CARBAZOLE	UG/KG	420	U		R	420	U	24	J
DI-N-BUTYLPHTHALATE	UG/KG	56	J	31	J	34	J	32	J
FLUORANTHENE	UG/KG	33	J	250	J	41	J	140	J
PYRENE	UG/KG	420	U	180	J	23	J	110	J
BUTYLBENZYLPHTHALATE	UG/KG	420	U	430	U	420	U	21	J
3,3'-DICHLOROBENZIDINE	UG/KG	420	U	430	U	420	U	410	U
BENZO(A)ANTHRACENE	UG/KG	420	U	74	J	420	U	57	J
CHRYSENE	UG/KG	420	U	160	J	28	J	120	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	34	J	51	J	290	J	63	J
DI-N-OCTYLPHTHALATE	UG/KG	420	U	430	U	420	U	410	U
BENZO(B)FLUORANTHENE	UG/KG	420	U	140	J	28	J	120	J
BENZO(K)FLUORANTHENE	UG/KG	420	U	130	J	24	J	100	J
BENZO(A)PYRENE	UG/KG	420	U	63	J	420	U	410	U
INDENO(1,2,3-CD)PYRENE	UG/KG	420	U	61	J	420	U	31	J
DIBENZ(A,H)ANTHRACENE	UG/KG	420	U	430	U	420	U	410	U
BENZO(G,H,I)PERYLENE	UG/KG	420	U	39	J	420	U	38	J

SIHP15.WK3

SUMMARY OF (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

	SAMPLE ID>	07-MAY-92 15-001-K011 HYDROPUNCH		07-MAY-92 15-001-K211 TRIP BLANK	
INORGANICS	UNITS				
Aluminum, Total	UG/L	621000	=	49.8	U
Antimony, Total	UG/L	360	R	36	R
Arsenic, Total	UG/L	20	R	2	R
Barium, Total	UG/L	2040	=	7	U
Beryllium, Total	UG/L	42.5	=	1	U
Cadmium, Total	UG/L	11.9	=	4	U
Calcium, Total	UG/L	37900	=	62	U
Chromium, Total	UG/L	1840	=	7	U
Cobalt, Total	UG/L	388	=	7	U
Copper, Total	UG/L	189	R	7	U
Iron, Total	UG/L	3070000	=	206	=
Lead, Total	UG/L	264	=	2	U
Magnesium, Total	UG/L	65800	=	69	U
Manganese, Total	UG/L	7620	=	2	U
Mercury, Total	UG/L	2.8	=	1.9	U
Nickel, Total	UG/L	557	=	18	U
Potassium, Total	UG/L	52000	=	896	U
Selenium, Total	UG/L	20	U	2	U
Silver, Total	UG/L	198	=	8	U
Sodium, Total	UG/L	16200	=	117	U
Thallium, Total	UG/L	20	R	2	R
Vanadium, Total	UG/L	541	=	5	U
Zinc, Total	UG/L	1470	=	6	U
PESTICIDES					
ALPHA-BHC	UG/L	0.056	U	0.056	U
BETA-BHC	UG/L	0.056	U	0.056	U
DELTA-BHC	UG/L	0.056	U	0.056	U
GAMMA-BHC (LINDANE)	UG/L	0.056	U	0.056	U
HEPTACHLOR	UG/L	0.056	U	0.056	U
ALDRIN	UG/L	0.056	U	0.056	U
HEPTACHLOR EPOXIDE	UG/L	0.056	U	0.056	U
ENDOSULFAN I	UG/L	0.056	U	0.056	U
DIELDRIN	UG/L	0.11	U	0.11	U
4,4'-DDE	UG/L	0.11	U	0.11	U
ENDRIN	UG/L	0.11	U	0.11	U
ENDOSULFAN II	UG/L	0.11	U	0.11	U
4,4'-DDD	UG/L	0.11	U	0.11	U
ENDOSULFAN SULFATE	UG/L	0.11	U	0.11	U
4,4'-DDT	UG/L	0.11	U	0.11	U
METHOXYCHLOR	UG/L	0.56	U	0.56	U
ENDRIN KETONE	UG/L	0.11	U	0.11	U
ENDRIN ALDEHYDE	UG/L	0.11	U	0.11	U
ALPHA CHLORDANE	UG/L	0.056	U	0.056	U
GAMMA CHLORDANE	UG/L	0.056	U	0.056	U
TOXAPHENE	UG/L	5.6	U	5.6	U

SIHP15.WK3

SUMMARY OF (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

		07-MAY-92		07-MAY-92	
SAMPLE ID>		15-001-K011		15-001-K211	
		HYDROPUNCH		TRIP BLANK	
PCB's					
AROCHLOR-1016	UG/L	1.1	U	1.1	U
AROCHLOR-1221	UG/L	2.2	U	2.2	U
AROCHLOR-1232	UG/L	1.1	U	1.1	U
AROCHLOR-1242	UG/L	1.1	U	1.1	U
AROCHLOR-1248	UG/L	1.1	U	1.1	U
AROCHLOR-1254	UG/L	1.1	U	1.1	U
AROCHLOR-1260	UG/L	1.1	U	1.1	U
ORGANICS					
CHLOROMETHANE	UG/L	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U
METHYLENE CHLORIDE	UG/L	9	JB	10	U
ACETONE	UG/L	18	=	4	J
CARBON DISULFIDE	UG/L	10	U	10	U
1,1-DICHLOROETHYLENE	UG/L	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	J
CHLOROFORM	UG/L	10	U	6	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U
TRICHLOROETHYLENE	UG/L	10	U	10	U
DIBROMOCHLOROMETHANE	UG/L	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U
BENZENE	UG/L	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U
BROMOFORM	UG/L	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U
TETRACHLOROETHYLENE	UG/L	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U
TOLUENE	UG/L	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U
STYRENE	UG/L	10	U	10	U
XYLENES (TOTAL)	UG/L	10	U	10	U
PHENOL	UG/L	16	U	10	U

SIHP15.WK3

SUMMARY OF (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

SAMPLE ID>		07-MAY-92 15-001-K011 HYDROPUNCH		07-MAY-92 15-001-K211 TRIP BLANK	
BIS(2-CHLOROETHYL)ETHER	UG/L	16	U	10	U
2-CHLOROPHENOL	UG/L	16	U	10	U
1,3-DICHLOROBENZENE	UG/L	16	U	10	U
1,4-DICHLOROBENZENE	UG/L	16	U	10	U
1,2-DICHLOROBENZENE	UG/L	16	U	10	U
2-METHYLPHENOL	UG/L	16	U	10	U
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	16	U	10	U
4-METHYLPHENOL	UG/L	16	U	10	U
N-NITROSO-DI-N-PROPYLAMINE	UG/L	16	U	10	U
HEXACHLOROETHANE	UG/L	16	U	10	U
NITROBENZENE	UG/L	16	U	10	U
ISOPHORONE	UG/L	16	U	10	U
2-NITROPHENOL	UG/L	16	U	10	U
2,4-DIMETHYLPHENOL	UG/L	16	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	16	U	10	U
2,4-DICHLOROPHENOL	UG/L	16	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	16	U	10	U
NAPHTHALENE	UG/L	16	U	10	U
4-CHLOROANILINE	UG/L	16	U	10	U
HEXACHLOROBUTADIENE	UG/L	16	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	16	U	10	U
2-METHYLNAPHTHALENE	UG/L	16	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	16	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	16	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	40	U	26	U
2-CHLORONAPHTHALENE	UG/L	16	U	10	U
2-NITROANILINE	UG/L	40	U	26	U
DIMETHYLPHTHALATE	UG/L	16	U	10	U
ACENAPHTHYLENE	UG/L	16	U	10	U
2,6-DINITROTOLUENE	UG/L	16	U	10	U
3-NITROANILINE	UG/L	40	U	26	U
ACENAPHTHENE	UG/L	16	U	10	U
2,4-DINITROPHENOL	UG/L	40	U	26	U
4-NITROPHENOL	UG/L	40	U	26	U
DIBENZOFURAN	UG/L	16	U	10	U
2,4-DINITROTOLUENE	UG/L	16	U	10	U
DIETHYLPHTHALATE	UG/L	1	J	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	16	U	10	U
FLUORENE	UG/L	16	U	10	U
4-NITROANILINE	UG/L	40	U	26	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	40	U	26	U
N-NITROSODIPHENYLAMINE	UG/L	16	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	16	U	10	U
HEXACHLOROBENZENE	UG/L	16	U	10	U

SIHP15.WK3

SUMMARY OF (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 15 (BILGE WATER DISPOSAL SITE)

		07-MAY-92		07-MAY-92	
	SAMPLE ID>	15-001-K011 HYDROPUNCH		15-001-K211 TRIP BLANK	
PENTACHLOROPHENOL	UG/L	40	U	26	U
PHENANTHRENE	UG/L	16	U	10	U
ANTHRACENE	UG/L	16	U	10	U
CARBAZOLE	UG/L	16	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	1	J	10	J
FLUORANTHENE	UG/L	16	U	10	U
PYRENE	UG/L	16	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	16	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	16	U	10	U
BENZO(A)ANTHRACENE	UG/L	16	U	10	U
CHRYSENE	UG/L	16	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	16	U	10	U
DI-N-OCTYLPHTHALATE	UG/L	16	U	10	U
BENZO(B)FLUORANTHENE	UG/L	16	U	10	U
BENZO(K)FLUORANTHENE	UG/L	16	U	10	U
BENZO(A)PYRENE	UG/L	16	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	16	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	16	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	16	U	10	U

SISOIL16.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL
RESULTS (JULY 1992) NWS EARLE, SITE16
(FUEL LINE CONNECTING BUILDINGS C-19 & C50)

BNA's	UNITS	31-JUL-92 SAMPLE ID>16-001-B007		31-JUL-92 16-001-B207 TRIP BLANK (µg/L)		31-JUL-92 16-002-B007		31-JUL-92 16-003-B010		31-JUL-92 16-003-B110		31-JUL-92 16-004-B008		31-JUL-92 16-005-B008	
PHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2-CHLOROPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
1,3-DICHLOROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
1,4-DICHLOROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
1,2-DICHLOROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2-METHYLPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
4-METHYLPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
HEXACHLOROETHANE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
NITROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
ISOPHORONE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2-NITROPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4-DIMETHYLPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4-DICHLOROPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
1,2,4-TRICHLOROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
NAPHTHALENE	UG/KG	22000	J	10	U	16000	=	25000	=	56000	U	18000	=	4000	J
4-CHLOROANILINE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
HEXACHLOROBUTADIENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2-METHYLNAPHTHALENE	UG/KG	78000	=	10	U	59000	=	86000	=	110000	=	64000	=	15000	=
HEXACHLOROCYCLOPENTADIENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4,6-TRICHLOROPHENOL	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4,5-TRICHLOROPHENOL	UG/KG	150000	U	10	U	29000	U	30000	U	140000	U	28000	U	29000	U
2-CHLORONAPHTHALENE	UG/KG	59000	U	26	U	11000	U	12000	U	56000	U	11000	U	11000	U
2-NITROANILINE	UG/KG	150000	U	10	U	29000	U	30000	U	140000	U	28000	U	29000	U
DIMETHYLPHTHALATE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
ACENAPHTHYLENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,6-DINITROTOLUENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
3-NITROANILINE	UG/KG	150000	U	26	U	29000	U	30000	U	140000	U	28000	U	29000	U
ACENAPHTHENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4-DINITROPHENOL	UG/KG	150000	U	26	U	29000	U	30000	U	140000	U	28000	U	29000	U
4-NITROPHENOL	UG/KG	150000	U	26	U	11000	U	30000	U	140000	U	28000	U	29000	U
DIBENZOFURAN	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
2,4-DINITROTOLUENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
DIETHYLPHTHALATE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
FLUORENE	UG/KG	59000	U	10	U	4600	J	12000	U	56000	U	11000	U	11000	U
4-NITROANILINE	UG/KG	150000	U	26	U	29000	U	30000	U	140000	U	28000	U	29000	U

SISOIL16.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL
RESULTS (JULY 1992) NWS EARLE, SITE16
(FUEL LINE CONNECTING BUILDINGS C-19 & C50)

		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92		31-JUL-92	
	SAMPLE ID>	16-001-B007		16-001-B207 TRIP BLANK (µg/L)		16-002-B007		16-003-B010		16-003-B110		16-004-B008		16-005-B008	
4,6-DINITRO-2-METHYLPHENOL	UG/KG	150000	U	26	U	29000	U	30000	U	140000	U	28000	U	29000	U
N-NITROSODIPHENYLAMINE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
HEXACHLOROBENZENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
PENTACHLOROPHENOL	UG/KG	150000	U	26	U	29000	U	30000	U	140000	U	28000	U	29000	U
PHENANTHRENE	UG/KG	14000	J	10	U	9300	J	11000	J	16000	J	9700	J	2500	J
ANTHRACENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
CARBAZOLE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
DI-N-BUTYLPHTHALATE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
FLUORANTHENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
PYRENE	UG/KG	59000	U	10	U	1200	J	12000	U	56000	U	11000	U	11000	U
BUTYLBENZYLPHTHALATE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
3,3'-DICHLOROBENZIDINE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BENZO(A)ANTHRACENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
CHRYSENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	59000	U	10	U	1800	J	1200	J	56000	U	11000	U	1400	J
DI-N-OCTYLPHTHALATE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BENZO(B)FLUORANTHENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BENZO(K)FLUORANTHENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BENZO(A)PYRENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
BENZO(G,H,I)PERYLENE	UG/KG	59000	U	10	U	11000	U	12000	U	56000	U	11000	U	11000	U
TPH	MG/KG	14000		1.1		9800		22000		22000		13000		4700	

SISE17.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE17 (DISPOSAL SITE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	17-001-D001		17-002-D001		17-003-D001		17-004-D001	
INORGANICS	UNITS								
Aluminum, Total	MG/KG	NR		NR		1530	=		
Antimony, Total	MG/KG	NR		NR		8.79	U		
Arsenic, Total	MG/KG	NR		NR		3.5	=		
Barium, Total	MG/KG	NR		NR		5.5	B		
Beryllium, Total	MG/KG	NR		NR		0.27	B		
Cadmium, Total	MG/KG	NR		NR		0.98	U		
Calcium, Total	MG/KG	NR		NR		959	=		
Chromium, Total	MG/KG	NR		NR		12.4	=		
Cobalt, Total	MG/KG	NR		NR		1.71	U		
Copper, Total	MG/KG	NR		NR		6.4	=		
Iron, Total	MG/KG	NR		NR		10400	=		
Lead, Total	MG/KG	NR		NR		12.8	=		
Magnesium, Total	MG/KG	NR		NR		386	B		
Manganese, Total	MG/KG	NR		NR		29.6	=		
Mercury, Total	MG/KG	NR		NR		0.06	U		
Nickel, Total	MG/KG	NR		NR		4.39	U		
Potassium, Total	MG/KG	NR		NR		219	B		
Selenium, Total	MG/KG	NR		NR		0.49	U		
Silver, Total	MG/KG	NR		NR		1.95	U		
Sodium, Total	MG/KG	NR		NR		5500	=		
Thallium, Total	MG/KG	NR		NR		0.49	U		
Vanadium, Total	MG/KG	NR		NR		16.1	=		
Zinc, Total	MG/KG	NR		NR		33.9	=		
Cyanide, Total	MG/KG	NR		NR		3.09	=		
PESTICIDES									
ALPHA-BHC	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
BETA-BHC	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
DELTA-BHC	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
GAMMA-BHC (LINDANE)	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
HEPTACHLOR	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
ALDRIN	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
HEPTACHLOR EPOXIDE	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
ENDOSULFAN I	UG/KG	4.7	U	3.4	U	2.1	U	5.4	U
DIELDRIN	UG/KG	4.7	U	6.7	U	4.3	U	11	U
4,4'-DDE	UG/KG	13	=	6.7	U	6.4	=	120	=
ENDRIN	UG/KG	9.5	U	6.7	U	4.3	U	11	U
ENDOSULFAN II	UG/KG	9.5	U	6.7	U	4.3	U	11	U
4,4'-DDD	UG/KG	5.7	J	6.7	U	4.3	U	19	J
ENDOSULFAN SULFATE	UG/KG	9.5	U	6.7	U	4.3	U	11	U
4,4'-DDT	UG/KG	35	=	6.7	U	4.3	J	210	=
METHOXYCHLOR	UG/KG	47	U	34	U	21	U	54	U
ENDRIN KETONE	UG/KG	9.5	U	6.7	U	4.3	U	11	U
ENDRIN ALDEHYDE	UG/KG	9.5	U	6.7	U	210	=	11	U
ALPHA CHLORDANE	UG/KG	16	U	3.4	U	23	=	42	J
GAMMA CHLORDANE	UG/KG	6.6	=	3.4	U	23	=	16	J
TOXAPHENE	UG/KG	470	U	340	U	210	U	540	U

SISE17.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE17 (DISPOSAL SITE BEHIND TRAINING BARGE)

	SAMPLE ID>	16-JUN-92 17-001-D001		16-JUN-92 17-002-D001		16-JUN-92 17-003-D001		16-JUN-92 17-004-D001	
PCB's									
AROCHLOR-1016	UG/KG	95	U	67	U	43	U	110	U
AROCHLOR-1221	UG/KG	190	U	130	U	86	U	220	U
AROCHLOR-1232	UG/KG	95	U	67	U	43	U	110	U
AROCHLOR-1242	UG/KG	95	U	67	U	43	U	110	U
AROCHLOR-1248	UG/KG	95	U	67	U	43	U	110	U
AROCHLOR-1254	UG/KG	95	U	67	U	43	U	110	U
AROCHLOR-1260	UG/KG	95	U	67	U	43	U	110	U
ORGANICS									
CHLOROMETHANE	UG/KG	10	U	10	U	13	U	32	U
BROMOMETHANE	UG/KG	10	U	10	U	13	U	32	U
VINYL CHLORIDE	UG/KG	10	U	10	U	13	U	32	U
CHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
METHYLENE CHLORIDE	UG/KG	11	B	20	U	20	B	46	B
ACETONE	UG/KG	10	U	44	U	150	B	32	B
CARBON DISULFIDE	UG/KG	10	U	10	U	13	U	11	U
1,1-DICHLOROETHYLENE	UG/KG	10	U	10	U	13	U	32	U
1,1-DICHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	10	U	13	U	32	U
CHLOROFORM	UG/KG	10	U	10	U	13	U	32	U
1,2-DICHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
2-BUTANONE	UG/KG	10	U	10	U	42	J	190	=
1,1,1-TRICHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
CARBON TETRACHLORIDE	UG/KG	10	U	10	U	13	U	32	U
BROMODICHLOROMETHANE	UG/KG	10	U	10	U	13	U	32	U
1,2-DICHLOROPROPANE	UG/KG	10	U	10	U	13	U	32	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	13	U	32	U
TRICHLOROETHYLENE	UG/KG	10	U	10	U	13	U	32	U
DIBROMOCHLOROMETHANE	UG/KG	10	U	10	U	13	U	32	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
BENZENE	UG/KG	10	U	10	U	13	U	32	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	13	U	32	U
BROMOFORM	UG/KG	10	U	10	U	13	U	32	U
4-METHYL-2-PENTANONE	UG/KG	10	U	10	U	13	U	32	U
2-HEXANONE	UG/KG	10	U	10	U	13	U	32	U
TETRACHLOROETHYLENE	UG/KG	10	U	10	U	13	U	32	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	10	U	13	U	32	U
TOLUENE	UG/KG	10	U	10	U	13	U	3	J
CHLOROBENZENE	UG/KG	10	U	10	U	13	U	32	U
ETHYLBENZENE	UG/KG	10	U	10	U	13	U	32	U
STYRENE	UG/KG	10	U	10	U	13	U	32	U
XYLENES (TOTAL)	UG/KG	10	U	10	U	13	U	32	U
PHENOL	UG/KG	360	U	340	U	430	U	1900	=

SISE17.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE17
(DISPOSAL SITE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		17-001-D001		17-002-D001		17-003-D001		17-004-D001	
BIS(2-CHLOROETHYL)ETHER	UG/KG	360	U	340	U	430	U	890	U
2-CHLOROPHENOL	UG/KG	360	U	340	U	430	U	890	U
1,3-DICHLOROBENZENE	UG/KG	360	U	340	U	430	U	890	U
1,4-DICHLOROBENZENE	UG/KG	360	U	340	U	430	U	890	U
1,2-DICHLOROBENZENE	UG/KG	360	U	340	U	430	U	890	U
2-METHYLPHENOL	UG/KG	360	U	340	U	430	U	890	U
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG	360	U	340	U	430	U	890	U
4-METHYLPHENOL	UG/KG	360	U	340	U	430	U	890	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	360	U	340	U	430	U	890	U
HEXACHLOROETHANE	UG/KG	360	U	340	U	430	U	890	U
NITROBENZENE	UG/KG	360	U	340	U	430	U	890	U
ISOPHORONE	UG/KG	360	U	340	U	430	U	890	U
2-NITROPHENOL	UG/KG	360	U	340	U	430	U	890	U
2,4-DIMETHYLPHENOL	UG/KG	360	U	340	U	430	U	890	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	360	U	340	U	430	U	890	U
2,4-DICHLOROPHENOL	UG/KG	360	U	340	U	430	U	890	U
1,2,4-TRICHLOROBENZENE	UG/KG	360	U	340	U	430	U	890	U
NAPHTHALENE	UG/KG	360	U	340	U	430	U	890	U
4-CHLOROANILINE	UG/KG	360	U	340	U	430	U	890	U
HEXACHLOROBUTADIENE	UG/KG	360	U	340	U	430	U	890	U
4-CHLORO-3-METHYLPHENOL	UG/KG	360	U	340	U	430	U	890	U
2-METHYLNAPHTHALENE	UG/KG	360	U	340	U	430	U	890	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	360	U	340	U	430	U	890	U
2,4,6-TRICHLOROPHENOL	UG/KG	360	U	340	U	430	U	890	U
2,4,5-TRICHLOROPHENOL	UG/KG	900	U	840	U	1100	U	2200	U
2-CHLORONAPHTHALENE	UG/KG	360	U	340	U	430	U	890	U
2-NITROANILINE	UG/KG	900	U	840	U	1100	U	2200	U
DIMETHYLPHTHALATE	UG/KG	360	U	340	U	430	U	890	U
ACENAPHTHYLENE	UG/KG	360	U	340	U	430	U	54	J
2,6-DINITROTOLUENE	UG/KG	360	U	340	U	430	U	890	
3-NITROANILINE	UG/KG	900	U	840	U	1100	U		R
ACENAPHTHENE	UG/KG	360	U	340	U	430	U	890	U
2,4-DINITROPHENOL	UG/KG	900	U	840	U		R	2200	U
4-NITROPHENOL	UG/KG	900	U	840	U	1100	U	2200	U
DIBENZOFURAN	UG/KG	360	U	340	U	430	U	890	U
2,4-DINITROTOLUENE	UG/KG	360	U	340	U	430	U	890	U
DIETHYLPHTHALATE	UG/KG	360	U	340	U	430	U	890	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	360	U	340	U	430	U	890	U
FLUORENE	UG/KG	360	U	340	U	430	U	890	U
4-NITROANILINE	UG/KG	900	U	840	U	1100	U	2200	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	900	U	840	U	1100	U	2200	U
N-NITROSODIPHENYLAMINE	UG/KG	360	U	340	U	430	U	890	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	360	U	340	U	430	U	890	U
HEXACHLOROBENZENE	UG/KG	360	U	340	U	430	U	890	U

SISE17.WK3

SUMMARY OF SEDIMENT AND SURFACE WATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE17
(DISPOSAL SITE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	17-001-D001		17-002-D001		17-003-D001		17-004-D001	
PENTACHLOROPHENOL	UG/KG	900	U	840	U	1100	U	2200	U
PHENANTHRENE	UG/KG	33	J	45	J	32	J	230	J
ANTHRACENE	UG/KG	30	J	26	J	430	U	73	J
CARBAZOLE	UG/KG	360	U	340	U	430	U	890	U
DI-N-BUTYLPHTHALATE	UG/KG	360	U	340	U	28	U	890	U
FLUORANTHENE	UG/KG	110	J	91	J	92	J	460	J
PYRENE	UG/KG	96	J	79	J	65	J	390	J
BUTYLBENZYLPHTHALATE	UG/KG	360	U	340	U	430	U	890	U
3,3'-DICHLOROBENZIDINE	UG/KG	360	U	340	U	430	U	890	U
BENZO(A)ANTHRACENE	UG/KG	60	J	47	J	36	J	890	U
CHRYSENE	UG/KG	85	J	110	J	58	J	120	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	380	U	340	U	76	J	890	U
DI-N-OCTYLPHTHALATE	UG/KG	360	U	340	U	430	U	890	U
BENZO(B)FLUORANTHENE	UG/KG	77	J	76	J	52	J	230	J
BENZO(K)FLUORANTHENE	UG/KG	72	J	60	J	50	J	240	J
BENZO(A)PYRENE	UG/KG	120	J	46	J	47	J	190	J
INDENO(1,2,3-CD)PYRENE	UG/KG	45	J	36	J	430	U	180	J
DIBENZ(A,H)ANTHRACENE	UG/KG	360	U	340	U	430	U	890	U
BENZO(G,H,I)PERYLENE	UG/KG	47	J	37	J	30	J	190	J

SISOL17.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 17, (DISPOSAL SITE BEHIND TRAINING BARG B)

		11-MAY-92		11-MAY-92		11-MAY-92		11-MAY-92		12-MAY-92		12-MAY-92		13-MAY-92		13-MAY-92		13-MAY-92		13-MAY-92	
	SAMPLE ID>	17-002-B006		17-002-B012		17-003-B005		17-003-B008		17-005-B008		17-006-B010		17-006-B006		17-006-B008		17-007-B004		17-007-B010	
INORGANICS	UNITS																				
Aluminum, Total	UG/L	NR		NR		5310	=	4480	=	2400	=	3200	=	4300	=	1040	=	NA		7310	=
Antimony, Total	UG/L	NR		NR		8.67	U	9.89	U	7.87	U	8.39	U	9.13	U	8.61	U	NA		9.66	U
Arsenic, Total	UG/L	NR		NR		13.8	=	7.4	=	2.3	=	3.4	=	3.3	=	11.7	=	NA		3.2	=
Barium, Total	UG/L	NR		NR		14.9	B	10.1	B	13.6	B	6.9	B	7.6	B	5.9	B	NA		7.1	B
Beryllium, Total	UG/L	NR		NR		0.82	B	0.71	b	0.22	U	0.29	B	0.31	B	0.24	U	NA		0.66	U
Cadmium, Total	UG/L	NR		NR		0.96	U	1.1	U	0.87	U	0.91	U	0.97	U	0.94	U	NA		1.1	U
Calcium, Total	UG/L	NR		NR		382	B	173	B	17600	=	560	B	173	B	98.5	B	NA		798	B
Chromium, Total	UG/L	NR		NR		19.4	=	36.1	=	15.3	=	6.3	=	17.5	=	9.9	=	NA		22.8	=
Cobalt, Total	UG/L	NR		NR		5.1	B	2.4	B	3.7	B	1.59	U	1.7	B	1.64	U	NA		6.5	B
Copper, Total	UG/L	NR		NR		9.2	=	15.6	=	19.1	=	2.4	B	4.5	B	1.8	B	NA		12.7	=
Iron, Total	UG/L	NR		NR		20400	=	21000	=	14200	=	8380	=	18200	=	5500	=	NA		103000	=
Lead, Total	UG/L	NR		NR		28.1	=	14.6	=	63.6	=	6	=	9.8	=	5.6	=	NA		15.1	=
Magnesium, Total	UG/L	NR		NR		536	B	208	B	1900	=	127	B	178	B	112	B	NA		285	B
Manganese, Total	UG/L	NR		NR		85.9	=	19.9	=	112	=	22.8	=	16.4	=	8.8	=	NA		127	=
Mercury, Total	UG/L	NR		NR		0.06	U	0.07	U	0.05	U	0.06	U	1.2	=	0.06	U	NA		0.07	U
Nickel, Total	UG/L	NR		NR		4.34	U	4.94	U	11.8	=	4.08	U	4.36	U	4.23	U	NA		4.93	U
Potassium, Total	UG/L	NR		NR		1130	B	724	B	236	B	203	U	375	B	211	U	NA		371	B
Selenium, Total	UG/L	NR		NR		0.49	U	0.55	U	0.44	U	0.46	U	0.48	U	0.45	U	NA		0.54	U
Silver, Total	UG/L	NR		NR		1.93	U	2.2	U	1.7	U	2.3	B	2.03	U	1.91	U	NA		4.8	=
Sodium, Total	UG/L	NR		NR		379	B	1.21	B	1300	=	479	B	53.7	B	65.3	B	NA		73	B
Thallium, Total	UG/L	NR		NR		0.49	U	0.55	U	0.44	U	0.46	U	0.48	U	0.45	U	NA		0.54	U
Vanadium, Total	UG/L	NR		NR		24.7	=	72.5	=	21.4	=	17.8	=	44.2	=	23.4	=	NA		15.7	=
Zinc, Total	UG/L	NR		NR		41.5	=	8.8	=	41.5	=	4.4	U	5.4	=	3	B	NA		24.8	=
CYANIDE	UG/L	NR		NR		1.22	U	1.39	U	1.09	U	1.17	U	1.27	U	1.2	U	NA		1.38	U

SIGW17.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE,
SITE 17(DISPOSAL STTE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID >	17-001-M001		17-002-M001		17-003-M001		17-003-M101		17-004-M001	
	WELL # >	MW-01		MW-02		MW-03		MW-03 (DUPLICATE)		MW-04	
INORGANICS	UNITS										
Aluminum, Total	UG/L	27400	=	23300	=	1990	=	2320	=	5780	=
Antimony, Total	UG/L	36	U	36	U	36	U	36	U	36	U
Arsenic, Total	UG/L	16.5	=	37	=	2	U	2	U	100	U
Barium, Total	UG/L	129	B	82.1	B	68.5	B	77.3	B	551	=
Beryllium, Total	UG/L	6.1	=	2.1	B	1	U	1	U	1	U
Cadmium, Total	UG/L	4	U	4.7	B	4	U	4	U	4	U
Calcium, Total	UG/L	17600	=	15300	=	7410	=	8250	=	466000	=
Chromium, Total	UG/L	139	=	156	=	9.3	B	10.9	=	13.3	=
Cobalt, Total	UG/L	39.1	B	44	B	11.1	B	10.6	B	12.2	B
Copper, Total	UG/L	81.1	=	81.5	=	7	U	7	U	7.1	B
Iron, Total	UG/L	88000	=	71000	=	2300	=	2600	=	136000	=
Lead, Total	UG/L	80	=	56	=	16.4	=	17.6	=	20	U
Magnesium, Total	UG/L	9840	=	5320	=	5260	=	5910	=	76100	=
Manganese, Total	UG/L	1540	=	286	=	290	=	325	=	2380	=
Mercury, Total	UG/L	0.13	B	0.13	B	0.1	U	0.1	U	0.1	U
Nickel, Total	UG/L	41.8	=	43.3	=	18	U	18	U	18	U
Potassium, Total	UG/L	9220	=	9170	=	2640	B	2710	B	58900	=
Selenium, Total	UG/L	2	U	2.2	B	2	U	2	U	40	U
Silver, Total	UG/L	8	U	8	U	8	U	8	U	8	U
Sodium, Total	UG/L	9370	=	14300	=	17900	=	17600	=	703000	=
Thallium, Total	UG/L	20	U	2	U	2	U	2	U	20	U
Vanadium, Total	UG/L	376	=	259	=	10.3	B	10.9	B	51.8	=
Zinc, Total	UG/L	253	=	182	=	90.4	=	63.1	=	75.2	=
PESTICIDES											
ALPHA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
BETA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
DELTA-BHC	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
GAMMA-BHC (LINDANE)	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
HEPTACHLOR	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
ALDRIN	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
HEPTACHLOR EPOXIDE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
ENDOSULFAN I	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
DIELDRIN	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
ENDRIN	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
ENDOSULFAN II	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDD	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
ENDOSULFAN SULFATE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDT	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
METHOXYCHLOR	UG/L	0.5	U	0.5	U	0.5	U	0.5	U	0.51	U
ENDRIN KETONE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
ENDRIN ALDEHYDE	UG/L	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
ALPHA CHLORDANE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
GAMMA CHLORDANE	UG/L	0.05	U	0.05	U	0.05	U	0.05	U	0.051	U
TOXAPHENE	UG/L	5	U	5	U	5	U	5	U	5.1	U

SIGW17.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE,
SITE 17(DISPOSAL STTE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID >		17-001-M001		17-002-M001		17-003-M001		17-003-M101		17-004-M001	
WELL # >		MW-01		MW-02		MW-03		MW-03 (DUPLICATE)		MW-04	
PCB's											
AROCHLOR-1016	UG/L	1	U	1	U	1	U	1	U	1	U
AROCHLOR-1221	UG/L	2	U	2	U	2	U	2	U	2	U
AROCHLOR-1232	UG/L	1	U	1	U	1	U	1	U	1	U
AROCHLOR-1242	UG/L	1	U	1	U	1	U	1	U	1	U
AROCHLOR-1248	UG/L	1	U	1	U	1	U	1	U	1	U
AROCHLOR-1254	UG/L	1	U	1	U	1	U	1	U	1	U
AROCHLOR-1260	UG/L	1	U	1	U	1	U	1	U	1	U
ORGANICS											
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U
ACETONE	UG/L	10	U	35	B	44	B	8	JB	51	B
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIBROMOCHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
XYLENES (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL	UG/L	10	U	10	U	10	U	10	U	10	U

SIGW17.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE,
SITE 17(DISPOSAL STTE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID >	17-001-M001		17-002-M001		17-003-M001		17-003-M101		17-004-M001	
	WELL # >	MW-01		MW-02		MW-03		MW-03 (DUPLICATE)		MW-04	
BIS(2-CHLOROETHYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
N-NITROSO-DI-N-PROPYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
ISOPHORONE	UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
2-CHLORONAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	26	U	26	U	26	U	26	U	26	U
DIMETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	26	U	26	U	26	U	26	U	26	U
ACENAPHTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
4-NITROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
DIBENZOFURAN	UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE	UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	26	U	26	R	26	R	26	R	26	R
4,6-DINITRO-2-METHYLPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
N-NITROSODIPHENYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U

SIGW17.WK3

SUMMARY OF GROUNDWATER SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE,
SITE 17(DISPOSAL STTE BEHIND TRAINING BARGE)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID >	17-001-M001		17-002-M001		17-003-M001		17-003-M101		17-004-M001	
	WELL # >	MW-01		MW-02		MW-03		MW-03 (DUPLICATE)		MW-04	
PENTACHLOROPHENOL	UG/L	26	U	26	U	26	U	26	U	26	U
PHENANTHRENE	UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE	UG/L	10	U	10	R	10	R	10	R	10	R
DI-N-BUTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE	UG/L	10	U	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	18	U	13	U	10	U	11	U	10	U
DI-N-OCTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	10	U	10	U	10	U	10	U	10	U
TYPICAL LANDFILL PARAMETERS											
BOD5 Day	MG/L	3.9		1.7		1.0		19.2		8.8	
Chloride	MG/L	37.6		17.3		34.6		47		19900	
Chemical Oxygen Demand	MG/L	119		79.6		8.1		119		15.9	
Nitrate Nitrite	MG-N/L	0.10	U	0.1		0.10	U	0.10	U	0.20	U
Ammonia, as N	MG/L	0.10	U	0.49		0.10	U	0.10	U	6.6	
Total Organic Carbon	MG/L	4.2		97.2		1.4		1.3		30.9	
Phosphate, as P	MG/L	0.48		0.41		0.028		0.022		0.48	
Sulfate	MG/L	576		12.9		46.8		45.3		260	
Turbidity	NTU	242		288		9.2		10		550	

SISOIL23.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

	SAMPLE ID>	16-JUN-92 23-001-B001		16-JUN-92 23-002-B001		16-JUN-92 23-003-B001		16-JUN-92 23-004-B001		16-JUN-92 23-005-B001		16-JUN-92 23-006-B001	
INORGANICS	UNITS												
Cadmium, Total	MG/KG	0.87	=	0.88	U	0.92	U	0.88	U	2.1	=	0.86	U
Chromium, Total	MG/KG	17.7	=	239	=	40.3	=	17.8	=	51.5	=	7.7	=
Copper, Total	MG/KG	5	B	4.8	B	5.6	B	3	B	6.3	=	2.6	B
Lead, Total	MG/KG	17.8	=	560	=	9.4	=	15.3	=	13.7	=	3.1	=
Zinc, Total	MG/KG	24.7	=	558	=	16.2	=	89.9	=	191	=	4.2	B
PESTICIDES													
ALPHA-BHC	UG/KG					2	U					1.8	U
BETA-BHC	UG/KG					2	U					1.8	U
DELTA-BHC	UG/KG					2	U					1.8	U
GAMMA-BHC (LINDANE)	UG/KG					2	U					1.8	U
HEPTACHLOR	UG/KG					2	U					1.8	U
ALDRIN	UG/KG					2	U					1.8	U
HEPTACHLOR EPOXIDE	UG/KG					2	U					1.8	U
ENDOSULFAN I	UG/KG					2	U					1.8	U
DIELDRIN	UG/KG					4	U					3.7	U
4,4'-DDE	UG/KG					4	U					3.7	U
ENDRIN	UG/KG					4	U					3.7	U
ENDOSULFAN II	UG/KG					4	U					3.7	U
4,4'-DDD	UG/KG					4	U					3.7	U
ENDOSULFAN SULFATE	UG/KG					4	U					3.7	U
4,4'-DDT	UG/KG					4	U					3.7	U
METHOXYCHLOR	UG/KG					20	U					18	U
ENDRIN KETONE	UG/KG					4	U					3.7	U
ENDRIN ALDEHYDE	UG/KG					4	U					3.7	U
ALPHA CHLORDANE	UG/KG					2	U					1.8	U
GAMMA CHLORDANE	UG/KG					2	U					1.8	U
TOXAPHENE	UG/KG					200	U					180	U
PCB's													
AROCHLOR-1016	UG/KG					40	U					37	U
AROCHLOR-1221	UG/KG					80	U					73	U
AROCHLOR-1232	UG/KG					40	U					37	U
AROCHLOR-1242	UG/KG					40	U					37	U
AROCHLOR-1248	UG/KG					40	U					37	U
AROCHLOR-1254	UG/KG					40	U					37	U
AROCHLOR-1260	UG/KG					40	U					37	U
ORGANICS													
CHLOROMETHANE	UG/KG					12	U					11	U
BROMOMETHANE	UG/KG					12	U					11	U
VINYL CHLORIDE	UG/KG					12	U					11	U
CHLOROETHANE	UG/KG					12	U					11	U
METHYLENE CHLORIDE	UG/KG					3	J					8	J
ACETONE	UG/KG					12	U					11	U
CARBON DISULFIDE	UG/KG					12	U					11	U

SISOIL23.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>	16-JUN-92 23-001-B001		16-JUN-92 23-002-B001		16-JUN-92 23-003-B001		16-JUN-92 23-004-B001		16-JUN-92 23-005-B001		16-JUN-92 23-006-B001	
1,1-DICHLOROETHYLENE	UG/KG				12	U					11	U
1,1-DICHLOROETHANE	UG/KG				12	U					11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG				12	U					11	U
CHLOROFORM	UG/KG				12	U					11	U
1,2-DICHLOROETHANE	UG/KG				12	U					11	U
2-BUTANONE	UG/KG				12	U					11	U
1,1,1-TRICHLOROETHANE	UG/KG				12	U					11	U
CARBON TETRACHLORIDE	UG/KG				12	U					11	U
BROMODICHLOROMETHANE	UG/KG				12	U					11	U
1,2-DICHLOROPROPANE	UG/KG				12	U					11	U
CIS-1,3-DICHLOROPROPENE	UG/KG				12	U					11	U
TRICHLOROETHYLENE	UG/KG				12	U					11	U
DIBROMOCHLOROMETHANE	UG/KG				12	U					11	U
1,1,2-TRICHLOROETHANE	UG/KG				12	U					11	U
BENZENE	UG/KG				12	U					11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG				12	U					11	U
BROMOFORM	UG/KG				12	U					11	U
4-METHYL-2-PENTANONE	UG/KG				12	U					11	U
2-HEXANONE	UG/KG				12	U					11	U
TETRACHLOROETHYLENE	UG/KG				12	U					11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG				12	U					11	U
TOLUENE	UG/KG				12	U					11	U
CHLOROBENZENE	UG/KG				12	U					11	U
ETHYLBENZENE	UG/KG				12	U					11	U
STYRENE	UG/KG				12	U					11	U
XYLENES (TOTAL)	UG/KG				12	U					11	U
PHENOL	UG/KG				390	U					370	U
BIS(2-CHLOROETHYL)ETHER	UG/KG				390	U					370	U
2-CHLOROPHENOL	UG/KG				390	U					370	U
1,3-DICHLOROBENZENE	UG/KG				390	U					370	U
1,4-DICHLOROBENZENE	UG/KG				390	U					370	U
1,2-DICHLOROBENZENE	UG/KG				390	U					370	U
2-METHYLPHENOL	UG/KG				390	U					370	U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG				390	U					370	U
4-METHYLPHENOL	UG/KG				390	U					370	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG				390	U					370	U
HEXACHLOROETHANE	UG/KG				390	U					370	U
NITROBENZENE	UG/KG				390	U					370	U
ISOPHORONE	UG/KG				390	U					370	U
2-NITROPHENOL	UG/KG				390	U					370	U
2,4-DIMETHYLPHENOL	UG/KG				390	U					370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG				390	U					370	U
2,4-DICHLOROPHENOL	UG/KG				390	U					370	U
1,2,4-TRICHLOROBENZENE	UG/KG				390	U					370	U
NAPHTHALENE	UG/KG				390	U					370	U
4-CHLOROANILINE	UG/KG				390	U					370	U

SISOIL23.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>		16-JUN-92 23-001-B001		16-JUN-92 23-002-B001		16-JUN-92 23-003-B001		16-JUN-92 23-004-B001		16-JUN-92 23-005-B001		16-JUN-92 23-006-B001	
HEXACHLOROBUTADIENE	UG/KG					390	U					370	U
4-CHLORO-3-METHYLPHENOL	UG/KG					390	U					370	U
2-METHYLNAPHTHALENE	UG/KG					390	U					370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG					390	U					370	U
2,4,6-TRICHLOROPHENOL	UG/KG					390	U					370	U
2,4,5-TRICHLOROPHENOL	UG/KG					980	U					930	U
2-CHLORONAPHTHALENE	UG/KG					390	U					370	U
2-NITROANILINE	UG/KG					390	U					930	U
DIMETHYLPHTHALATE	UG/KG					390	U					370	U
ACENAPHTHYLENE	UG/KG					390	U					370	U
2,6-DINITROTOLUENE	UG/KG					390	U					370	U
3-NITROANILINE	UG/KG					980	U					920	U
ACENAPHTHENE	UG/KG					390	U					370	U
2,4-DINITROPHENOL	UG/KG					980	U					930	U
4-NITROPHENOL	UG/KG					980	U					930	U
DIBENZOFURAN	UG/KG					390	U					370	U
2,4-DINITROTOLUENE	UG/KG					390	U					370	U
DIETHYLPHTHALATE	UG/KG					390	U					370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG					390	U					370	U
FLUORENE	UG/KG					390	U					370	U
4-NITROANILINE	UG/KG					980	U					930	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG					980	U					930	U
N-NITROSODIPHENYLAMINE	UG/KG					390	U					370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG					390	U					370	U
HEXACHLOROBENZENE	UG/KG					390	U					370	U
PENTACHLOROPHENOL	UG/KG					980	U					930	U
PHENANTHRENE	UG/KG					390	U					370	U
ANTHRACENE	UG/KG					390	U					370	U
CARBAZOLE	UG/KG					390	U					370	U
DI-N-BUTYLPHTHALATE	UG/KG					48	J					40	J
FLUORANTHENE	UG/KG					390	U					370	U
PYRENE	UG/KG					390	U					370	U
BUTYLBENZYLPHTHALATE	UG/KG					390	U					370	U
3,3'-DICHLOROBENZIDINE	UG/KG					390	U					370	U
BENZO(A)ANTHRACENE	UG/KG					390	U					370	U
CHRYSENE	UG/KG					390	U					370	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG					600	U					830	U
DI-N-OCTYLPHTHALATE	UG/KG					390	U					370	U
BENZO(B)FLUORANTHENE	UG/KG					390	U					370	U
BENZO(K)FLUORANTHENE	UG/KG					390	U					370	U
BENZO(A)PYRENE	UG/KG					390	U					370	U
INDENO(1,2,3-CD)PYRENE	UG/KG					390	U					370	U
DIBENZ(A,H)ANTHRACENE	UG/KG					390	U					370	U
BENZO(G,H,I)PERYLENE	UG/KG					390	U					370	U

SISE23.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>		16-JUN-92 23-002-D001		16-JUN-92 23-002-D101 (DUPLICATE)		16-JUN-92 23-003-D001		16-JUN-92 23-004-D001		16-JUN-92 23-005-D001		16-JUN-92 23-006-D001		16-JUN-92 23-007-D001		16-JUN-92 23-008-D001	
						SEDIMENTS											
INORGANICS	UNITS																
Aluminum, Total	MG/KG	3140	=	1930	=												
Antimony, Total	MG/KG	11.5	U	11.2	U											1750	=
Arsenic, Total	MG/KG	6.7	=	6.2	=											11.5	U
Barium, Total	MG/KG	27.5	B	20.4	B											3.52	=
Beryllium, Total	MG/KG	1.2	B	0.77	B											3.8	B
Cadmium, Total	MG/KG	1.05	U	1.02	U											0.26	U
Calcium, Total	MG/KG	1480	=	938	B	1	B	6.7	=	1.7	=	1.25	U	1.21	=	1.04	U
Chromium, Total	MG/KG	56.9	=	37.1	=	32.1	=	116	=	149	=	280	=	115	=	102	B
Cobalt, Total	MG/KG	1.8	B	1.53	U											24.2	=
Copper, Total	MG/KG	1.31	U	1.28	U	5.2	=	27.9	=	19.5	=	15.8	=	9	=	2.6	B
Iron, Total	MG/KG	12600	=	10800	=											3.4	B
Lead, Total	MG/KG	9.65	=	7.5	=	5.1	=	143.1	=	128.5	=	82.7	=	39.2	=	23600	=
Magnesium, Total	MG/KG	1110	B	792	B											15.9	=
Manganese, Total	MG/KG	52.6	=	46.6	=											213	B
Mercury, Total	MG/KG	0.07	U	0.07	U											13.8	=
Nickel, Total	MG/KG	4.72	U	4.59	U											0.07	U
Potassium, Total	MG/KG	2360	=	1570	=											4.69	U
Selenium, Total	MG/KG	0.52	U	0.5	U											678	B
Silver, Total	MG/KG	1.57	U	1.53	U											0.51	U
Sodium, Total	MG/KG	73	B	62.8	B											1.8	B
Thallium, Total	MG/KG	0.52	U	0.5	U											30.1	B
Vanadium, Total	MG/KG	94.9	=	74.3	=											0.51	U
Zinc, Total	MG/KG	49.8	=	39.5	=	81.6	=	499	=	131	=	32.4	=	11.8	=	14.2	=
Cyanide, Total	MG/KG	1.31	U	1.36	U											17.9	=
																1.38	U
PESTICIDES																	
ALPHA-BHC	UG/KG																
BETA-BHC	UG/KG	2.3	U	2.1	U									2.6	U		
DELTA-BHC	UG/KG	2.3	U	2.1	U									2.6	U		
GAMMA-BHC (LINDANE)	UG/KG	2.3	U	2.1	U									2.6	U		
HEPTACHLOR	UG/KG	2.3	U	2.1	U									2.6	U		
ALDRIN	UG/KG	2.3	U	2.1	U									2.6	U		
HEPTACHLOR EPOXIDE	UG/KG	2.3	U	2.1	U									2.6	U		
ENDOSULFAN I	UG/KG	2.3	U	2.1	U									2.6	U		
DIELDRIN	UG/KG	4.5	U	4.2	U									5.2	U		
4,4'-DDE	UG/KG	4.5	U	4.2	U									0.52	U		
ENDRIN	UG/KG	4.5	U	4.2	U									5.2	U		
ENDOSULFAN II	UG/KG	4.5	U	4.2	U									5.2	U		
4,4'-DDD	UG/KG	4.5	U	0.84	J									5.2	U		
ENDOSULFAN SULFATE	UG/KG	4.5	U	4.2	U									5.2	U		
4,4'-DDT	UG/KG	4.5	U	4.2	U									5.2	U		
METHOXYCHLOR	UG/KG	23	U	21	U									26	U		
ENDRIN KETONE	UG/KG	4.5	U	4.2	U									5.2	U		
ENDRIN ALDEHYDE	UG/KG	4.5	U	4.2	U									5.2	U		
ALPHA CHLORDANE	UG/KG	2.3	U	2.1	U									1	U		
GAMMA CHLORDANE	UG/KG	2.3	U	2.1	U									2.6	U		
TOXAPHENE	UG/KG	230	U	210	U									260	U		

SISE23.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>		16-JUN-92 23-002-D001		16-JUN-92 23-002-D101 (DUPLICATE)		16-JUN-92 23-003-D001		16-JUN-92 23-004-D001 SEDIMENTS		16-JUN-92 23-005-D001		16-JUN-92 23-006-D001		16-JUN-92 23-007-D001		16-JUN-92 23-008-D001	
	UG/KG																	
PCB's	UG/KG																	
AROCHLOR-1016	UG/KG	45	U	42	U									52	U			
AROCHLOR-1221	UG/KG	90	U	84	U									100	U			
AROCHLOR-1232	UG/KG	45	U	42	U									52	U			
AROCHLOR-1242	UG/KG	45	U	42	U									52	U			
AROCHLOR-1248	UG/KG	45	U	42	U									52	U			
AROCHLOR-1254	UG/KG	45	U	42	U									52	U			
AROCHLOR-1260	UG/KG	45	U	42	U									52	U			
ORGANICS																		
CHLOROMETHANE	UG/KG	13	U	14	U									16	U			
BROMOMETHANE	UG/KG	13	U	14	U									16	U			
VINYL CHLORIDE	UG/KG	13	U	14	U									16	U			
CHLOROETHANE	UG/KG	13	U	14	U									16	U			
METHYLENE CHLORIDE	UG/KG	3	J	14	U									16	U			
ACETONE	UG/KG	26	J	38	J									27	B			
CARBON DISULFIDE	UG/KG	13	U	14	U									16	U			
1,1-DICHLOROETHYLENE	UG/KG	13	U	14	U									16	U			
1,1-DICHLOROETHANE	UG/KG	13	U	14	U									16	U			
1,2-DICHLOROETHENE (TOTAL)	UG/KG	13	U	14	U									16	U			
CHLOROFORM	UG/KG	13	U	14	U									16	U			
1,2-DICHLOROETHANE	UG/KG	13	U	14	U									16	U			
2-BUTANONE	UG/KG	13	U	14	U									16	U			
1,1,1-TRICHLOROETHANE	UG/KG	13	U	14	U									16	U			
CARBON TETRACHLORIDE	UG/KG	13	U	14	U									16	U			
BROMODICHLOROMETHANE	UG/KG	13	U	14	U									16	U			
1,2-DICHLOROPROPANE	UG/KG	13	U	14	U									16	U			
CIS-1,3-DICHLOROPROPENE	UG/KG	13	U	14	U									16	U			
TRICHLOROETHYLENE	UG/KG	13	U	14	U									16	U			
DIBROMOCHLOROMETHANE	UG/KG	13	U	14	U									16	U			
1,1,2-TRICHLOROETHANE	UG/KG	13	U	14	U									16	U			
BENZENE	UG/KG	13	U	14	U									16	U			
TRANS-1,3-DICHLOROPROPENE	UG/KG	13	U	14	U									16	U			
BROMOFORM	UG/KG	13	U	14	U									16	U			
4-METHYL-2-PENTANONE	UG/KG	13	U	14	U									16	U			
2-HEXANONE	UG/KG	13	U	14	U									16	U			
TETRACHLOROETHYLENE	UG/KG	13	U	14	U									16	U			
1,1,2,2-TETRACHLOROETHANE	UG/KG	13	U	14	U									16	U			
TOLUENE	UG/KG	13	U	14	U									16	U			
CHLOROBENZENE	UG/KG	13	U	14	U									16	U			
ETHYLBENZENE	UG/KG	13	U	14	U									16	U			
STYRENE	UG/KG	13	U	14	U									16	U			
XYLENES (TOTAL)	UG/KG	13	U	14	U									16	U			
PHENOL	UG/KG	57	J	51	J									520	U			

SISE23.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>		16-JUN-92 23-002-D001		16-JUN-92 23-002-D101 (DUPLICATE)		16-JUN-92 23-003-D001		16-JUN-92 23-004-D001		16-JUN-92 23-005-D001		16-JUN-92 23-006-D001		16-JUN-92 23-007-D001		16-JUN-92 23-008-D001	
						SEDIMENTS											
BIS(2-CHLOROETHYL)ETHER	UG/KG	400	U	440	U									520	U		
2-CHLOROPHENOL	UG/KG	400	U	440	U									520	U		
1,3-DICHLOROBENZENE	UG/KG	400	U	440	U									520	U		
1,4-DICHLOROBENZENE	UG/KG	400	U	440	U									520	U		
1,2-DICHLOROBENZENE	UG/KG	400	U	440	U									520	U		
2-METHYLPHENOL	UG/KG	400	U	440	U									520	U		
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	400	U	440	U									520	U		
4-METHYLPHENOL	UG/KG	130	J	41	J									520	U		
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	400	U	440	U									520	U		
HEXACHLOROETHANE	UG/KG	400	U	440	U									520	U		
NITROBENZENE	UG/KG	400	U	440	U									520	U		
ISOPHORONE	UG/KG	400	U	440	U									520	U		
2-NITROPHENOL	UG/KG	400	U	440	U									520	U		
2,4-DIMETHYLPHENOL	UG/KG	400	U	440	U									520	U		
BIS(2-CHLOROETHOXY)METHANE	UG/KG	400	U	440	U									520	U		
2,4-DICHLOROPHENOL	UG/KG	400	U	440	U									520	U		
1,2,4-TRICHLOROBENZENE	UG/KG	400	U	440	U									520	U		
NAPHTHALENE	UG/KG	400	U	440	U									520	U		
4-CHLOROANILINE	UG/KG	400	U	440	U									520	U		
HEXACHLOROBUTADIENE	UG/KG	400	U	440	U									520	U		
4-CHLORO-3-METHYLPHENOL	UG/KG	400	U	440	U									520	U		
2-METHYLNAPHTHALENE	UG/KG	400	U	440	U									520	U		
HEXACHLOROCYCLOPENTADIENE	UG/KG	400	U	440	U									520	U		
2,4,6-TRICHLOROPHENOL	UG/KG	400	U	440	U									520	U		
2,4,5-TRICHLOROPHENOL	UG/KG	1000	U	1100	U									1300	U		
2-CHLORONAPHTHALENE	UG/KG	400	U	400	U									520	U		
2-NITROANILINE	UG/KG	1000	U	1100	U									1300	U		
DIMETHYLPHTHALATE	UG/KG	400	U	400	U									520	U		
ACENAPHTHYLENE	UG/KG	400	U	400	U									520	U		
2,6-DINITROTOLUENE	UG/KG	400	U	400	U									520	U		
3-NITROANILINE	UG/KG	1000	U	1100	U									1300	U		
ACENAPHTHENE	UG/KG	400	U	400	U									520	U		
2,4-DINITROPHENOL	UG/KG	1000	U	1100	U									1300	U		
4-NITROPHENOL	UG/KG	1000	U	1100	U									1300	U		
DIBENZOFURAN	UG/KG	400	U	400	U									520	U		
2,4-DINITROTOLUENE	UG/KG	400	U	400	U									520	U		
DIETHYLPHTHALATE	UG/KG	400	U	400	U									520	U		
4-CHLOROPHENYL-PHENYLETHER	UG/KG	400	U	400	U									520	U		
FLUORENE	UG/KG	400	U	400	U									520	U		
4-NITROANILINE	UG/KG	1000	U	1100	U									1300	U		
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1000	U	1100	U									1300	U		
N-NITROSODIPHENYLAMINE	UG/KG	400	U	400	U									520	U		
4-BROMOPHENYL-PHENYLETHER	UG/KG	400	U	400	U									520	U		
HEXACHLOROBENZENE	UG/KG	400	U	400	U									520	U		

SISE23.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

SAMPLE ID>		16-JUN-92 23-002-D001		16-JUN-92 23-002-D101 (DUPLICATE)		16-JUN-92 23-003-D001		16-JUN-92 23-004-D001		16-JUN-92 23-005-D001		16-JUN-92 23-006-D001		16-JUN-92 23-007-D001		16-JUN-92 23-008-D001	
						SEDIMENTS											
PENTACHLOROPHENOL	UG/KG	1000	U	1100	U									1300	U		
PHENANTHRENE	UG/KG	34	J	30	J									46	J		
ANTHRACENE	UG/KG	400	U	440	U									520	U		
CARBAZOLE	UG/KG	400	U	440	U									520	U		
DI-N-BUTYLPHTHALATE	UG/KG	54	J	58	J									53	J		
FLUORANTHENE	UG/KG	64	J	58	J									110	J		
PYRENE	UG/KG	57	J	51	J									90	J		
BUTYLBENZYLPHTHALATE	UG/KG	400	U	440	U									520	U		
3,3'-DICHLOROBENZIDINE	UG/KG	400	U	440	U									520	U		
BENZO(A)ANTHRACENE	UG/KG	39	J	25	J									39	J		
CHRYSENE	UG/KG	40	J	35	J									70	J		
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	720	U	860	U									810	U		
DI-N-OCTYLPHTHALATE	UG/KG	400	U	440	U									520	U		
BENZO(B)FLUORANTHENE	UG/KG	31	J	26	J									54	J		
BENZO(K)FLUORANTHENE	UG/KG	31	J	29	J									55	J		
BENZO(A)PYRENE	UG/KG	28	J	25	J									41	J		
INDENO(1,2,3-CD)PYRENE	UG/KG	400	U	440	U									520	U		
DIBENZ(A,H)ANTHRACENE	UG/KG	400	U	440	U									520	U		
BENZO(G,H,I)PERYLENE	UG/KG	400	U	440	U									520	U		

SIHP23.WK3

SUMMARY OF GROUNDWATER (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

	SAMPLE ID >	01-MAY-92 23-001-K029 HYDROPUNCH		
INORGANICS	UNITS			
Silver, Total	UG/L	8	U	
Aluminum, Total	UG/L	158000	=	
Arsenic, Total	UG/L	144	=	
Barium, Total	UG/L	98.2	B	
Beryllium, Total	UG/L	34.8	=	
Calcium, Total	UG/L	16100	=	
Cadmium, Total	UG/L	10.5	=	
Cobalt, Total	UG/L	240	=	
Chromium, Total	UG/L	5680	=	
Copper, Total	UG/L	141	=	
Iron, Total	UG/L	230000	=	
Mercury, Total	UG/L	0.17	B	
Potassium, Total	UG/L	69100	=	
Magnesium, Total	UG/L	22100	=	
Manganese, Total	UG/L	469	=	
Sodium, Total	UG/L	4650	B	
Nickel, Total	UG/L	812	=	
Lead, Total	UG/L	395	=	
Antimony, Total	UG/L	36	U	
Selenium, Total	UG/L	20	U	
Thallium, Total	UG/L	2	U	
Vanadium, Total	UG/L	3340	=	
Zinc, Total	UG/L	587	=	
PESTICIDES				
ALPHA-BHC	UG/L	0.05	U	
BETA-BHC	UG/L	0.05	U	
DELTA-BHC	UG/L	0.05	U	
GAMMA-BHC (LINDANE)	UG/L	0.05	U	
HEPTACHLOR	UG/L	0.05	U	
ALDRIN	UG/L	0.05	U	
HEPTACHLOR EPOXIDE	UG/L	0.05	U	
ENDOSULFAN I	UG/L	0.05	U	
DIELDRIN	UG/L	0.1	U	
4,4'-DDE	UG/L	0.1	U	
ENDRIN	UG/L	0.1	U	
ENDOSULFAN II	UG/L	0.1	U	
4,4'-DDD	UG/L	0.1	U	
ENDOSULFAN SULFATE	UG/L	0.1	U	
4,4'-DDT	UG/L	0.1	U	
METHOXYCHLOR	UG/L	0.5	U	
ENDRIN KETONE	UG/L	0.1	U	
ENDRIN ALDEHYDE	UG/L	0.1	U	
ALPHA CHLORDANE	UG/L	0.05	U	
GAMMA CHLORDANE	UG/L	0.05	U	
TOXAPHENE	UG/L	5	U	

SIHP23.WK3

SUMMARY OF GROUNDWATER (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

	SAMPLE ID >	01-MAY-92 23-001-K029 HYDROPUNCH		
PCB's				
AROCHLOR-1016	UG/L	1	U	
AROCHLOR-1221	UG/L	2	U	
AROCHLOR-1232	UG/L	1	U	
AROCHLOR-1242	UG/L	1	U	
AROCHLOR-1248	UG/L	1	U	
AROCHLOR-1254	UG/L	1	U	
AROCHLOR-1260	UG/L	1	U	
ORGANICS				
CHLOROMETHANE	UG/L	10	U	
BROMOMETHANE	UG/L	10	U	
VINYL CHLORIDE	UG/L	10	U	
CHLOROETHANE	UG/L	10	U	
METHYLENE CHLORIDE	UG/L	5	J	
ACETONE	UG/L	55	=	
CARBON DISULFIDE	UG/L	10	U	
1,1-DICHLOROETHYLENE	UG/L	10	U	
1,1-DICHLOROETHANE	UG/L	10	U	
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	
CHLOROFORM	UG/L	10	U	
1,2-DICHLOROETHANE	UG/L	10	U	
2-BUTANONE	UG/L	10	U	
1,1,1-TRICHLOROETHANE	UG/L	10	U	
CARBON TETRACHLORIDE	UG/L	10	U	
BROMODICHLOROMETHANE	UG/L	10	U	
1,2-DICHLOROPROPANE	UG/L	10	U	
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	
TRICHLOROETHYLENE	UG/L	10	U	
DIBROMOCHLOROMETHANE	UG/L	10	U	
1,1,2-TRICHLOROETHANE	UG/L	10	U	
BENZENE	UG/L	10	U	
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	
BROMOFORM	UG/L	10	U	
4-METHYL-2-PENTANONE	UG/L	10	U	
2-HEXANONE	UG/L	10	U	
TETRACHLOROETHYLENE	UG/L	10	U	
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	
TOLUENE	UG/L	10	U	
CHLOROBENZENE	UG/L	10	U	
ETHYLBENZENE	UG/L	10	U	
STYRENE	UG/L	10	U	
XYLENES (TOTAL)	UG/L	10	U	
PHENOL	UG/L	11	U	

SIHP23.WK3

SUMMARY OF GROUNDWATER (HYDROPUNCH) SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 23 (PAINT CHIP DISPOSAL AREA)

	SAMPLE ID >	01-MAY-92 23-001-K029 HYDROPUNCH			
BIS(2-CHLOROETHYL)ETHER	UG/L	11	U		
2-CHLOROPHENOL	UG/L	11	U		
1,3-DICHLOROBENZENE	UG/L	11	U		
1,4-DICHLOROBENZENE	UG/L	11	U		
1,2-DICHLOROBENZENE	UG/L	11	U		
2-METHYLPHENOL	UG/L	11	U		
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	11	U		
4-METHYLPHENOL	UG/L	11	U		
N-NITROSO-DI-N-PROPYLAMINE	UG/L	11	U		
HEXACHLOROETHANE	UG/L	11	U		
NITROBENZENE	UG/L	11	U		
ISOPHORONE	UG/L	11	U		
2-NITROPHENOL	UG/L	11	U		
2,4-DIMETHYLPHENOL	UG/L	11	U		
BIS(2-CHLOROETHOXY)METHANE	UG/L	11	U		
2,4-DICHLOROPHENOL	UG/L	11	U		
1,2,4-TRICHLOROBENZENE	UG/L	11	U		
NAPHTHALENE	UG/L	11	U		
4-CHLOROANILINE	UG/L	11	U		
HEXACHLOROBUTADIENE	UG/L	11	U		
4-CHLORO-3-METHYLPHENOL	UG/L	11	U		
2-METHYLNAPHTHALENE	UG/L	11	U		
HEXACHLOROCYCLOPENTADIENE	UG/L	11	U		
2,4,6-TRICHLOROPHENOL	UG/L	11	U		
2,4,5-TRICHLOROPHENOL	UG/L	26	U		
2-CHLORONAPHTHALENE	UG/L	11	U		
2-NITROANILINE	UG/L	26	U		
DIMETHYLPHTHALATE	UG/L	11	U		
ACENAPHTHYLENE	UG/L	11	U		
2,6-DINITROTOLUENE	UG/L	11	U		
3-NITROANILINE	UG/L	26	U		
ACENAPHTHENE	UG/L	11	U		
2,4-DINITROPHENOL	UG/L	26	U		
4-NITROPHENOL	UG/L	26	U		
DIBENZOFURAN	UG/L	11	U		
2,4-DINITROTOLUENE	UG/L	11	U		
DIETHYLPHTHALATE	UG/L	11	U		
4-CHLOROPHENYL-PHENYLETHER	UG/L	11	U		
FLUORENE	UG/L	11	U		
4-NITROANILINE	UG/L	26	U		
4,6-DINITRO-2-METHYLPHENOL	UG/L	26	U		
N-NITROSODIPHENYLAMINE	UG/L	11	U		
4-BROMOPHENYL-PHENYLETHER	UG/L	11	U		
HEXACHLOROBENZENE	UG/L	11	U		

SIHP23.WK3

SUMMARY OF GROUNDWATER (HYDROPUNCH) SAMPLE
ANALYTICAL RESULTS (JUNE 1992) NWS EARLE,
SITE 23 (PAINT CHIP DISPOSAL AREA)

	SAMPLE ID >	01-MAY-92 23-001-K029 HYDROPUNCH		
PENTACHLOROPHENOL	UG/L	26	U	
PHENANTHRENE	UG/L	11	U	
ANTHRACENE	UG/L	11	U	
CARBAZOLE	UG/L	11	U	
DI-N-BUTYLPHTHALATE	UG/L	11	U	
FLUORANTHENE	UG/L	11	U	
PYRENE	UG/L	11	U	
BUTYLBENZYLPHTHALATE	UG/L	11	U	
3,3'-DICHLOROBENZIDINE	UG/L	11	U	
BENZO(A)ANTHRACENE	UG/L	11	U	
CHRYSENE	UG/L	11	U	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	11	U	
DI-N-OCTYLPHTHALATE	UG/L	11	U	
BENZO(B)FLUORANTHENE	UG/L	11	U	
BENZO(K)FLUORANTHENE	UG/L	11	U	
BENZO(A)PYRENE	UG/L	11	U	
INDENO(1,2,3-CD)PYRENE	UG/L	11	U	
DIBENZ(A,H)ANTHRACENE	UG/L	11	U	
BENZO(G,H,I)PERYLENE	UG/L	11	U	
EXPLOSIVES				
HMX	UG/L			
RDX	UG/L			
1,3,5-TNB	UG/L			
1,3-DNB	UG/L			
TETRYL	UG/L			
2,4,6-TNT	UG/L			
2,6-DNT	UG/L			
2,4-DNT	UG/L	11	U	
PICRIC ACID	UG/L			
Nitrate Nitrite	MG-N/L			
Ncellulose/Nglycerine	UG/L			
Cyanide, Total	UG/L			
TYPICAL LANDFILL PARAMETERS				
BOD 5 Day	MG/L			
Chloride	MG/L			
Chemical Oxygen Demand	MG/L			
Ammonia, as N	MG/L			
Total Organic Carbon	MG/L	76	=	
Phosphate, as P	MG/L			
Sulfate	MG/L			
Turbidity	NTU			

SISOIL24.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 24, (CLOSED PISTOL RANGE)

		09-JUN-92		09-JUN-92		09-JUN-92		10-JUN-92		09-JUN-92		
	SAMPLE ID>	24-001-B001		24-002-B001		24-002-B101		24-003-B001		24-004-B001		
INORGANICS	UNITS											
Cadmium, Total	MG/L	0.81	U	0.8	U	0.8	U	0.83	U	0.8	U	
Chromium, Total	MG/L	2.2	=	1.4	U	1.41	=	1.9	B	2.4	=	
Copper, Total	MG/L	1.42	U	1.4	U	1.41	U	1.44	U	1.4	U	
Lead, Total	MG/L	9.95	R	9	R	6.4	R	1.7	R	6.3	R	
Zinc, Total	MG/L	1.3	B	1.3	B	1.2	B	2	B	1.5	B	

SISOIL25.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 25, (CLOSED PISTOL RANGE)

	SAMPLE ID >	09-JUN-92 25-001-B001		09-JUN-92 25-002-B001		10-JUN-92 25-003-B001		09-JUN-92 25-004-B001	
INORGANICS	UNITS								
Cadmium, Total	MG/L	0.83	U	0.8	U	0.82	U	0.79	U
Chromium, Total	MG/L	1.6	B	1.4	U	1.43	U	1.38	U
Copper, Total	MG/L	3.5	B	5.3	=	5.3	=	82.6	=
Lead, Total	MG/L	11.9	R	61.8	R	113	=	406	R
Zinc, Total	MG/L	1.4	B	1.2	=	1.8	U	2.9	B

SISOIL27.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-S001		27-001-S002		27-002-S001		27-002-S002		27-003-S001 RE		27-003-S002		27-004-S001		27-004-S002 RE		27-005-S001		27-005-S002	
INORGANICS	UNITS																				
Aluminum, Total	MG/KG	1070	=	1670	=	379	B	3050	=	2670	=	2880	=	1010	=	2710	=	6730	=	6990	=
Antimony, Total	MG/KG	8.1	U	7.63	U	74.8	U	7.43	U	7.28	U	7.48	U	7.68	U	7.69	U	7.51	U	7.66	U
Arsenic, Total	MG/KG	5.6	=	2.4	=	17.1	=	2.4	=	0.98	B	3.1	=	4.5	=	1.4	B	0.62	B	0.73	B
Barium, Total	MG/KG	35.4	B	9.2	B	129	=	17.3	B	16.6	B	15.9	B	37.1	B	9.5	B	13.5	B	12.3	B
Beryllium, Total	MG/KG	0.54	B	0.3	B	0.21	U	0.21	U	0.2	U	0.21	U	0.23	B	0.24	B	0.21	U	0.21	U
Cadmium, Total	MG/KG	4.7	=	0.85	U	64.4	=	7.4	=	1.4	=	7.5	=	7.5	=	4.9	=	2.1	=	1.2	=
Calcium, Total	MG/KG	207	B	55.4	B	171	B	256	B	364	B	266	B	136	B	91.3	B	97.8	B	91.4	B
Chromium, Total	MG/KG	140	=	21.2	=	1620	=	15	=	16.7	=	71.3	=	256	=	28.5	=	25.8	=	20.9	=
Cobalt, Total	MG/KG	7.7	B	2.6	B	52.4	=	1.44	U	1.42	U	12.2	=	3.3	B	3.8	B	2.8	B	2.3	B
Copper, Total	MG/KG	61.2	=	11.6	=	1450	=	11.3	=	7.4	=	144	=	38.6	=	7.2	=	6.1	=	4.2	B
Iron, Total	MG/KG	7100	=	4750	=	349000	=	5740	=	4630	=	72100	=	4420	=	5430	=	9420	=	8920	=
Lead, Total	MG/KG	184	=	22.9	=	787	=	25.6	=	20.1	=	25.9	=	559	=	63.2	=	36.2	=	21.1	=
Magnesium, Total	MG/KG	90	B	151	B	466	B	223	B	180	B	239	B	99.3	B	132	B	166	B	182	B
Manganese, Total	MG/KG	26.4	=	26.2	=	2560	=	35.1	=	16.3	=	557	=	27.9	=	27.3	=	19.3	=	17.9	=
Mercury, Total	MG/KG	0.06	U	0.05	U	0.41	=	0.05	U	0.05	U	0.05	U	0.06	U	0.06	U	0.07	B	0.05	U
Nickel, Total	MG/KG	6.6	B	3.82	U	377	=	3.71	U	3.64	U	48.1	=	5.9	B	3.95	U	3.76	U	3.63	U
Potassium, Total	MG/KG	260	B	265	B	186	U	212	B	181	U	186	U	191	U	196	U	228	B	191	U
Selenium, Total	MG/KG	2.5	=	0.61	B	0.42	U	0.43	U	0.41	U	0.42	U	0.75	B	0.44	U	0.41	U	0.43	U
Silver, Total	MG/KG	1.6	U	1.7	U	32.2	=	1.65	U	1.62	U	5.2	=	1.71	U	1.75	U	1.67	U	1.7	U
Sodium, Total	MG/KG	29.6	B	24.8	U	26.7	B	24.1	U	26	B	26.1	B	32.6	B	28.6	B	33	B	29.9	B
Thallium, Total	MG/KG	0.45	U	0.42	U	0.42	U	0.43	U	0.41	U	0.42	U	0.44	U	0.44	U	0.41	U	0.43	U
Vanadium, Total	MG/KG	3.9	B	5.1	B	10.4	U	8.9	B	7.3	B	1.04	U	4.9	B	8.7	B	13.4	=	13.6	=
Zinc, Total	MG/KG	314	=	39.6	=	774	=	48.3	=	34.4	=	71.2	=	438	=	215	=	223	=	130	=
Cyanide, Total	MG/KG	1.95	=	1.06	U	1.58	=	1.08	U	1.06	U	1.08	U	2.76	=	1.12	U	1.09	U	1.08	U
PESTICIDES																					
ALPHA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
BETA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
DELTA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
HEPTACHLOR	UG/KG	1.9	U	1.8	U	0.71	NJ	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
ALDRIN	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
ENDOSULFAN I	UG/KG	0.75	J	1.8	U	3.2	NJ	1.8	U	1.8	J	1.8	U	1.9	J	1.9	U	1.8	U	1.8	U
DIELDRIN	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
4,4'-DDE	UG/KG	7.9	R	3.5	U	22	R	7.2	UJ	0.7	NJ	3.6	UJ	0.75	J	3.7	U	4.4	UJ	0.72	J
ENDRIN	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
ENDOSULFAN II	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
4,4'-DDD	UG/KG	5.6	R	3.5	U	5.6	R	1.8	R	3.5	UJ	3.9	UJ	1.5	R	3.7	U	2.5	R	3.6	UJ
ENDOSULFAN SULFATE	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
4,4'-DDT	UG/KG	16	R	3.5	U	22	R	12	R	7.7	NJ	3.6	UJ	6.7	UJ	3.7	U	13	NJ	2.9	NJ
METHOXYCHLOR	UG/KG	19	U	18	U	18	U	18	U	18	U	18	U	19	U	19	U	18	U	18	U
ENDRIN KETONE	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
ENDRIN ALDEHYDE	UG/KG	3.7	U	3.5	U	3.5	U	3.6	U	3.5	U	3.6	U	3.8	U	3.7	U	3.6	U	3.6	U
ALPHA CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
GAMMA CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.9	U	1.9	U	1.8	U	1.8	U
TOXAPHENE	UG/KG	190	U	180	U	180	U	180	U	180	U	180	U	190	U	190	U	180	U	180	U

SISOIL27.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

	SAMPLE ID>	16-JUN-92 27-001-S001		16-JUN-92 27-001-S002		16-JUN-92 27-002-S001		16-JUN-92 27-002-S002		16-JUN-92 27-003-S001 RE		16-JUN-92 27-003-S002		16-JUN-92 27-004-S001		16-JUN-92 27-004-S002 RE		16-JUN-92 27-005-S001		16-JUN-92 27-005-S002	
PCB's																							
AROCHLOR-1016	UG/KG	37	U	35	U	35	U	36	U	35	U	36	U	38	U	37	U	36	U	36	U
AROCHLOR-1221	UG/KG	75	U	71	U	71	U	72	U	70	U	72	U	75	U	74	U	72	U	72	U
AROCHLOR-1232	UG/KG	37	U	35	U	35	U	36	U	35	U	36	U	38	U	37	U	36	U	36	U
AROCHLOR-1242	UG/KG	37	U	35	U	35	U	36	U	35	U	36	U	38	U	37	U	36	U	36	U
AROCHLOR-1248	UG/KG	37	U	35	U	35	U	36	U	35	U	36	U	38	U	37	U	36	U	36	U
AROCHLOR-1254	UG/KG	37	U	35	U	35	U	36	U	35	U	36	U	38	U	37	U	36	U	36	U
AROCHLOR-1260	UG/KG	400	J	35	U	600	=	80	=	33	J	25	J	21	J	37	U	57	=	10	J
ORGANICS																							
CHLOROMETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	1	J	11	U	11	U	4	J	4	J	11		11	UJ	31		11	U	11	U
ACETONE	UG/KG	10	J	6	J	11	UJ	20	J	23	J	18	J	11	UJ	24	J	11	U	11	U
CARBON DISULFIDE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
1,1-DICHLOROETHYLENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
CHLOROFORM	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
2-BUTANONE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	U	11	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
TRICHLOROETHYLENE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
DIBROMOCHLOROMETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
BENZENE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	UJ	11	U	11	U	11	U	11	UJ	11	UJ	11	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
2-HEXANONE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
TETRACHLOROETHYLENE	UG/KG	11	U	11	U	11	UJ	11	U	3	J	11	U	11	UJ	11	UJ	11	UJ	11	UJ
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
TOLUENE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
CHLOROBENZENE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
ETHYLBENZENE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
STYRENE	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
XYLENES (TOTAL)	UG/KG	11	U	11	U	11	UJ	11	U	11	UJ	11	U	11	UJ	11	UJ	11	UJ	11	UJ
PHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	21	J	27	J	24	J

SISOIL27.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL
RESULTS (JUNE 1992) NWS EARLE,
SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-S001		27-001-S002		27-002-S001		27-002-S002		27-003-S001 RE		27-003-S002		27-004-S001		27-004-S002 RE		27-005-S001		27-005-S002	
BIS(2-CHLOROETHYL)ETHER	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2-CHLOROPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
1,3-DICHLOROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
1,4-DICHLOROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
1,2-DICHLOROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2-METHYLPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,2-OXYBIS(2-CHLOROPROPANE)	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
4-METHYLPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
HEXACHLOROETHANE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
NITROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
ISOPHORONE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2-NITROPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4-DICHLOROPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
NAPHTHALENE	UG/KG	150	J	25	J	350	U	340	U	350	U	350	U	46	J	370	U	350	U	350	U
4-CHLOROANILINE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
HEXACHLOROBUTADIENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2-METHYLNAPHTHALENE	UG/KG	67	J	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
2-CHLORONAPHTHALENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2-NITROANILINE	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
DIMETHYLPHTHALATE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
ACENAPHTHYLENE	UG/KG	370	U	340	U	350	U	340	U	47	J	350	U	370	U	370	U	350	U	350	U
2,6-DINITROTOLUENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
3-NITROANILINE	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
ACENAPHTHENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4-DINITROPHENOL	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
4-NITROPHENOL	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
DIBENZOFURAN	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
2,4-DINITROTOLUENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
DIETHYLPHTHALATE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
FLUORENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
4-NITROANILINE	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	920	U	860	U	860	U	860	U	870	U	860	U	920	U	920	U	880	U	880	U
N-NITROSODIPHENYLAMINE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
HEXACHLOROBENZENE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U

SISOIL27.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-S001		27-001-S002		27-002-S001		27-002-S002		27-003-S001 RE		27-003-S002		27-004-S001		27-004-S002 RE		27-005-S001		27-005-S002	
PENTACHLOROPHENOL	UG/KG	920	U	880	U	880	U	880	U	870	U	880	U	920	U	920	U	880	U	880	U
PHENANTHRENE	UG/KG	370	U	340	U	350	U	340	U	18	J	350	U	50	J	370	U	350	U	350	U
ANTHRACENE	UG/KG	370	U	340	U	350	U	340	U	41	J	350	U	370	U	370	U	350	U	350	U
CARBAZOLE	UG/KG	370	U	340	U	350	UJ	340	UJ	350	UJ	350	UJ	370	UJ	370	UJ	350	UJ	350	UJ
DI-N-BUTYLPHTHALATE	UG/KG	370	U	340	U	51	J	30	J	30	J	26	J	34	J	39	J	44	J	40	U
FLUORANTHENE	UG/KG	370	U	340	U	350	U	340	U	120	J	350	U	84	J	370	U	350	U	350	U
PYRENE	UG/KG	370	U	340	U	350	U	340	U	130	J	350	U	49	J	370	U	350	U	350	U
BUTYLBENZYLPHTHALATE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
BENZO(A)ANTHRACENE	UG/KG	370	U	340	U	350	U	340	U	88	J	350	U	370	U	370	U	350	U	350	U
CHRYSENE	UG/KG	370	U	340	U	350	U	340	U	130	J	350	U	370	U	370	U	350	U	350	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	4700	J	400	U	350	U	410	U	520	U	460	U	1600	U	630	U	550	U	570	U
DI-N-OCTYLPHTHALATE	UG/KG	370	U	340	U	350	U	340	U	350	U	350	U	370	U	370	U	350	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	370	U	340	U	350	U	340	U	130	J	350	U	370	U	370	U	350	U	350	U
BENZO(K)FLUORANTHENE	UG/KG	370	U	340	U	350	U	340	U	120	J	350	U	370	U	370	U	350	U	350	U
BENZO(A)PYRENE	UG/KG	370	U	340	U	350	U	340	U	130	J	350	U	370	U	370	U	350	U	350	U
INDENO(1,2,3-CD)PYRENE	UG/KG	370	U	340	U	350	U	340	U	150	J	350	U	370	U	370	U	350	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	370	U	340	U	350	U	340	U	61	J	350	U	370	U	370	U	350	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	370	U	340	U	350	U	340	U	190	J	350	U	370	U	370	U	350	U	350	U

SISE27.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
SAMPLE ID>		27-001-D001		27-002-D001		27-003-D001		27-004-D001		27-005-D001		27-006-D001		27-007-D001		27-008-D001 RE	
INORGANICS	UNITS																
Aluminum, Total	MG/KG	1190	=			785	=										
Antimony, Total	MG/KG	15.9	=			7.38	U										
Arsenic, Total	MG/KG	4.3	=			2.5	=										
Barium, Total	MG/KG	199	=			86.1	=										
Beryllium, Total	MG/KG	0.31	B			0.23	B										
Cadmium, Total	MG/KG	36.3	=			9.9	=										
Calcium, Total	MG/KG	260	B			270	B										
Chromium, Total	MG/KG		R	311	=	71.4	=	4.6	=	4.8	=	471	=	169	=	5.1	=
Cobalt, Total	MG/KG	9.3	B			2.5	B										
Copper, Total	MG/KG	426	=	434	=	167	=	2.4	B	19.9	=	325	=	82.6	=	32.3	=
Iron, Total	MG/KG	22500	=			8280	=										
Lead, Total	MG/KG	25.2	=	743	=	229	=	2.1	=	23.1	=	786	=	110	=	15.9	=
Magnesium, Total	MG/KG	226	B			89.2	B										
Manganese, Total	MG/KG	165	=			73.5	=										
Mercury, Total	MG/KG	0.2	=			0.15	=										
Nickel, Total	MG/KG	15.8	=			8.4	=										
Potassium, Total	MG/KG	197	U			184	U										
Selenium, Total	MG/KG	1.6	=			0.41	U										
Silver, Total	MG/KG	2.5	=			1.64	U										
Sodium, Total	MG/KG	25.9	B			24	U										
Thallium, Total	MG/KG	0.43	U			0.41	U										
Vanadium, Total	MG/KG	1.1	U			3.1	B										
Zinc, Total	MG/KG		R	528	=	120	=	7.4	=	46.4	=	840	=	320	=	13.6	=
Cyanide, Total	MG/KG	1.84	=			1.07	U										
PESTICIDES																	
ALPHA-BHC	UG/KG							1.8	U							1.8	U
BETA-BHC	UG/KG							1.8	U							1.8	U
DELTA-BHC	UG/KG							1.8	U							1.8	U
GAMMA-BHC (LINDANE)	UG/KG							1.8	U							1.8	U
HEPTACHLOR	UG/KG							1.8	U							1.8	U
ALDRIN	UG/KG							1.8	U							1.8	U
HEPTACHLOR EPOXIDE	UG/KG							1.8	U							1.8	U
ENDOSULFAN I	UG/KG							1.8	U							1.8	U
DIELDRIN	UG/KG							3.7	U							3.7	U
4,4'-DDE	UG/KG							3.7	U							7.3	=
ENDRIN	UG/KG							3.7	U							3.7	U
ENDOSULFAN II	UG/KG							3.7	U							3.7	U
4,4'-DDD	UG/KG							3.7	U							6.2	UJ
ENDOSULFAN SULFATE	UG/KG							3.7	U							3.7	U
4,4'-DDT	UG/KG							3.7	U							21	=
METHOXYCHLOR	UG/KG							18	U							18	U
ENDRIN KETONE	UG/KG							3.7	U							3.7	U
ENDRIN ALDEHYDE	UG/KG							3.7	U							3.7	U
ALPHA CHLORDANE	UG/KG							1.8	U							1.8	U
GAMMA CHLORDANE	UG/KG							1.8	U							0.37	J
TOXAPHENE	UG/KG							180	U							180	U

SISE27.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92								
	SAMPLE ID>	27-001-D001		27-002-D001		27-003-D001		27-004-D001		27-005-D001		27-006-D001		27-007-D001		27-008-D001.RE	
PCB's																	
AROCHLOR-1016	UG/KG							37	U							37	U
AROCHLOR-1221	UG/KG							74	U							73	U
AROCHLOR-1232	UG/KG							37	U							37	U
AROCHLOR-1242	UG/KG							37	U							37	U
AROCHLOR-1248	UG/KG							37	U							37	U
AROCHLOR-1254	UG/KG							37	U							37	U
AROCHLOR-1260	UG/KG							37	U							37	U
ORGANICS																	
CHLOROMETHANE	UG/KG							11	UJ							11	U
BROMOMETHANE	UG/KG							11	U							11	U
VINYL CHLORIDE	UG/KG							11	U							11	U
CHLOROETHANE	UG/KG							11	U							11	U
METHYLENE CHLORIDE	UG/KG							12								34	
ACETONE	UG/KG							11	U							20	J
CARBON DISULFIDE	UG/KG							11	U							11	U
1,1-DICHLOROETHYLENE	UG/KG							11	U							11	U
1,1-DICHLOROETHANE	UG/KG							11	U							11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG							11	U							11	U
CHLOROFORM	UG/KG							11	U							11	U
1,2-DICHLOROETHANE	UG/KG							11	U							11	U
2-BUTANONE	UG/KG							11	U							11	U
1,1,1-TRICHLOROETHANE	UG/KG							11	U							11	UJ
CARBON TETRACHLORIDE	UG/KG							11	U							11	UJ
BROMODICHLOROMETHANE	UG/KG							11	U							11	UJ
1,2-DICHLOROPROPANE	UG/KG							11	U							11	UJ
CIS-1,3-DICHLOROPROPENE	UG/KG							11	U							11	UJ
TRICHLOROETHYLENE	UG/KG							11	U							11	UJ
DIBROMOCHLOROMETHANE	UG/KG							11	U							11	UJ
1,1,2-TRICHLOROETHANE	UG/KG							11	U							11	UJ
BENZENE	UG/KG							11	U							11	UJ
TRANS-1,3-DICHLOROPROPENE	UG/KG							11	U							11	UJ
BROMOFORM	UG/KG							11	U							11	UJ
4-METHYL-2-PENTANONE	UG/KG							11	U							11	UJ
2-HEXANONE	UG/KG							11	U							11	UJ
TETRACHLOROETHYLENE	UG/KG							11	U							11	UJ
1,1,2,2-TETRACHLOROETHANE	UG/KG							11	U							11	UJ
TOLUENE	UG/KG							11	U							3	J
CHLOROBENZENE	UG/KG							11	U							11	UJ
ETHYLBENZENE	UG/KG							11	U							11	UJ
STYRENE	UG/KG							11	U							11	UJ
XYLENES (TOTAL)	UG/KG							11	U							11	UJ
PHENOL	UG/KG							360	U							360	U

SISE27.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92	16-JUN-92
	SAMPLE ID>	27-001-D001	27-002-D001	27-003-D001	27-004-D001	27-005-D001	27-006-D001	27-007-D001	27-008-D001 RE
BIS(2-CHLOROETHYL)ETHER	UG/KG				360 U				360 U
2-CHLOROPHENOL	UG/KG				360 U				360 U
1,3-DICHLOROBENZENE	UG/KG				360 U				360 U
1,4-DICHLOROBENZENE	UG/KG				360 U				360 U
1,2-DICHLOROBENZENE	UG/KG				360 U				360 U
2-METHYLPHENOL	UG/KG				360 U				360 U
2,2-OXYBIS(2- CHLOROPROPANE)	UG/KG				360 U				360 U
4-METHYLPHENOL	UG/KG				360 U				360 U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG				360 U				360 U
HEXACHLOROETHANE	UG/KG				360 U				360 U
NITROBENZENE	UG/KG				360 U				360 U
ISOPHORONE	UG/KG				360 U				360 U
2-NITROPHENOL	UG/KG				360 U				360 U
2,4-DIMETHYLPHENOL	UG/KG				360 U				360 U
BIS(2-CHLOROETHOXY)METHANE	UG/KG				360 U				360 U
2,4-DICHLOROPHENOL	UG/KG				360 U				360 U
1,2,4-TRICHLOROBENZENE	UG/KG				360 U				360 U
NAPHTHALENE	UG/KG				360 U				360 U
4-CHLOROANILINE	UG/KG				360 U				360 U
HEXACHLOROBUTADIENE	UG/KG				360 U				360 U
4-CHLORO-3-METHYLPHENOL	UG/KG				360 U				360 U
2-METHYLNAPHTHALENE	UG/KG				360 U				360 U
HEXACHLOROCYCLOPENTADIENE	UG/KG				360 U				360 U
2,4,6-TRICHLOROPHENOL	UG/KG				360 U				360 U
2,4,5-TRICHLOROPHENOL	UG/KG				890 U				910 U
2-CHLORONAPHTHALENE	UG/KG				360 U				360 U
2-NITROANILINE	UG/KG				890 U				910 U
DIMETHYLPHTHALATE	UG/KG				360 U				360 U
ACENAPHTHYLENE	UG/KG				360 U				360 U
2,6-DINITROTOLUENE	UG/KG				360 U				360 U
3-NITROANILINE	UG/KG				890 U				910 U
ACENAPHTHENE	UG/KG				360 U				360 U
2,4-DINITROPHENOL	UG/KG				890 U				910 U
4-NITROPHENOL	UG/KG				890 U				910 U
DIBENZOFURAN	UG/KG				360 U				360 U
2,4-DINITROTOLUENE	UG/KG				360 U				360 U
DIETHYLPHTHALATE	UG/KG				360 U				360 U
4-CHLOROPHENYL-PHENYLETHER	UG/KG				360 U				360 U
FLUORENE	UG/KG				360 U				360 U
4-NITROANILINE	UG/KG				890 U				910 U
4,6-DINITRO-2-METHYLPHENOL	UG/KG				890 U				910 U
N-NITROSODIPHENYLAMINE	UG/KG				360 U				360 U
4-BROMOPHENYL-PHENYLETHER	UG/KG				360 U				360 U
HEXACHLOROBENZENE	UG/KG				360 U				360 U

SISE27.WK3

SUMMARY OF SEDIMENT SAMPLE ANALYTICAL RESULTS (JUNE 1992) NWS EARLE, SITE 27 (PROJECTILE REFURBISHING AREA)

		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92		16-JUN-92	
	SAMPLE ID>	27-001-D001		27-002-D001		27-003-D001		27-004-D001		27-005-D001		27-006-D001		27-007-D001		27-008-D001 RE	
PENTACHLOROPHENOL	UG/KG							890	U							910	U
PHENANTHRENE	UG/KG							360	U							46	J
ANTHRACENE	UG/KG							360	U							360	U
CARBAZOLE	UG/KG							360	UJ							9	UJ
DI-N-BUTYLPHTHALATE	UG/KG							26	J							32	J
FLUORANTHENE	UG/KG							360	U							62	J
PYRENE	UG/KG							360	U							57	J
BUTYLBENZYLPHTHALATE	UG/KG							360	U							360	U
3,3'-DICHLOROBENZIDINE	UG/KG							360	U							360	U
BENZO(A)ANTHRACENE	UG/KG							360	U							19	J
CHRYSENE	UG/KG							360	U							31	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG							490	U							540	U
DI-N-OCTYLPHTHALATE	UG/KG							360	U							360	U
BENZO(B)FLUORANTHENE	UG/KG							360	U							360	U
BENZO(K)FLUORANTHENE	UG/KG							360	U							360	U
BENZO(A)PYRENE	UG/KG							360	U							360	U
INDENO(1,2,3-CD)PYRENE	UG/KG							360	U							360	U
DIBENZ(A,H)ANTHRACENE	UG/KG							360	U							360	U
BENZO(G,H,I)PERYLENE	UG/KG							360	U							360	U

SISOIL29.WK3

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS (JUNE 1992); NWS EARLE, SITE 29, (PCB SPILL SITE/BUILDING C-16)

	SAMPLE ID>	10-JUN-92 29-001-S001		11-JUN-92 29-002-S001		11-JUN-92 29-003-S001		11-JUN-92 29-004-S001		11-JUN-92 29-005-S001		
PESTICIDES	UNITS											
ALPHA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
BETA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
DELTA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
GAMMA-BHC (LINDANE)	UG/KG	4.7	UJ	1.8	U	1.8	U	2	U	2	U	
HEPTACHLOR	UG/KG	5	UJ	1.8	U	1.8	U	2	U	2	U	
ALDRIN	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.8	U	1.8	U	2	P	2	U	
ENDOSULFAN I	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
DIELDRIN	UG/KG	6.1	UJ	3.6	U	3.6	U	4	U	4	U	
4,4'-DDE	UG/KG	7.5	UJ	2.5	J	1.4	J	10	=	1.2	JP	
ENDRIN	UG/KG	3.6	U	3.6	U	3.6	U	4.4	=	4	U	
ENDOSULFAN II	UG/KG	3.6	UJ	3.6	U	3.6	U	4	U	4	U	
4,4'-DDD	UG/KG	9.3	UJ	0.36	J	3.6	U	9.1	P	1.2	JP	
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.6	U	3.6	U	4	U	4	U	
4,4'-DDT	UG/KG	2.5	U	3.3	JP	2.5	J	32	=	1.6	JP	
METHOXYCHLOR	UG/KG	18	U	18	U	18	U	20	U	20	U	
ENDRIN KETONE	UG/KG	3.6	U	3.6	U	3.6	U	4	U	4	U	
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.6	U	3.6	U	4	U	4	U	
ALPHA CHLORDANE	UG/KG	1.8	U	0.36	J	1.8	U	2	U	2	U	
GAMMA CHLORDANE	UG/KG	1.8	U	1.8	U	1.8	U	2	U	2	U	
TOXAPHENE	UG/KG	180	U	180	U	180	U	200	U	200	U	
PCB's												
AROCHLOR-1016	UG/KG	36	U	36	U	36	U	40	U	40	U	
AROCHLOR-1221	UG/KG	72	U	72	U	72	U	79	U	79	U	
AROCHLOR-1232	UG/KG	36	U	36	U	36	U	40	U	40	U	
AROCHLOR-1242	UG/KG	36	U	36	U	36	U	40	U	40	U	
AROCHLOR-1248	UG/KG	36	U	36	U	36	U	40	U	40	U	
AROCHLOR-1254	UG/KG	36	U	36	U	36	U	40	U	40	U	
AROCHLOR-1260	UG/KG	36	U	36	U	36	U	27	J	160	=	
Petroleum Hydrocarbons	MG/KG	28000	=	7.8	=	7	=	51	=	60	=	

Table 1 Geotechnical Tests Performed, Reference Methods and Test Numbers		
Test Parameter	**Reference Method[1]**	**Test Number**
Grain Size by Sieve and Hydrometer	ASTM D 422	4

[1] All analytical methods derived from the Annual Book of ASTM Standards, Section 4, Volume 4.08, Soil and Rock; Building Stones; Geotextiles, American Society of Testing Materials, Philadelphia, PA, 1991 unless noted otherwise.

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	Naval Weapons/Coltsneck	PROJECT SAMPLE I.D.	06-004-D001	PROJECT ANALYST	SPM
JOB NUMBER	9206L708	ETL SAMPLE NUMBER	003	QA/QC ANALYST	RWF
W. O. NUMBER	1771-15-04-0000	DATE RECEIVED	6/23/92	DATE COMPLETED	07/03/92

PARTICLE SIZE DISTRIBUTION

U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	99.4
#4	4.750	97.1
#10	2.000	94.8
#20	0.850	87.1
#50	0.300	62.3
#100	0.150	31.8
#200	0.075	23.7
HYDROMETER	0.0448	16.8
	0.0326	14.0
	0.0235	12.0
	0.0168	10.6
	0.0124	9.9
	0.0089	8.5
	0.0063	7.8
	0.0045	6.4
	0.0032	6.4
	0.0023	4.3
	0.0013	4.3
	0.0009	4.3

EFFECTIVE SIZES

% Finer	Diameter mm
60	0.289
30	0.133
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION

dark brown gravelly and silty or clayey SAND with 3% gravel and 24% silt or clay, also contained organics

Unified Soil Classification System (USCS) Group Symbol

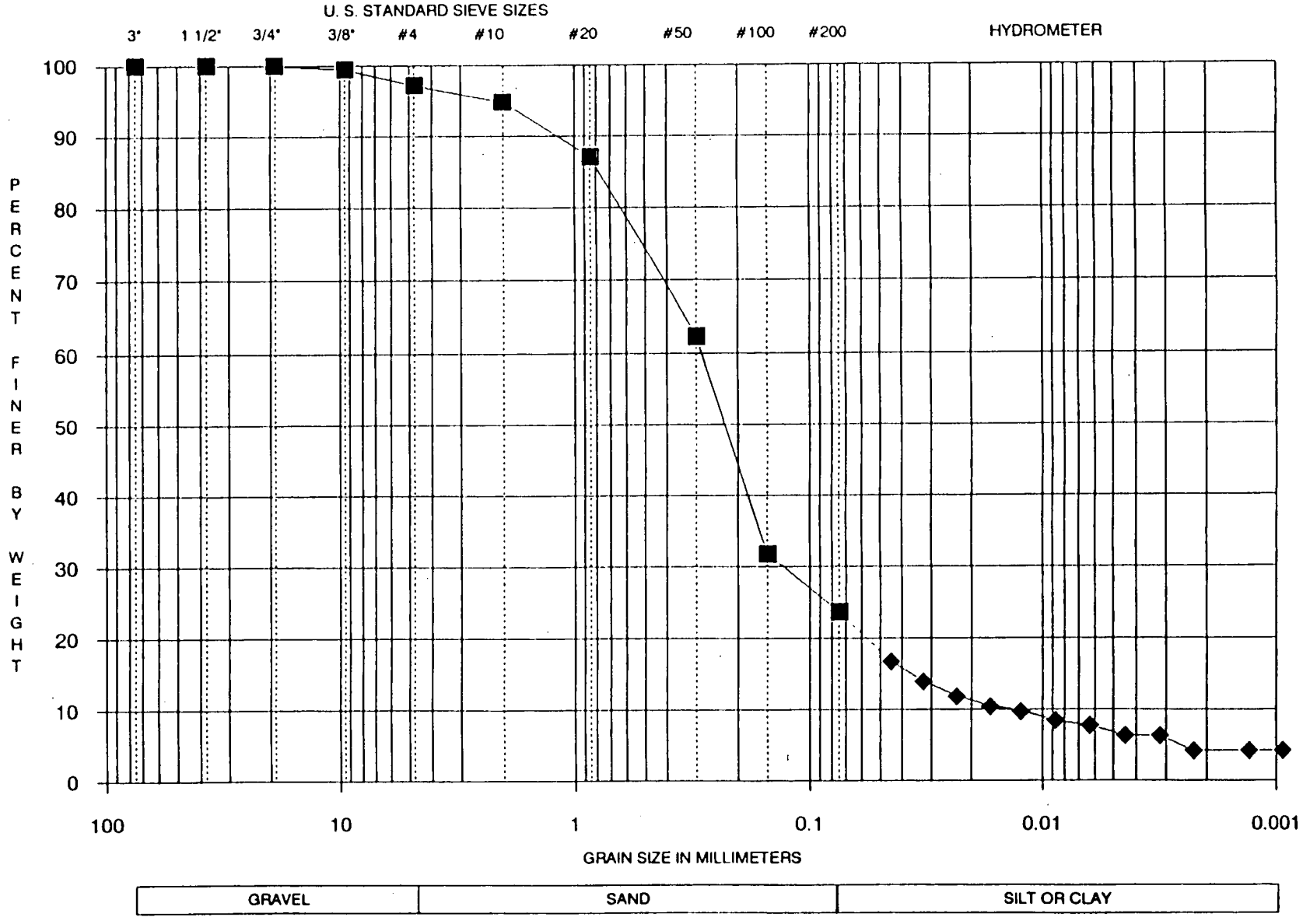
SM or SC

NOTES

NA=NOT APPLICABLE

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

PARTICLE-SIZE DISTRIBUTION CURVE FOR
NAVAL WEAPONS/COLTSNECK PROJECT SAMPLE 06-004-D001, ETL SAMPLE # 9206L708-003



WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	Naval Weapons/Coltsneck	PROJECT SAMPLE I.D.	12-002-D001	PROJECT ANALYST	SPM
JOB NUMBER	9206L708	ETL SAMPLE NUMBER	005	QA/QC ANALYST	RWF
W. O. NUMBER	1771-15-04-0000	DATE RECEIVED	6/23/92	DATE COMPLETED	07/03/92

PARTICLE SIZE DISTRIBUTION

U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	99.9
#4	4.750	99.8
#10	2.000	98.9
#20	0.850	94.9
#50	0.300	75.1
#100	0.150	41.4
#200	0.075	33.7
HYDROMETER	0.0452	19.8
	0.0328	16.4
	0.0234	15.6
	0.0172	10.4
	0.0128	7.9
	0.0091	6.2
	0.0065	5.3
	0.0046	4.4
	0.0033	3.6
	0.0023	3.6
	0.0013	3.6
	0.0009	3.6

EFFECTIVE SIZES

% Finer	Diameter mm
60	0.233
30	NA
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION

dark brown silty or clayey SAND with 34% silt or clay, also contained organics

Unified Soil Classification System (USCS) Group Symbol

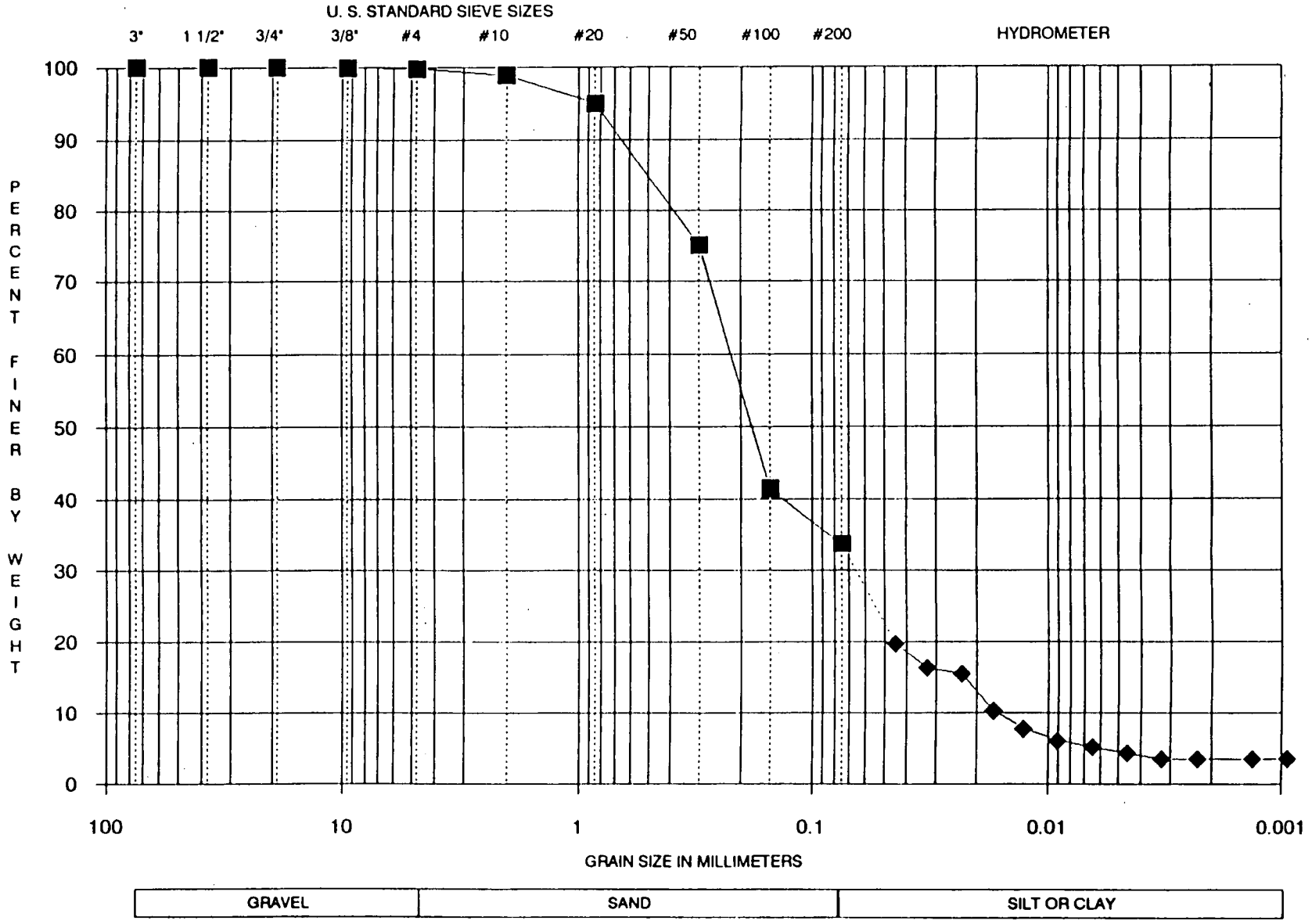
SM or SC

NOTES

NA=NOT APPLICABLE

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

PARTICLE-SIZE DISTRIBUTION CURVE FOR
NAVAL WEAPONS/COLTSNECK PROJECT SAMPLE 12-002-D001, ETL SAMPLE # 9206L708-005



WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	Naval Weapons-Coltsneck	PROJECT SAMPLE I.D.	13-001-D001	PROJECT ANALYST	SPM
JOB NUMBER	9206L612	ETL SAMPLE NUMBER	006	QA/QC ANALYST	RWF
W. O. NUMBER	1771-15-04	DATE RECEIVED	6/16/92	DATE COMPLETED	06/24/92

PARTICLE SIZE DISTRIBUTION

U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	99.9
#4	4.750	99.7
#10	2.000	99.2
#20	0.850	94.3
#50	0.300	21.7
#100	0.150	4.2
#200	0.075	1.9
HYDROMETER	0.0522	2.3
	0.0371	1.6
	0.0263	1.6
	0.0186	1.6
	0.0136	1.6
	0.0096	0.9
	0.0068	0.9
	0.0048	0.9
	0.0034	0.9
	0.0024	0.9
	0.0014	0.9
	0.0010	0.1

EFFECTIVE SIZES

% Finer	Diameter mm
60	0.590
30	0.363
10	0.200
Uniformity Coefficient	Gradation Coefficient
3.0	1.1

SAMPLE DESCRIPTION

white poorly graded SAND with 2% silt or clay, also contained organics

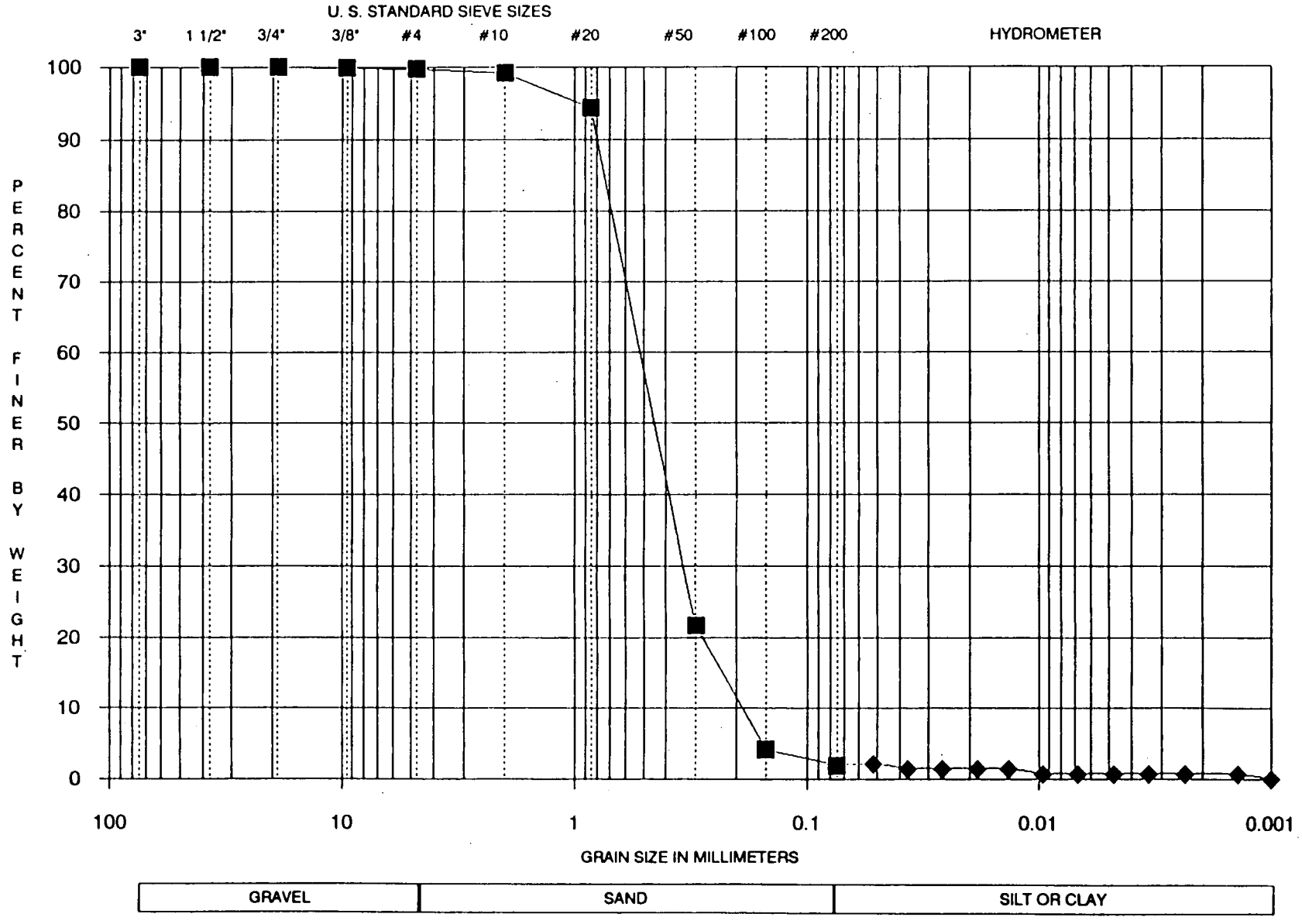
Unified Soil Classification System (USCS) Group Symbol

SP

NOTES

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

PARTICLE-SIZE DISTRIBUTION CURVE FOR
NAVAL WEAPONS-COLTSNECK PROJECT SAMPLE 13-001-D001, ETL SAMPLE # 9206L612-006



WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	Naval Weapons/Coltsneck	PROJECT SAMPLE I.D.	17-001-D001	PROJECT ANALYST	SPM
JOB NUMBER	9206L708	ETL SAMPLE NUMBER	007	QA/QC ANALYST	RWF
W. O. NUMBER	1771-15-04-0000	DATE RECEIVED	6/23/92	DATE COMPLETED	07/03/92

PARTICLE SIZE DISTRIBUTION

U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	98.8
#4	4.750	97.6
#10	2.000	96.6
#20	0.850	94.1
#50	0.300	72.4
#100	0.150	51.2
#200	0.075	44.9
HYDROMETER	0.0401	39.0
	0.0289	36.9
	0.0208	34.9
	0.0149	32.8
	0.0112	29.8
	0.0080	28.8
	0.0057	25.7
	0.0041	24.7
	0.0030	21.6
	0.0021	18.6
	0.0013	16.5
	0.0009	14.5

EFFECTIVE SIZES

% Finer	Diameter mm
60	0.212
30	NA
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION

brown gravelly and silty or clayey SAND with 2% gravel and 45% silt or clay

Unified Soil Classification System (USCS) Group Symbol

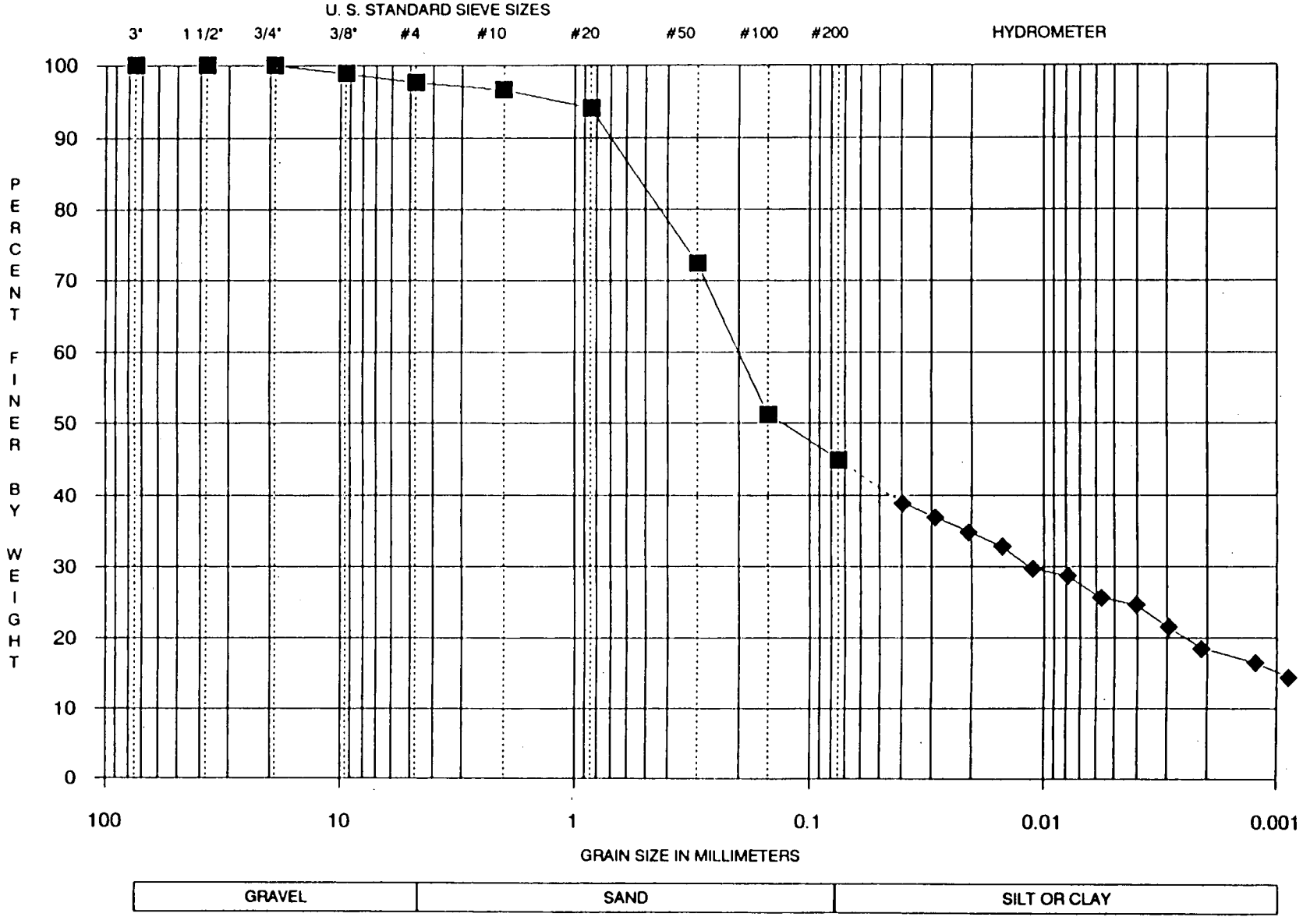
SM or SC

NOTES

NA=NOT APPLICABLE

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

PARTICLE-SIZE DISTRIBUTION CURVE FOR
NAVAL WEAPONS/COLTSNECK PROJECT SAMPLE 17-001-D001, ETL SAMPLE # 9206L708-007



WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	Naval Weapons/Coltsneck	PROJECT SAMPLE I.D.	17-004-D001	PROJECT ANALYST	SPM
JOB NUMBER	9206L708	ETL SAMPLE NUMBER	009	QA/QC ANALYST	RWF
W. O. NUMBER	1771-15-04-0000	DATE RECEIVED	6/23/92	DATE COMPLETED	07/03/92

PARTICLE SIZE DISTRIBUTION

U. S: Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#10	2.000	94.4
#20	0.850	83.9
#50	0.300	70.2
#100	0.150	61.0
#200	0.075	55.1
HYDROMETER	0.0467	22.7
	0.0332	21.5
	0.0238	19.0
	0.0170	16.5
	0.0130	7.7
	0.0092	6.5
	0.0066	5.2
	0.0046	5.2
	0.0033	5.2
	0.0023	4.0
	0.0014	4.0
	0.0010	4.0

EFFECTIVE SIZES

% Finer	Diameter mm
60	0.137
30	NA
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION

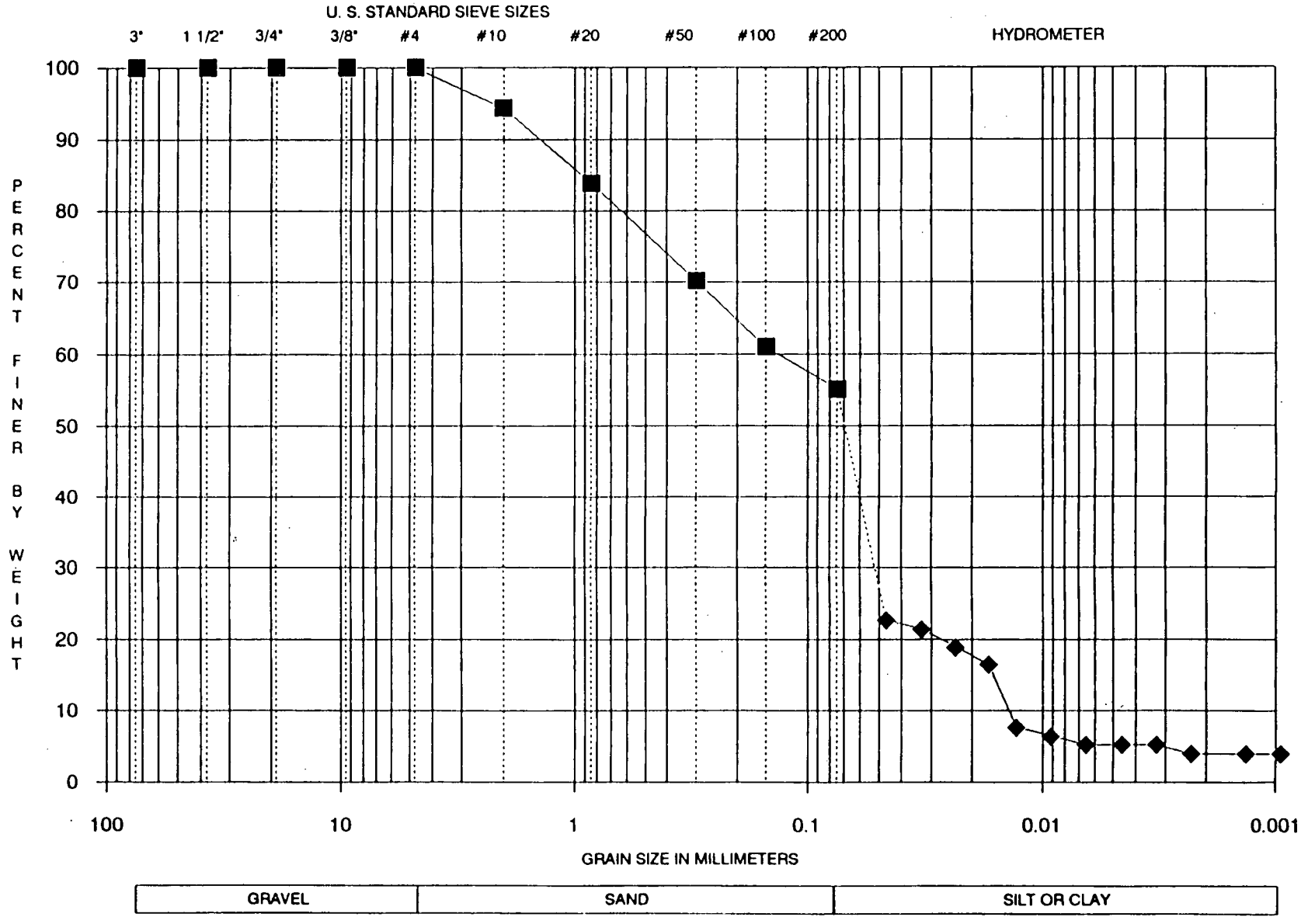
brown sandy SILT or CLAY with 45% sand

Unified Soil Classification System (USCS) Group Symbol

ML, CL, MH, or CH

NOTES

NA=NOT APPLICABLE

WESTON ENVIRONMENTAL TECHNOLOGY LABORATORY

PARTICLE-SIZE DISTRIBUTION CURVE FOR
NAVAL WEAPONS/COLTSNECK PROJECT SAMPLE 17-004-D001, ETL SAMPLE # 9206L708-009