U.S. Army Corps of Engineers

New England District
Concord, Massachusetts

Preliminary Site Investigation at the Former Loring AFB Defense Area Nike LO-58 Launch Area Caribou, Maine

Contract No. DACA31-96-D-0006

FINAL PRELIMINARY SITE INVESTIGATION REPORT Delivery Order No. 0218 DCN: NIKE-062800-AABA

28 June 2000

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FINAL

PRELIMINARY SITE INVESTIGATION REPORT
FORMER LORING AFB DEFENSE AREA
NIKE BATTERY LO-58 LAUNCH AREA
CARIBOU, MAINE

Contract No. DACA31-96-D-0006
Task Order 18
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Prepared for:

U.S. DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
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Concord, Massachusetts 01742-2751

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One Wall Street
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28 June 2000

W.O. No. 10971.218.001

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LIST OF ACRONYMS

AFN	Acid Fueling/Neutralization
AMAC	Adult Multiple Alternative Center
AMSL	above mean sea level
CENAE	U. S. Army Corps of Engineers, New England District
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
EM	Electromagnetic
FUDS	Formerly Used Defense Sites
GAC	granular activated carbon
GPR	ground-penetrating radar
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guideline
MSS	Maryland Spectral Services
mV	milli-volts
NGS	Northeast Geophysical Services
ns	nanoseconds
PCE	tetrachloroethene
PID	photoionization detector
ppb	parts per billion
ppm	parts per million
QC	quality control
RAGs	Remedial Action Guidelines
SAP	Sampling and Analysis Plan
SOW	Statement of Work
TCE	trichloroethene
TPH-DRO	total petroleum hydrocarbon – diesel range organics
UDMH	unsymmetrical dimethylhydrazine
UST	underground storage tank
VOCs	volatile organic compounds
WESTON®	Roy F. Weston, Inc.

SECTION 1

EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

This Preliminary Site Investigation was performed by Roy F. Weston, Inc. (WESTON®) at the Former Nike Battery LO-58 Launch Area property ("the Site") in Caribou, Maine. These activities were performed for the U.S. Army Corps of Engineers, New England District (CENAE) in accordance with the revised Statement of Work (SOW) issued by CENAE to WESTON on September 14, 1998. The work performed under this SOW falls under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS).

The investigation was initiated following the detection of trichloroethene (TCE) in a bedrock water supply well at the property at a concentration above the Maine Department of Environmental Protection (MEDEP)'s Maximum Exposure Guideline (MEG) of 5 parts per billion (ppb). Additional investigation at the property by the MEDEP indicated that an underground storage tank (UST), which was believed to have been removed in 1994, could still exist at the property.

The Preliminary Site Investigation at the property was conducted to evaluate subsurface conditions at the Site by performing ground-penetrating radar (GPR) and passive soil-gas surveys, as well as a Geoprobe® soil boring and soil sampling program. The objective was to assess if the source of the TCE contamination detected in the on-site bedrock water supply well was due to former activities of the Department of Defense (DOD) during its operation of the property, and to assess if additional investigations are warranted.

The property was acquired from the Town of Caribou by the U.S. Government for the construction of a Nike missile launching facility in 1955. Construction of the LO-58 site began in the mid-1950s, and by 1957 it became operational as an anti-aircraft guided missile launching facility. Historical information relating to missile launcher facilities indicates that the Acid Fueling/Neutralization (AFN) area was used for the earlier Nike Ajax missiles, which had a liquid fuel sustainer (rocket) motor. The Ajax missile used a blend of jet petroleum (JP-4), inhibited red fuming nitric acid, and approximately one pint of unsymmetrical dimethylhydrazine (UDMH) to make the mixture hypergolic, and hence capable of spontaneous ignition without the need for an additional ignition source. Thus, the AFN was an area to be investigated.

Following its decommissioning as a military facility in 1966, the Site was purchased by the City of Presque Isle and used for the storage of municipal property and equipment. In 1971, the property was purchased by its current owner, the Lister-Knowlton VFW Post 9389. The property consists of the former Nike missile launcher area; the former Engine, Generator, & Frequency Changer Building ("Generator Building"); the former Missile Assembly & Test Building ("Test Building"); the former Warhead Building and AFN Station; and the former Barracks Building. The VFW currently uses the former Barracks Building as their headquarters for meetings and functions, and leases the former Generator Building to the Adult Multiple Alternative Center (AMAC), a daytime care facility for handicapped adults.

In the fall of 1996, MEDEP responded to a complaint made by the current owners concerning odors in the water from the bedrock drinking water well serving the AMAC. Two rounds of groundwater sampling and analysis (EPA Method 8260) by the MEDEP documented and confirmed the presence of TCE contamination above the MEDEP's MEG of 5 ppb.

During a site visit on May 21, 1998, MEDEP staff investigated an area located southwest of the former Generator Building, where a 4000-gallon underground fuel storage tank was previously located during the time the Site was operated by the military. Although this tank reportedly had been removed, a magnetometer survey of the area by MEDEP detected a significant anomaly approximately 3 feet east and 9 feet south of the southwest corner of the building. This magnetometer survey suggested that a large metallic object existed in this portion of the property.

A subcontractor to WESTON, Northeast Geophysical Services (NGS) of Bangor, Maine, performed a GPR survey near the former Generator Building on June 23, 1999. The NGS survey consisted of two phases of investigation; a preliminary metal detection survey to identify the location of medium to large buried metal objects, and a more sensitive GPR survey to identify physical characteristics of those objects. The results of the GPR survey indicate that the metallic response observed during the magnetometer survey by representatives of the MEDEP was not due to the presence of an underground storage tank in the area. GPR profiles in this area showed strong but narrow hyperbolic reflectors that are indicative of a small-diameter metal pipe extending outwards from the corner of the former Generator Building.

WESTON initiated a passive soil-gas survey at the Site on June 22, 1999. A total of 75 EMFLUX® soil-gas probes were installed in the vicinity of former Generator Building and surroundings; the former Test Building and surroundings; the former Acid Storage Shed and surroundings; the former AFN area and surroundings; the former Launcher Pad; and the drainage system outfalls and associated drainage swales located around the perimeter of the operations area. WESTON removed the soil-gas probes on July 12, 1999, and shipped them to Maryland Spectral Services (MSS) of Baltimore, Maryland for laboratory analysis of volatile organic compounds (VOCs) by EPA Method 8260B. The analytical results of the soil-gas survey indicated that low levels of BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), TCE, tetrachloroethene (PCE), naphthalene, chloromethane, 1,2,4-Trimethylbenzene, and 1,3,5-Trimethylbenzene may exist in the subsurface.

In October 1999, a Geoprobe soil boring and soil sampling investigation was performed to characterize the Site soils, determine the depth of the overburden groundwater table (if present), explore the depth to bedrock at the property, and sample potentially contaminated soil zones identified by the passive soil-gas survey. Under the direction of a WESTON geologist, a total of 40 soil borings were advanced in the overburden at the Site. The borings were advanced to the top of the bedrock surface at each location, which was encountered at depths ranging between approximately 1 and 19 feet bgs. Soil samples were collected from 15 of the 40 soil borings locations and submitted to ESS Laboratory for laboratory analysis of VOCs by EPA Method 8260B, total petroleum hydrocarbon – diesel range organics (TPH-DRO) by MEDEP Method 4.1.25, and total petroleum hydrocarbon – gasoline range organics (TPH-GRO) by MEDEP Method 4.2.17.

The analytical results of the soil samples collected indicate the presence of acetone in 16 of the 17 samples collected at concentrations ranging from approximately 6.8 to 55.1 ppb, and trichloroethene was detected in two soil samples at concentrations of approximately 1.1 and 9 ppb. These concentrations are below their respective MEDEP Remedial Action Guidelines (RAGs). No other VOCs were detected in the soil samples collected from the Nike LO-58 property.

TPH-DRO was detected in soil samples SB-04, SB-09, and SB-13 at concentrations of 4, 10, and 36 parts per million (ppm), respectively. The MEDEP Remediation Standard for this substance is 10 ppm. There were no other detections of TPH-DRO, and no detections of TPH-GRO in the 17 soil samples collected from the Nike LO-58 property.

Based on the results of the soil-gas survey and Geoprobe soil boring investigation, WESTON concludes that low levels of VOCs and/or TPH-DRO may exist in bedrock groundwater beneath the Site. In addition, two soil samples collected from the property were found to contain concentrations of TPH-DRO in exceedance of the MEDEP Remediation Standard. WESTON therefore recommends the installation and sampling of bedrock monitoring wells at the property. The groundwater samples collected from these monitoring wells should be submitted for laboratory analysis of VOCs by EPA Method 8260B and TPH-DRO by Maine Method 4.1.25. WESTON also recommends continued sampling and laboratory analysis of the on-site bedrock water supply well for VOCs by EPA Method 524.2, as well as for TPH-DRO by Maine Method 4.1.25. The objective of the additional investigative work is to assess whether or not activities formerly conducted at the property have resulted in an impact to bedrock water quality at the Site, and if so, the magnitude of that impact. Water level measurements taken in the newly installed bedrock wells will also assist in estimating the direction of groundwater flow in the bedrock water-bearing zone, so that potential receptors of VOC contamination can be evaluated.

SECTION 2

GENERAL

2. GENERAL

2.1 INTRODUCTION

This Preliminary Site Investigation was performed by Roy F. Weston, Inc. (WESTON®) at the Former Nike Battery LO-58 Launch Area property ("the Site") in Caribou, Maine. These activities were performed for the U.S. Army Corps of Engineers, New England District (CENAE) in accordance with the revised Statement of Work (SOW) issued by CENAE to WESTON on September 14, 1998. The work performed under this SOW falls under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS).

The investigation was initiated following the detection of trichloroethene (TCE) in a bedrock water supply well at the property at a concentration above the Maine Department of Environmental Protection (MEDEP)'s Maximum Exposure Guideline (MEG) of 5 parts per billion (ppb) (MEDEP, 1998). Additional investigation at the property by the MEDEP indicated that an underground storage tank (UST), which was believed to have been removed in 1994, could still exist at the property. The following sections define the objectives of the investigation; provide information on the location and physiography of the property; identify previous site owners; and describe prior uses of the Site.

2.2 PROJECT OBJECTIVES

The Preliminary Site Investigation at the property was conducted to evaluate subsurface conditions at the Site by performing ground-penetrating radar (GPR) and passive soil-gas surveys, as well as a Geoprobe® soil boring and soil sampling program. The objective was to assess if the source of the TCE contamination detected in the on-site bedrock water supply well was due to former activities of the Department of Defense (DOD) during its operation of the property, and to assess if additional investigations are warranted. The investigation was performed in a phased approach, beginning with the GPR and soil-gas surveys in June 1999 and culminating with the Geoprobe® soil boring and sampling program in October 1999. Descriptions of each of these investigative activities are presented in Section 3. These results would then be used to decide if additional investigations would be warranted at the Site.

2.3 SITE LOCATION AND PHYSIOGRAPHY

According to information obtained from CENAE and MEDEP, the Former Nike Battery LO-58 Launch Area property is a 45.48 acre parcel of land located on Route 1 in Caribou, Aroostook County, Maine. It is located on a regional topographic high at an approximate maximum elevation of 610 feet above mean sea level (AMSL). The approximate center of the parcel is located at latitude 46° 52' 57" north and longitude 68° 00' 34" west.

Surface water runoff across the Site is primarily radial, discharging into swales and topographic low areas of the property. The ultimate discharge point for surface water runoff is the Aroostook River, located approximately two miles southeast of the Nike LO-58 site (USGS, 1953). An unnamed tributary to the Aroostook River is located approximately one mile south of the Site, at the southern base of the topographic high that makes up the former Launch Site property. A second surface water body, Hardwood Brook, is located approximately one mile north of the property, at the base of the northern margin of the property's uplands. Hardwood Brook joins Otter Brook, approximately one mile east of the Nike LO-58 property, prior to discharging into the Aroostook River. No other surface water bodies are located within approximately two miles of the Site (USGS, 1953).

2.4 OWNERSHIP AND PRIOR LAND USE

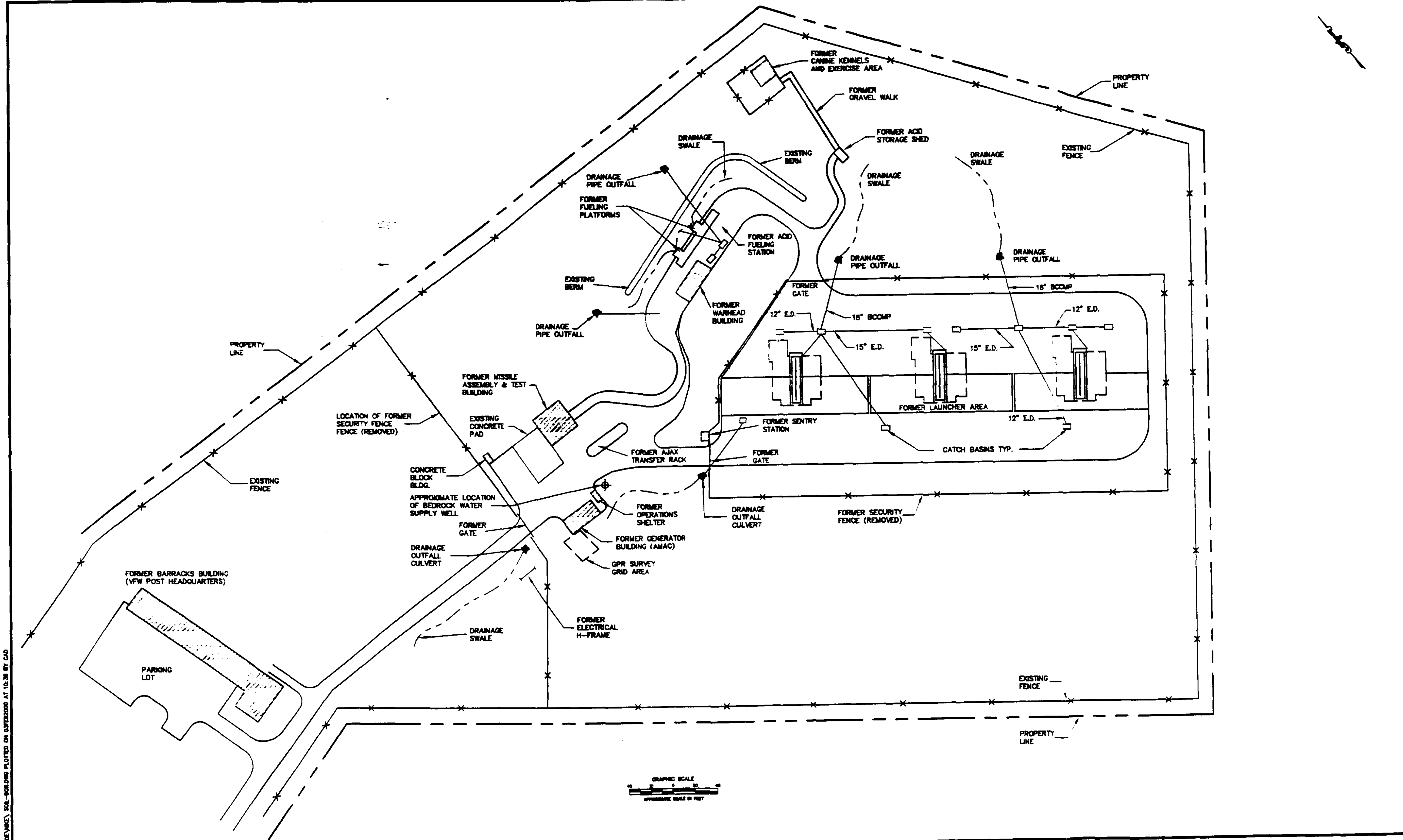
The property was acquired from the Town of Caribou by the U.S. Government for the construction of a Nike missile launching facility in 1955. Construction of the LO-58 site began in the mid-1950s, and by 1957 it became operational as an anti-aircraft guided missile launching facility (U.S. Army, 1999). The launcher facility was originally designed to carry and deploy the Ajax-type guided missiles; however, in approximately 1960, the operation was converted to operate with the bigger, nuclear-capable Hercules-type missiles (MEDEP, 1998). Historical information relating to missile launcher facilities indicates that the AFN area relates to the earlier Nike Ajax missiles, which had a liquid fuel sustainer (rocket) motor. The Ajax missile used a blend of jet petroleum (JP-4), inhibited red fuming nitric acid, and approximately one pint of unsymmetrical dimethylhydrazine (UDMH) to make the mixture hypergolic, and hence capable of spontaneous ignition without the need for an additional ignition source. Reportedly, the missiles were periodically de-fueled at the AFN area so that maintenance checks could be

performed. For safety reasons, these checks could not be performed on fueled missiles (U.S. Army, 1999). Thus, this area was investigated as a potential source area of VOC contamination.

According to information provided to WESTON by Mr. Donald Bender of Fairleigh Dickinson University and the New Jersey Nike Missile Site Survey, several changes occurred at Nike missile launching sites as a result of the conversion from Nike Ajax to Nike Hercules missiles. Some of these changes included the construction of the Warhead Building within the AFN area, the construction of a larger Missile Assembly & Test Building, and an upgrade to the launchers, missile elevators, motors, and related power elements associated with the three on-site missile magazines. Historical information relating to the type and configuration of the missile magazines at LO-58 indicates that there were approximately 10 Nike Ajax missiles in each of the "pits" at this site, and approximately 6 of the larger Hercules-types within each "pit" after the Site had been converted (Bender, 1998). Maintenance and routine cleaning of the missiles may have included the use of solvents; therefore, the missile pit areas were investigated during this phase of work.

Following its decommissioning as a military facility in 1966, the Site was purchased by the City of Presque Isle and used for the storage of municipal property. In 1971 the property was purchased by its current owner, the Lister-Knowlton VFW Post 9389 (MEDEP, 1998). The property consists of the former Nike missile launcher area, the former Engine, Generator, and Frequency Changer Building ("Generator Building"), the former Missile Assembly and Test Building ("Test Building"), the former Warhead Building and AFN Station, and the former Barracks Building (Figure 2-1). The VFW currently uses the former Barracks Building as their headquarters for meetings and functions, and leases the former Generator Building to the Adult Multiple Alternative Center (AMAC), a daytime care facility for handicapped adults. The only other activity at the Site since decommissioning was a small farm machinery repair facility that operated for less than a year out of the former Test Building (MEDEP, 1998).

Information provided in the September 1998 CENAE Statement of Work indicates that the missile silos were closed during a CENAE project performed in 1994. That same year,



SUPPLEMENTAL SITE INVESTIGATION
FORMER LORING AFB DEFENSE AREA
NIKE BATTERY LO-58 LAUNCH AREA
CARIBOU, MAINE

WESTON

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

SITE PLAN

JBT	JAN 00	FIGURE 2-1
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a 64-foot deep bedrock water supply well was installed approximately 25 feet east of the former Generator Building to provide water service to the AMAC (Figure 2-1).

The Generator Building was previously served by a water supply well located approximately 50 feet west of the VFW building; however, the supply line that carried water from the well to the AMAC was reportedly damaged when a portion of it froze during the winter and no longer functioned properly. No damage has been reported to the supply line that services the VFW building, and currently the former Barracks Building is still served by the well located to the west of the VFW building (CENAE, 1998).

In the fall of 1996, MEDEP responded to a complaint made by the current owners concerning odors in the water from the well serving the AMAC. Two rounds of groundwater sampling and analysis (EPA Method 8260) by the MEDEP documented and confirmed the presence of TCE contamination. The first round of sampling was performed on October 8, 1996. The analytical results of this sample indicated the presence of TCE at a concentration of 8.6 parts per billion (ppb), which is above MEDEP's MEG of 5 ppb. The results of the second round of sampling, performed on October 21, 1996, indicated the presence of TCE at a concentration of 8.8 ppb. The MEDEP immediately installed a dual granular activated carbon (GAC) filtering system and initiated a quarterly monitoring program. Between 1996 and 1998, TCE contamination was consistently detected in samples collected as part of the quarterly monitoring program, with concentrations remaining above the MEG of 5 ppb. According to MEDEP, however, the analytical results of a sample collected in 1999 indicated the presence of TCE contamination in the drinking water well at a concentration below 5 ppb (MEDEP, 1998).

During a site visit on May 21, 1998, MEDEP staff investigated an area located southwest of the former Generator Building, where a 4000-gallon underground fuel storage tank was previously located during the time the Site was operated by the military. Although this tank reportedly had been removed, a magnetometer survey of the area detected a significant anomaly approximately 3 feet east and 9 feet south of the southwest corner of the building. This magnetometer survey suggested that a large metallic object existed in this portion of the property (MEDEP, 1998).

Following the May 21, 1998 site visit, the drinking water well located adjacent west of the VFW Post headquarters building was added to the ongoing quarterly monitoring program. Due to

the fact that this well is located topographically downhill from the area of known TCE contamination, it was added to the program as a precautionary measure to assess if the VFW drinking water well had also been impacted (MEDEP, 1998). During the summer of 1998, a drinking water sample was collected from the VFW water supply well and analyzed for volatile organic compounds (VOCs) by EPA Method 8260. Analytical results of the sample, however, detected no compounds above laboratory detection limits (WESTON, 1998).

SECTION 3

SITE INVESTIGATION

3. SITE INVESTIGATION

3.1 INTRODUCTION

The subsections that follow describe the rationale and procedures used to conduct the GPR, passive soil-gas, and Geoprobe® soil boring and soil sampling activities at the Site. The GPR and soil-gas surveys were performed in accordance with the Final Initial Sampling and Analysis Plan (SAP), prepared by WESTON and submitted to CENAE on December 11, 1998. The subsequent Geoprobe® soil boring and soil sampling activities were performed in accordance with the Final Supplemental SAP, prepared by WESTON and submitted to CENAE on October 22, 1999. The results of these investigations are provided in Section 4.

3.2 GROUND-PENETRATING RADAR (GPR) SURVEY

According to information presented in the 1998 CENAE SOW, CENAE performed a CON/HTRW closure of the Site in 1994. Following the investigation, CENAE stated that "We did not find any indication of a tank being present and assume it was removed" (CENAE, 1998). However, a magnetometer survey of the area by MEDEP personnel during the May 21, 1998 site visit resulted in the detection of an anomaly approximately 3 feet east and 9 feet south of the southwest corner of the building (CENAE, 1998). This anomaly suggested that a metallic object still remained in this portion of the property, where a 4000-gallon underground fuel storage tank may have been located during the time the Site was operated by the military (Figure 2-1).

A subcontractor to WESTON, Northeast Geophysical Services (NGS) of Bangor, Maine, performed the GPR survey in this area on June 23, 1999. The NGS survey consisted of two phases of investigation; a preliminary metal detection survey to identify the location of medium to large buried metal objects, and a more sensitive GPR survey to identify physical characteristics of those objects. A Geonics EM-61 metal detector was used for the preliminary metal detection survey. The EM-61 is a portable time domain instrument with a coincident transmitter/receiver coil and second parallel receiver coil for depth to target estimation and rejection of surface metal response. The instrument measures the secondary electromagnetic field response in milli-volts (mV). The EM-61 is designed specifically to locate medium to large

buried metal objects such as drums and tanks while being relatively insensitive to above-surface metallic objects such as fences, buildings and power lines. The technique is sensitive to conductive metal up to a depth of approximately 12 feet. The size and burial depth of the metal determine the strength of the response. The EM-61 transmitter/receiver coils can either be carried by the operator using a harness, or pulled on wheels. Electromagnetic (EM) data is digitally recorded on an Omnidata PC-604 Polycorder. Readings can be recorded manually or, if the wheel mode is used, readings can be recorded at regular intervals controlled by the rotation of the wheels. The wheel mode was used for this survey and readings were recorded approximately every 0.63 feet along survey lines (NGS, 1999).

Ground-penetrating radar utilizes high frequency radio waves to probe the subsurface. Radar waves are transmitted into the ground from an antenna that is pulled across the ground surface. In the subsurface, radar waves are reflected at interfaces of materials with contrasting dielectric properties. The returning signal is intercepted by a receiver and converted to a graphic image. The horizontal axis of the image is distance along the traverse. The vertical axis is two-way travel time of the radar pulses, in nanoseconds (ns) (NGS, 1999).

The GPR graphic images are examined and features noted on the images are then transferred to a map. Tanks, pipelines and other objects with rounded tops (boulders, tree roots, or segments of old foundations, for example) may show up on the profiles as hyperbola-shaped reflections. Tanks and pipelines usually appear on more than one survey fine as hyperbolic reflectors on lines perpendicular to the tank or pipe axis and as horizontal reflectors on lines along the axis. The GPR instrument used was a GSSI, SIR System-3. A 500 MHz antenna was used with a time range set at 60 nanoseconds. At this setting the depth surveyed is approximately 10 feet. The GPR surveys were conducted at a slow walking pace along lines spaced approximately 5 feet apart (NGS, 1999).

3.2.1 Field Survey Procedures

The field survey area was marked with a 10-foot by 10-foot orthogonal grid using a tape measure and pin flags. A grid coordinate system was arbitrarily assigned and the grid was referenced to the southwest corner of the AMAC building (see Figure 3-1.) The metal detection and GPR surveys were conducted along north-south and east-west lines spaced approximately five feet

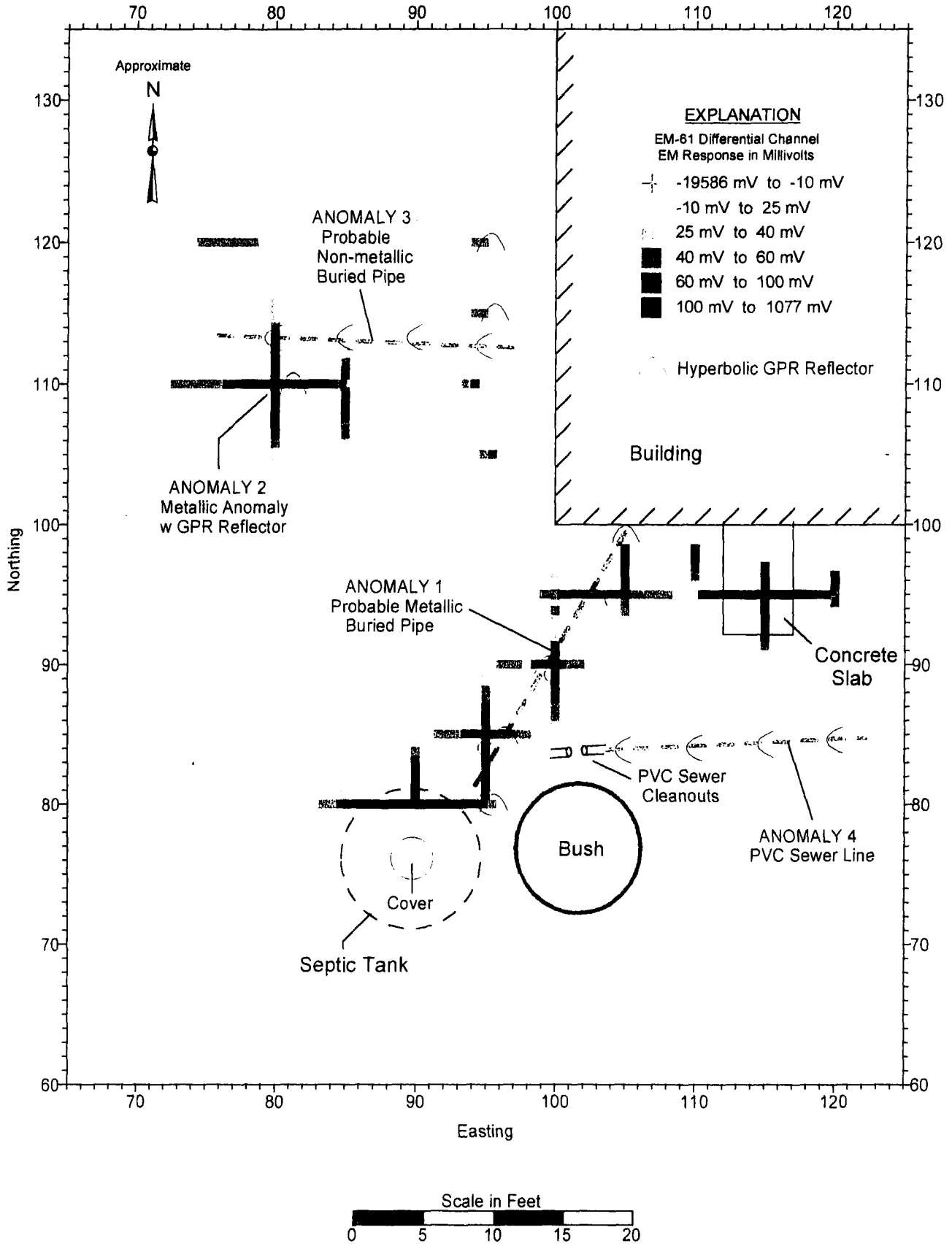


Figure 3-1

Plot of GPR and Metal Detection Survey Results
Former Nike Missile Site, Caribou, Maine

Surveyed June 23, 1999 By:

Northeast Geophysical Services
4 Union Street, Suite 3
Bangor, Maine

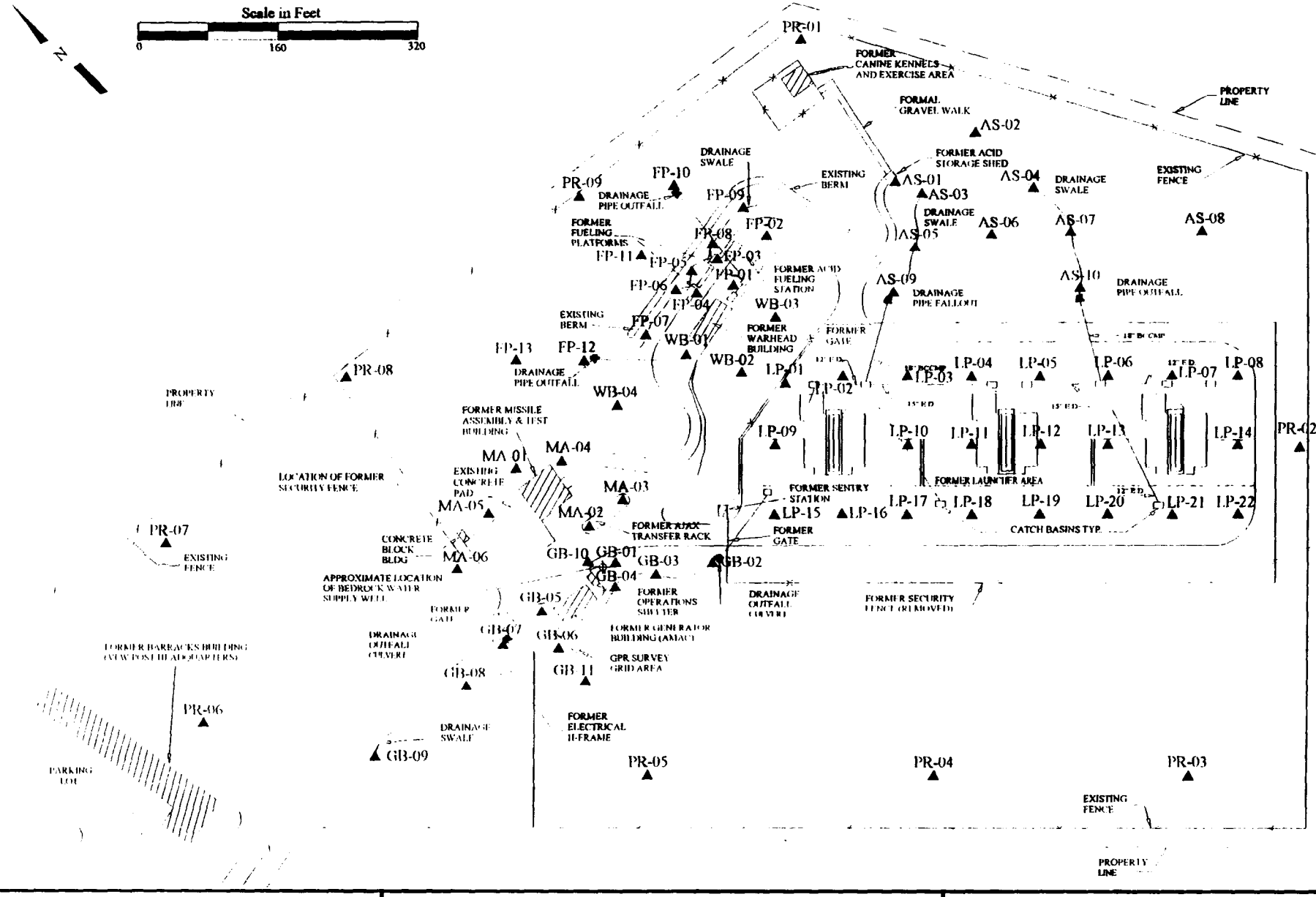
apart. Surveying was conducted south to north and west to east along the lines. Following the survey a sketch map was made of the survey grid and prominent features seen there. This sketch map was later digitized and serves as a base for Figure 3-1.

3.3 PASSIVE SOIL-GAS SURVEY

A passive soil-gas survey was performed by WESTON at the Site between June 22, 1999 and July 12, 1999. The areas of the property that were included in the soil-gas survey are the former Generator Building and surroundings; the former Test Building and surroundings; the former Acid Storage Shed and surroundings; the former AFN area and surroundings; the former Launcher Pad; and the drainage system outfalls and associated drainage swales located around the perimeter of the operations area.

On June 22 and June 23, 1999, a total of 75 EMFLUX® soil-gas probes were installed at the locations shown in Figure 3-2. In areas of open ground, the soil-gas probes were installed by first making a hole in the ground by hammering a metal stake approximately three inches into the soil and removing it. The shipping cap that came on the collector vial containing the absorbent "trap" was then removed and replaced with a sampling cap. After extending the retrieval wire that came wrapped around the collector vial, the vial was placed into the hole with the sampling cap down, and the hole was then covered over with available soils. At locations where the traps were to be installed beneath the concrete pad at the former Launcher Pad, a one-inch diameter hole was first drilled through the concrete using an electric hammer-drill. A sanitized metal sleeve, provided with the EMFLUX® Kit, was cut to the appropriate length and inserted into the hole. To deploy the soil-gas probe, the procedure described above for areas of open ground was followed, except the hole was plugged with aluminum foil rather than with available soil. Following installation of each soil-gas probe, its location was marked with either brightly colored spray paint (on the concrete pad) or wooden grade stake, and the installation time was noted in the field logbook.

WESTON returned to the Site to remove the soil-gas probes on July 12, 1999. During the retrieval process, it was discovered that 16 of the 75 soil-gas probes previously installed at the property were missing (WESTON, 1999). The missing probes are identified on



BEACON
ENVIRONMENTAL SERVICES

PR-05 ▲ EMFLUX Sample Point Location

Figure 3-2
EMFLUX Sample Point Locations

Nike Missile Site
Caribou, ME

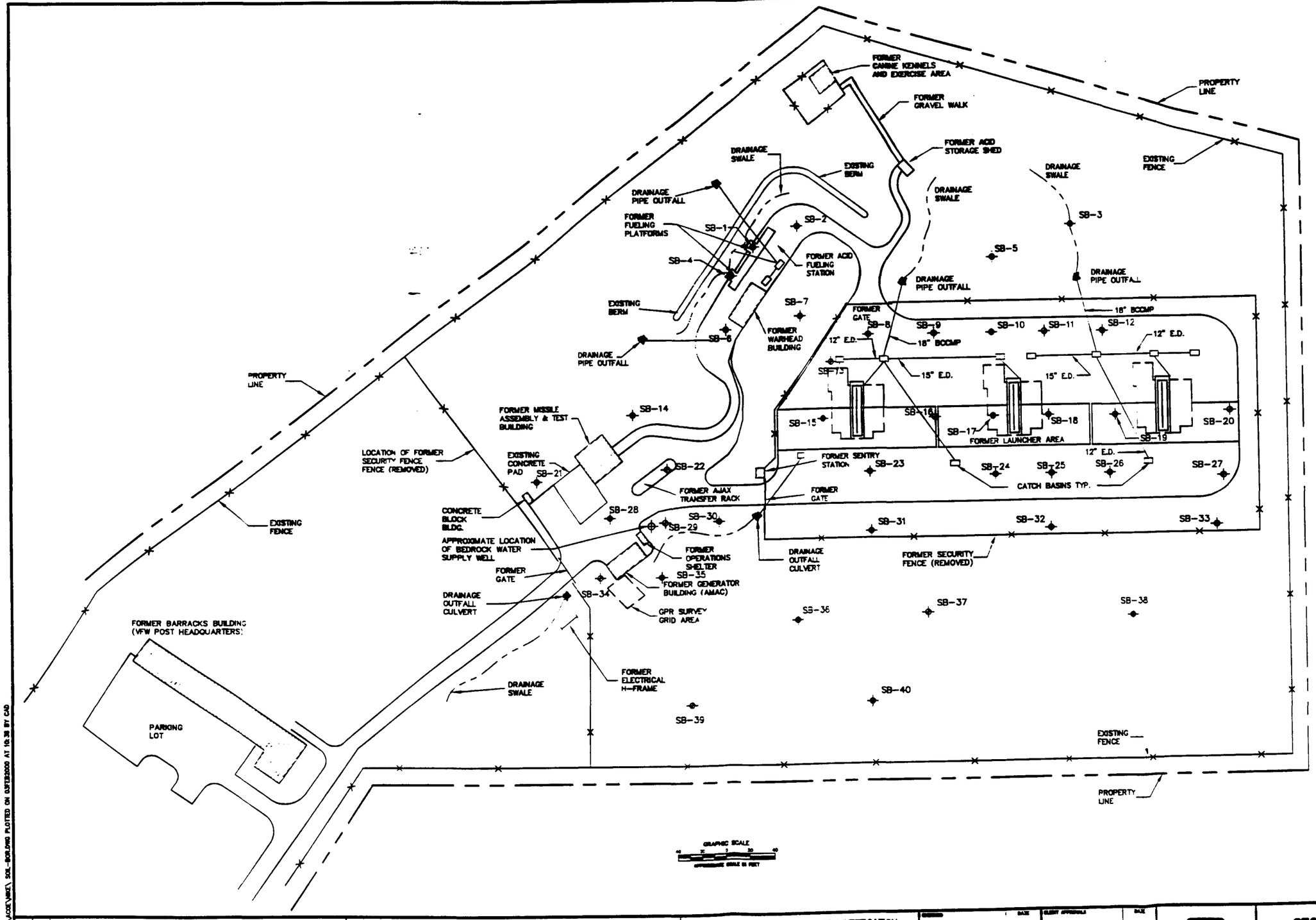
Figure 3-2 as FP-11, FP-13, GB-01, GB-05, GB-06, GB-10, GB-11, MA-01, MA-02, MA-04, MA-05, MA-06, PR-06, PR-07, WB-02, and WB-03. The majority of these probes were located in the vicinity of former Generator and Test Buildings. Due to the close proximity of the probes to the adult care facility and the day-to-day operations that occur there, it is assumed that the missing probes were removed by clients and/or employees of the AMAC, although this was not verified by the AMAC staff.

At the remaining 59 locations, the soil-gas probes were withdrawn from the hole and the shipping caps were replaced. The samples were shipped to Maryland Spectral Services (MSS) of Baltimore, Maryland for laboratory analysis of VOCs by EPA Method 8260B. Three quality control (QC) samples were also analyzed in addition to the 59 field sample probes shipped to MSS. Two of the three QC samples served to identify compounds present in ambient air during deployment and retrieval of the soil-gas probes. A trip blank, consisting of a sample cartridge that was prepared, transported, and analyzed with the samples, but intentionally not exposed, was also shipped with the samples.

3.4 GEOPROBE SOIL BORING AND SOIL SAMPLING PROGRAM

On October 25 and October 26, 1999, a Geoprobe® soil boring and soil sampling investigation was performed based, in part, upon the results of the soil-gas and GPR surveys, to address concerns expressed by the MEDEP regarding soil quality at Site. The areas of the property that were included in the investigation were the former Launcher Pad, Generator Building, and AFN areas; the former Test Building and surroundings; the former Warhead Building and surroundings; and the grassy area located to the southwest of the former Launcher Pad area. The objective of the exploration was to characterize the Site soils, determine the depth of the overburden groundwater table (if present), explore the depth to bedrock at the property, and sample potentially contaminated zones identified by the passive soil-gas survey.

Under the direction of a WESTON geologist, a total of 40 soil borings were advanced during this investigation at the approximate locations shown on Figure 3-3. These locations were chosen based on the results of the passive soil-gas survey, and represent the areas where the survey indicates the potential presence of fuel-related and chlorinated compounds. The borings were



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SUPPLEMENTAL SITE INVESTIGATION
FORMER LORING AFB DEFENSE AREA
NIKE BATTERY LO-58 LAUNCH AREA
CARIBOU, MAINE

WESTON

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

GEOPROBE SOIL BORING AND SOIL SAMPLING LOCATIONS

DESIGN JE | DATE JAN 00 | FIGURE 3-3
SCALE AS SHOWN

advanced to the top of the bedrock surface at each location, which was encountered at depths ranging between approximately 1 and 19 feet bgs (WESTON, 1999). Soil samples were collected continually from the ground surface to the bottom of the borehole using 4-ft long Geoprobe® Macrosamplers. Upon removal from the borehole, each sample was screened in the field for organic vapors using photoionization detector (PID) headspace analysis. The PID readings, and any pertinent features such as odors and/or staining, were recorded by the WESTON geologist in the field logbook, and are described in this report.

Soil samples were collected from 15 of the 40 soil borings locations and submitted for laboratory analysis of VOCs by EPA Method 8260B, TPH-DRO by MEDEP Method 4.1.25, and TPH-GRO by MEDEP Method 4.2.17. The 15 soil sampling locations were selected to address areas where elevated concentrations of VOCs were identified during the soil-gas survey, as well as to encircle the existing bedrock water supply well used by the AMAC. The samples were collected from the interval immediately above the top of the bedrock surface at the locations shown on Figure 3-3. They were collected directly from the Geoprobe® acetate sample sleeve using disposable open barrel plastic syringes and transferred directly to the appropriate sample containers. Soil samples collected for analysis of VOCs and TPH-GRO were preserved in either sodium bisulfate (for low-level analysis) or methanol (for high-level analysis) to reduce analyte volatilization and biodegradation. Following collection, the samples were packed in ice and shipped to ESS Laboratory in Cranston, Rhode Island for laboratory analysis of the compounds identified above.

SECTION 4

RESULTS

4. RESULTS

4.1 GROUND-PENETRATING RADAR (GPR) RESULTS

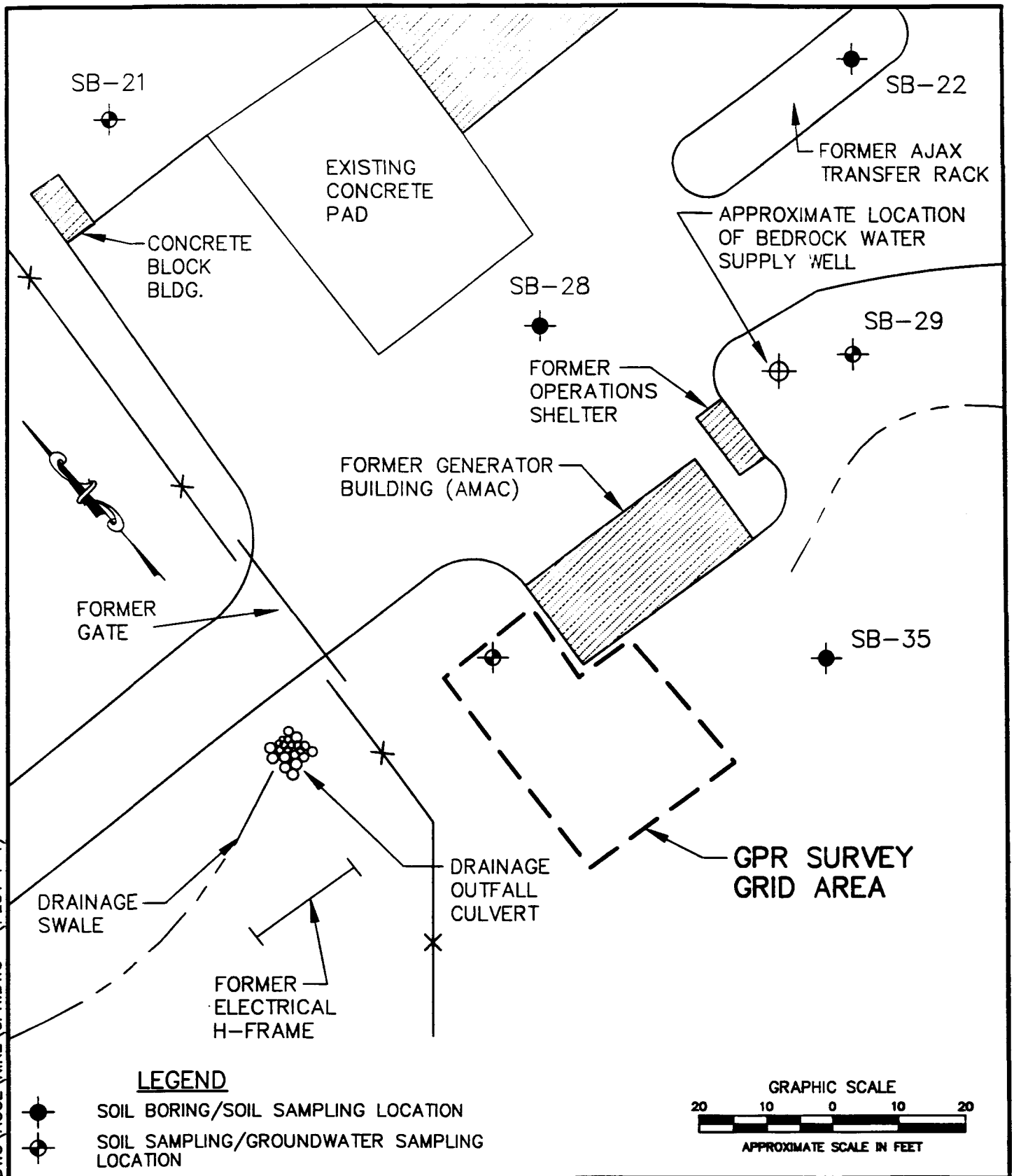
The GPR survey was performed in the area adjacent to the former Generator Building as shown on Figure 4-1. The results of the EM-61 and GPR surveys are shown on Figure 3-1. Individual GPR profiles for each survey line are included in Appendix A. Positive metal detection results are shown on Figure 3-1 as colored blocks ranging in color from yellow for weakly anomalous to black for strongly anomalous. EM-61 data collected within a few feet of the building were eliminated from the data for Figure 3-1 because they were extremely high due to reinforcing steel in the concrete slab (NGS, 1999). Hyperbolic GPR reflectors are shown on Figure 3-1 as small hyperbolic symbols. Four anomalies shown on Figure 3-1 are discussed below. A copy of the NGS report is included in Appendix A.

4.1.1 Anomaly 1

Anomaly 1 is located in the area of the magnetometer anomaly previously detected by MEDEP staff. This was the primary area of concern for the possible presence of an underground tank. EM-61 results show a moderate to strong metallic anomaly trending from the south wall of the building, approximately 5 feet east of the southwest corner, running approximately 20 feet southwest towards the septic tank. East-west GPR profiles crossing this anomaly show strong but narrow hyperbolic reflectors indicative of a buried metal pipe at this location. Supporting this interpretation, a small piece of 4-inch cast iron pipe was found on the surface nearby. It is possible that this older metal pipe was cut or broken when the new septic system was installed. The GPR profiles indicate that this feature is approximately 1.5 feet deep at its southerly end and approximately 2.5 feet deep adjacent to the building. This variation in depth appears to be mainly a function of the ground surface rising towards the building (NGS, 1999).

4.1.2 Anomaly 2

This anomaly consists of a strong, roughly equidimensional metallic anomaly at 80 East, 110 North, and a single small hyperbolic GPR reflector. Further unrecorded exploration to the



GPR SURVEY AREA AT FORMER GENERATOR BUILDING

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

SUPPLEMENTAL SITE INVESTIGATION
FORMER LORING AFB DEFENSE AREA
NIKE BATTERY LO-58 LAUNCH AREA
CARIBOU, MAINE

WESTON MANAGERS MANCHESTER DESIGNERS/CONSULTANTS NEW HAMPSHIRE

DRAWN	A.J.M.
DATE	FEB. 2000
FIGURE NO.	4-1

FILE NAME: G:\DESIGN DWG\ACOE\NIKE\GPR.DWG (PLOT 1=1)

west-southwest with the metal detector found a series of similar anomalies in a linear trend. A review of site plans dated May 1960 submitted to WESTON by CENAE indicates that these anomalies are likely caused by fence post anchors for an old chain-link fence that was removed from the Site. A few of these cut-off metal posts set in concrete were noted to exist in the long grass west of the building (NGS, 1999).

4.1.3 Anomaly 3

This anomaly consists of a linear trend of strong, narrow hyperbolic GPR reflectors that trend in an east-west direction starting approximately 13 feet north of the southwest corner of the building. The reflectors appear to be about 2 feet deep away from the building and approximately 3 feet deep near the building. It is interpreted that this anomaly likely represents a buried plastic pipe due to the lack of metallic response here. It may be an underdrain outlet pipe for the building foundation (NGS, 1999).

4.1.4 Anomaly 4

Anomaly 4 is similar to anomaly 3, consisting of a series of narrow hyperbolic GPR reflectors with no associated metallic response. This anomaly is clearly caused by the PVC sewer pipe leading to the septic tank. Two PVC cleanouts are exposed at the surface as shown on Figure 3-1. Strong metallic responses are also caused by reinforcing steel in the septic tank and in a concrete slab adjacent to the building (NGS, 1999).

4.2 SOIL GAS SURVEY RESULTS

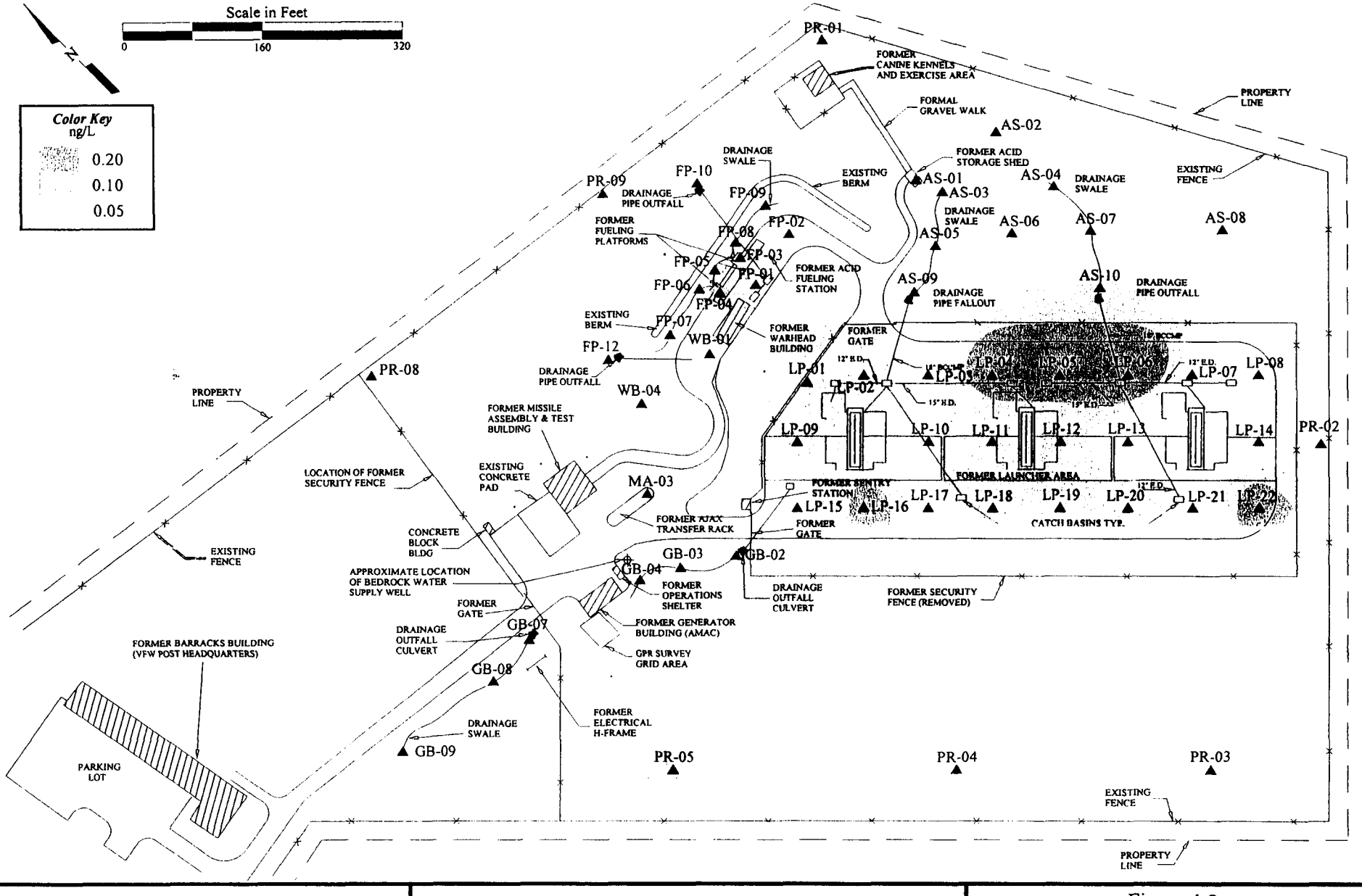
The analytical results of the soil-gas survey indicated that low levels of BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), trichloroethene (TCE), tetrachloroethene (PCE), naphthalene, chloromethane, 1,2,4-Trimethylbenzene, and 1,3,5-Trimethylbenzene may exist in the subsurface (BEACON, 1999). Forty-five of the 59 samples analyzed indicated the presence of at least one of these compounds; however, the majority of the compounds were detected in fewer than seven of the probe locations. A summary of the number of VOC detections by compound is presented in Table 4-1.

Table 4-1

Number of VOC Detections by Compound in Soil-Gas Samples

Compound	Number of Detections	Maximum (ng/L, or parts per trillion)	Minimum (ng/L, or parts per trillion)
Toluene	39	0.15	0.02
Xylenes (total)	18	0.15	0.01
Benzene	15	0.03	0.02
Tetrachloroethene	6	0.04	0.01 J
1,2,4-Trimethylbenzene	6	0.06	0.03
Chloromethane	3	0.15	0.09
1,3,5-Trimethylbenzene	2	0.02	0.02
Ethylbenzene	2	0.02	0.02
Trichloroethene	2	0.02	0.01 J
Naphthalene	1	0.05	N/A

The most commonly occurring compounds in the soil-gas sample analyses were those of the BTEX group. BTEX compounds were detected at 43 of the 45 locations where VOCs were reported above laboratory quantitation limits (BEACON, 1999). The distribution and total BTEX concentrations of this VOC group are presented graphically on Figure 4-2. The next two most commonly occurring compounds at the Nike LO-58 site were PCE and 1,2,4-Trimethylbenzene, each detected in a total of six soil-gas probe locations (BEACON, 1999). Five of the six probes where PCE was detected were located at the former Launcher Pad area, and the sixth was installed in the grassy area located to the west of the pad. Four of the six probes where 1,2,4-Trimethylbenzene was detected were also located at the former Launcher Pad area. The remaining two probes were installed in the drainage swale leading away from the concrete pad at the former AFN area. The distribution and concentrations of the PCE and 1,2,4-Trimethylbenzene compounds detected at the Site are presented graphically on Figures 4-3 and 4-4, respectively. Trichloroethene, the compound detected in the AMAC bedrock water supply well, was detected at only two locations (FP-02 and FP-06) and therefore is not presented graphically on the figures. A summary of compounds detected during the soil-gas investigation is presented in Table 4-1.



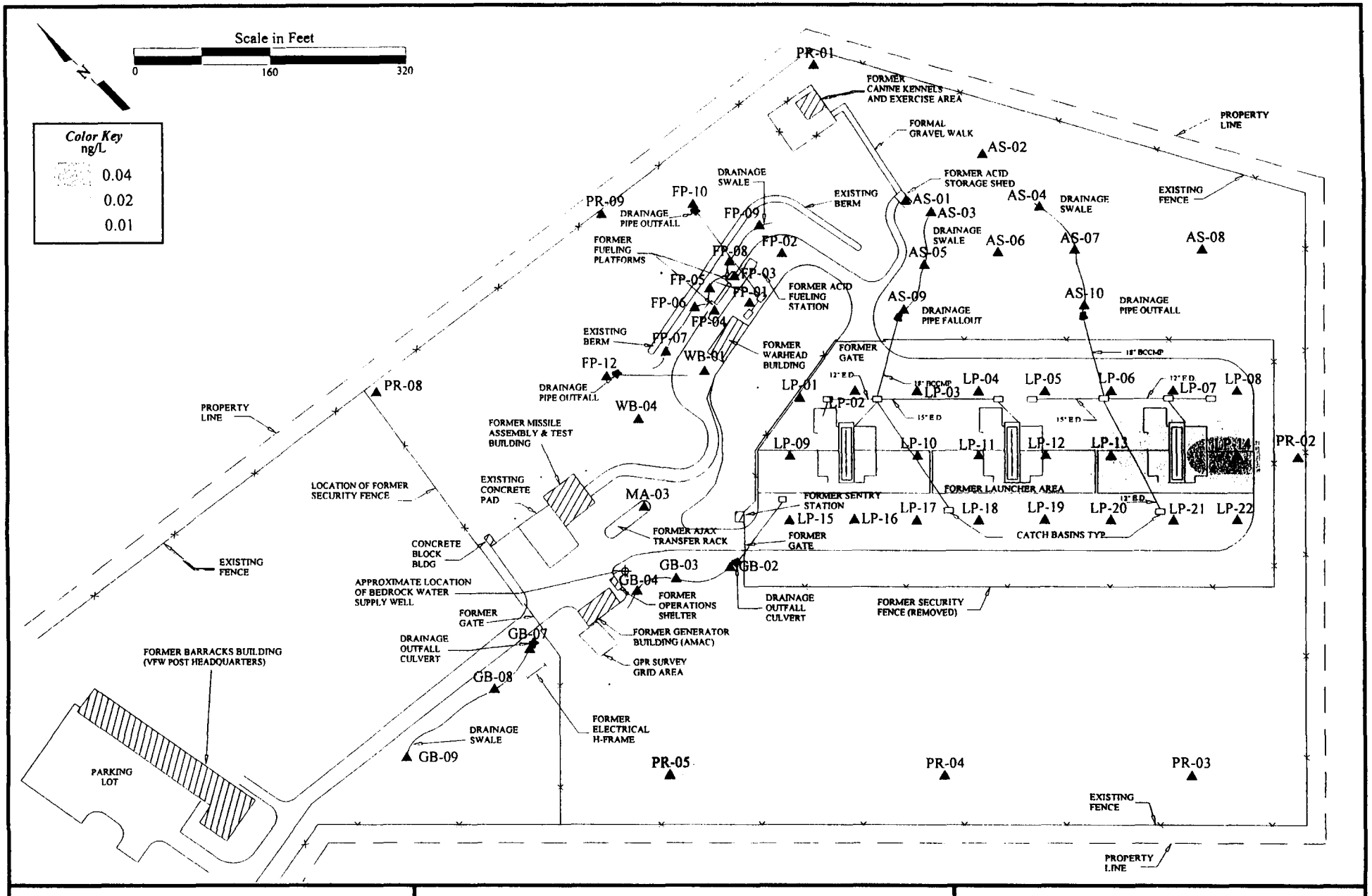
BEACON
ENVIRONMENTAL SERVICES

PR-05 ▲ EMFLUX Sample Point Location

Notes: Sixteen sample locations were omitted (see Section 3).
The reported quantitation level for Total BTEX is 0.01 ng/L.

Figure 4-2
Total BTEX

Nike Missile Site
Caribou, ME



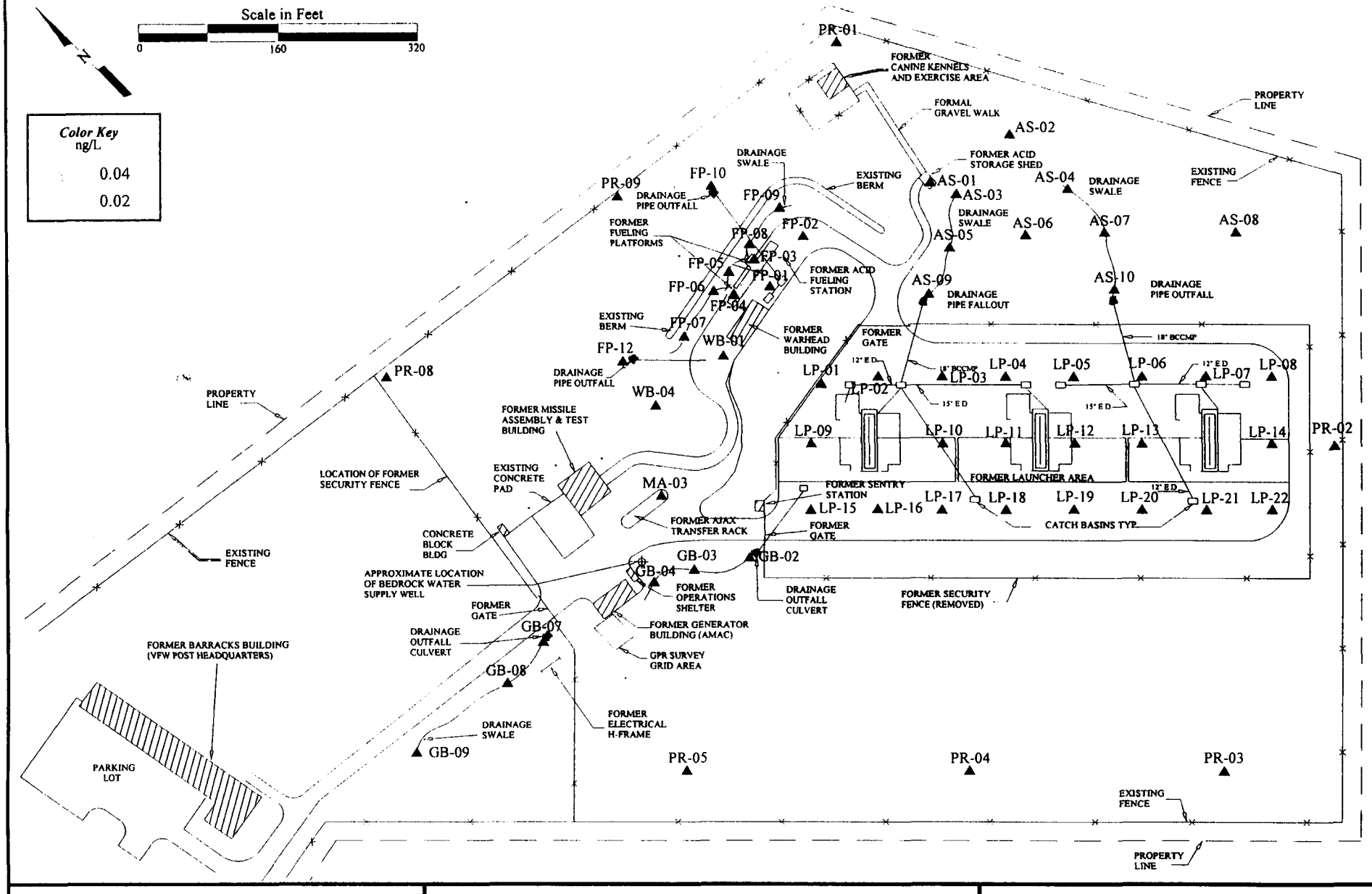
BEACON
ENVIRONMENTAL SERVICES

PR-05 ▲ EMFLUX Sample Point Location

Note: Sixteen sample locations were omitted (see Section 3).

Figure 4-3
Tetrachloroethene

Nike Missile Site
Caribou, ME



BEACON
ENVIRONMENTAL SERVICES

PR-05 ▲ EMFLUX Sample Point Location

Note: Sixteen sample locations were omitted (see Section 3).

Figure 4-4
1,2,4-Trimethylbenzene

Nike Missile Site
Caribou, ME

4.3 GEOPROBE SOIL BORING AND SOIL SAMPLING PROGRAM

A total of seventeen soil samples (including two duplicate samples) were collected at the Nike LO-58 property from soil boring locations SB-01, SB-04, SB-09, SB-10, SB-11, SB-13, SB-16, SB-20, SB-21, SB-22, SB-27, SB-29, SB-34, SB-37, and SB-39 (please refer to Figure 3-3). The analytical results of the soil samples collected indicate the presence of acetone in 16 of the 17 samples collected at concentrations ranging from approximately 6.8 to 55.1 ppb (ESS, 1999). The MEDEP's Remedial Action Guideline for this substance is 475,000 ppb (MEDEP, 1998). Methylene chloride was also detected in the 16 of the 17 samples collected at concentrations ranging from approximately 1.1 to 4.8 ppb; however, it was also detected in both trip blank samples submitted to the laboratory. Therefore, the presence of methylene chloride may be the result of laboratory contamination and not attributable to the Site. Trichloroethene was detected in two soil samples (SB-13 and SB-34) at concentrations of approximately 1.1 and 9 ppb, respectively (ESS, 1999). These concentrations are below the MEDEP Remedial Action Guideline protective of groundwater 600 ppb for TCE (MEDEP, 1998). No other VOCs were detected in the soil samples collected from the Nike LO-58 property.

TPH-DRO was detected in soil samples SB-04, SB-09, and SB-13 at concentrations of 4, 10, and 36 parts per million (ppm), respectively (ESS, 1999). The MEDEP Remediation Standard for this substance is 10 ppm (MEDEP, 1995). There were no other detections of TPH-DRO, and no detections of TPH-GRO in the 17 soil samples collected from the Nike LO-58 property (ESS, 1999). Summaries of the analytical results, including regulatory and laboratory reporting limits, are presented in Tables 4-2 and 4-3. The laboratory data report by ESS Laboratory is included as Appendix B.

As previously indicated, bedrock was encountered during the Geoprobe® soil boring activities at depths ranging between 1 and 19 ft bgs. No overburden groundwater was noted in any of the 40 soil borings drilled at the property (WESTON, 1999). In accordance with the CENAE SOW and the Final Supplemental SAP, WESTON had scheduled the collection of overburden groundwater samples from the borings and the installation of several small diameter monitor

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (ug/kg)	MEDEP Remedial Action Guideline	SB-01	SB-04	QC-02	SB-09	SB-10
1,1,1,2-Tetrachloroetnane	660,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1,1-Trichloroethane	260,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1,2,2-Tetrachloroethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1,2-Trichloroethane	3,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1-Dichloroethane	645,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1-Dichloroethene	200	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,1-Dichloropropene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2,3-Trichlorobenzene	--	10 U	11.4 U	8.9 U	7.2 U	7 U
1,2,3-Trichloropropane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2,4-Trichlorobenzene	540,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2,4-Trimethylbenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2-Dibromo-3-Chloropropane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2-Dibromoethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2-Dichlorobenzene	2,670,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2-Dichloroethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,2-Dichloropropane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,3,5-Trimethylbenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,3-Dichlorobenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,3-Dichloropropane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
1,4-Dichlorobenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
2,2-Dichloropropane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
2-Butanone	10,000,000	40 U	45.4 U	35.6 U	28.7 U	27.9 U
2-Chlorotoluene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
2-Hexanone	--	25 U	28.4 U	22.2 U	17.9 U	17.4 U
4-Chlorotoluene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
4-Methyl-2-Pentanone	--	25 U	28.4 U	22.2 U	17.9 U	17.4 U
Acetone	475,000	55.1	26.7 J	24.7 J	6.8 J	23 J
Benzene	5,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Bromobenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Bromochloromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Bromodichloromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Bromoform	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-01	SB-04	QC-02	SB-09	SB-10
Bromomethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Carbon Tetrachloride	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Chlorobenzene	310,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Chloroethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Chloroform	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Chloromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
cis-1.2-Dichloroethene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
cis-1.3-Dichloropropene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Dibromochloromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Dibromomethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Dichlorodifluoromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Ethylbenzene	1,670,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Hexachlorobutadiene	--	10 U	11.4 U	8.9 U	7.2 U	7 U
Isopropylbenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Methyl tert-Butyl Ether (MTBE)	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Methylene Chloride	13,000	5 U	4.3 JTB	1.1 JTB	1.5 JTB	2.1 JTB
n-Butylbenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
n-Propylbenzene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Naphthalene	245,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
sec-Butylbenzene	--	10 U	11.4 U	8.9 U	7.2 U	7 U
Styrene	--	10 U	11.4 U	8.9 U	7.2 U	7 U
tert-Butylbenzene	--	10 U	11.4 U	8.9 U	7.2 U	7 U
Tetrachloroethene	3,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Tetrahydrofuran	--	10 U	11.4 U	8.9 U	7.2 U	7 U
Toluene	2,390,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
trans-1,2-Dichloroethene	135,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
trans-1,3-Dichloropropene	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Trichloroethene	19,000	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Trichlorofluoromethane	--	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Vinyl Acetate	--	10 U	11.4 U	8.9 U	7.2 U	7 U
Vinyl Chloride	40	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Xylene O	10,000,000 (total)	5 U	5.7 U	4.4 U	3.6 U	3.5 U
Xylene P,M	10,000,000 (total)	10 U	11.4 U	8.9 U	7.2 U	7 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-11	SB-13	SB-16	SB-20	SB-21
1,1,1,2-Tetrachloroethane	660,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1,1-Trichloroethane	260,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1,2,2-Tetrachloroethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1,2-Trichloroethane	3,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1-Dichloroethane	645,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1-Dichloroethene	200	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,1-Dichloropropene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2,3-Trichlorobenzene	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
1,2,3-Trichloropropane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2,4-Trichlorobenzene	540,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2,4-Trimethylbenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2-Dibromo-3-Chloropropane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2-Dibromoethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2-Dichlorobenzene	2,670,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2-Dichloroethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,2-Dichloropropane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,3,5-Trimethylbenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,3-Dichlorobenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,3-Dichloropropane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
1,4-Dichlorobenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
2,2-Dichloropropane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
2-Butanone	10,000,000	39.4 U	31.1 U	28.1 U	29.9 U	25.9 U
2-Chlorotoluene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
2-Hexanone	--	24.6 U	19.5 U	17.5 U	18.7 U	16.2 U
4-Chlorotoluene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
4-Methyl-2-Pentanone	--	24.6 U	19.5 U	17.5 U	18.7 U	16.2 U
Acetone	475,000	18.3 J	8.3 J	9.7 J	19.3 J	25.9 U
Benzene	5,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Bromobenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Bromochloromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Bromodichloromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Bromoform	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-11	SB-13	SB-16	SB-20	SB-21
Bromomethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Carbon Tetrachloride	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Chlorobenzene	310,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Chloroethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Chloroform	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Chloromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
cis-1,2-Dichloroethene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
cis-1,3-Dichloropropene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Dibromochloromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Dibromomethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Dichlorodifluoromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Ethylbenzene	1,670,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Hexachlorobutadiene	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
Isopropylbenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Methyl tert-Butyl Ether (MTBE)	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Methylene Chloride	13,000	3.7 JTB	1.6 JTB	1.5 JTB	2.8 JTB	1.6 JTB
n-Butylbenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
n-Propylbenzene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Naphthalene	245,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
sec-Butylbenzene	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
Styrene	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
tert-Butylbenzene	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
Tetrachloroethene	3,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Tetrahydrofuran	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
Toluene	2,390,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
trans-1,2-Dichloroethene	135,000	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
trans-1,3-Dichloropropene	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Trichloroethene	19,000	4.9 U	1.1 J	3.5 U	3.7 U	3.2 U
Trichlorofluoromethane	--	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Vinyl Acetate	--	9.8 U	7.8 U	7 U	7.5 U	6.5 U
Vinyl Chloride	40	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Xylene O	10,000,000 (total)	4.9 U	3.9 U	3.5 U	3.7 U	3.2 U
Xylene P,M	10,000,000 (total)	9.8 U	7.8 U	7 U	7.5 U	6.5 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (ug/kg)	MEDEP Remedial Action Guideline	SB-22	SB-27	SB-29	QC-01	SB-34
1,1,1,2-Tetrachloroethane	660,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1,1-Trichloroethane	260,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1,2,2-Tetrachloroethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1,2-Trichloroethane	3,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1-Dichloroethane	645,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1-Dichloroethene	200	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,1-Dichloropropene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2,3-Trichlorobenzene	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
1,2,3-Trichloropropane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2,4-Trichlorobenzene	540,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2,4-Trimethylbenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2-Dibromo-3-Chloropropane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2-Dibromoethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2-Dichlorobenzene	2,670,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2-Dichloroethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,2-Dichloropropane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,3,5-Trimethylbenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,3-Dichlorobenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,3-Dichloropropane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
1,4-Dichlorobenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
2,2-Dichloropropane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
2-Butanone	10,000,000	36.9 U	33.1 U	32.2 U	36.1 U	32.5 U
2-Chlorotoluene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
2-Hexanone	--	23 U	20.7 U	20.1 U	22.6 U	20.3 U
4-Chlorotoluene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
4-Methyl-2-Pentanone	--	23 U	20.7 U	20.1 U	22.6 U	20.3 U
Acetone	475,000	31.6 J	24 J	30	40	47.6
Benzene	5,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Bromobenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Bromochloromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Bromodichloromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Bromoform	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-22	SB-27	SB-29	QC-01	SB-34
Bromomethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Carbon Tetrachloride	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Chlorobenzene	310,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Chloroethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Chloroform	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Chloromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
cis-1.2-Dichloroethene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
cis-1.3-Dichloropropene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Dibromochloromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Dibromomethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Dichlorodifluoromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Ethylbenzene	1,670,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Hexachlorobutadiene	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
Isopropylbenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Methyl tert-Butyl Ether (MTBE)	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Methylene Chloride	13,000	2.2 JTB	2.8 JTB	2 JTB	2.5 JTB	1.9 JTB
n-Butylbenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
n-Propylbenzene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Naphthalene	245,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
sec-Butylbenzene	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
Styrene	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
tert-Butylbenzene	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
Tetrachloroethene	3,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Tetrahydrofuran	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
Toluene	2,390,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
trans-1,2-Dichloroethene	135,000	4.6 U	4.1 U	4 U	4.5 U	4.1 U
trans-1,3-Dichloropropene	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Trichloroethene	19,000	4.6 U	4.1 U	4 U	4.5 U	9
Trichlorofluoromethane	--	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Vinyl Acetate	--	9.2 U	8.3 U	8.1 U	9 U	8.1 U
Vinyl Chloride	40	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Xylene O	10,000,000 (total)	4.6 U	4.1 U	4 U	4.5 U	4.1 U
Xylene P,M	10,000,000 (total)	9.2 U	8.3 U	8.1 U	9 U	8.1 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-37	SB-39	TB-01	TB-02
1,1,1,2-Tetrachloroethane	660.000	4.6 U	4.2 U	5 U	5 U
1,1,1-Trichloroethane	260.000	4.6 U	4.2 U	5 U	5 U
1,1,2,2-Tetrachloroethane	--	4.6 U	4.2 U	5 U	5 U
1,1,2-Trichloroethane	3.000	4.6 U	4.2 U	5 U	5 U
1,1-Dichloroethane	645.000	4.6 U	4.2 U	5 U	5 U
1,1-Dichloroethene	200	4.6 U	4.2 U	5 U	5 U
1,1-Dichloropropene	--	4.6 U	4.2 U	5 U	5 U
1,2,3-Trichlorobenzene	--	9.3 U	8.5 U	10 U	10 U
1,2,3-Trichloropropane	--	4.6 U	4.2 U	5 U	5 U
1,2,4-Trichlorobenzene	540.000	4.6 U	4.2 U	5 U	5 U
1,2,4-Trimethylbenzene	--	4.6 U	4.2 U	5 U	5 U
1,2-Dibromo-3-Chloropropane	--	4.6 U	4.2 U	5 U	5 U
1,2-Dibromoethane	--	4.6 U	4.2 U	5 U	5 U
1,2-Dichlorobenzene	2,670.000	4.6 U	4.2 U	5 U	5 U
1,2-Dichloroethane	--	4.6 U	4.2 U	5 U	5 U
1,2-Dichloropropane	--	4.6 U	4.2 U	5 U	5 U
1,3,5-Trimethylbenzene	--	4.6 U	4.2 U	5 U	5 U
1,3-Dichlorobenzene	--	4.6 U	4.2 U	5 U	5 U
1,3-Dichloropropane	--	4.6 U	4.2 U	5 U	5 U
1,4-Dichlorobenzene	--	4.6 U	4.2 U	5 U	5 U
2,2-Dichloropropane	--	4.6 U	4.2 U	5 U	5 U
2-Butanone	10,000,000	37.1 U	33.9 U	40 U	40 U
2-Chlorotoluene	--	4.6 U	4.2 U	5 U	5 U
2-Hexanone	--	23.2 U	21.2 U	25 U	25 U
4-Chlorotoluene	--	4.6 U	4.2 U	5 U	5 U
4-Methyl-2-Pentanone	--	23.2 U	21.2 U	25 U	25 U
Acetone	475.000	19.4 J	30	40 U	40 U
Benzene	5.000	4.6 U	4.2 U	5 U	5 U
Bromobenzene	--	4.6 U	4.2 U	5 U	5 U
Bromochloromethane	--	4.6 U	4.2 U	5 U	5 U
Bromodichloromethane	--	4.6 U	4.2 U	5 U	5 U
Bromoform	--	4.6 U	4.2 U	5 U	5 U

Please see notes page at end of Table 4-2.

TABLE 4-2
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (µg/kg)	MEDEP Remedial Action Guideline	SB-37	SB-39	TB-01	TB-02
Bromomethane	--	4.6 U	4.2 U	5 U	5 U
Carbon Tetrachloride	--	4.6 U	4.2 U	5 U	5 U
Chlorobenzene	310,000	4.6 U	4.2 U	5 U	5 U
Chloroethane	--	4.6 U	4.2 U	5 U	5 U
Chloroform	--	4.6 U	4.2 U	5 U	5 U
Chloromethane	--	4.6 U	4.2 U	5 U	5 U
cis-1,2-Dichloroethene	--	4.6 U	4.2 U	5 U	5 U
cis-1,3-Dichloropropene	--	4.6 U	4.2 U	5 U	5 U
Dibromochloromethane	--	4.6 U	4.2 U	5 U	5 U
Dibromomethane	--	4.6 U	4.2 U	5 U	5 U
Dichlorodifluoromethane	--	4.6 U	4.2 U	5 U	5 U
Ethylbenzene	1,670,000	4.6 U	4.2 U	5 U	5 U
Hexachlorobutadiene	--	9.3 U	8.5 U	10 U	10 U
Isopropylbenzene	--	4.6 U	4.2 U	5 U	5 U
Methyl tert-Butyl Ether (MTBE)	--	4.6 U	4.2 U	5 U	5 U
Methylene Chloride	13,000	2.4 JTB	2.4 JTB	4.8 J	1.7 J
n-Butylbenzene	--	4.6 U	4.2 U	5 U	5 U
n-Propylbenzene	--	4.6 U	4.2 U	5 U	5 U
Naphthalene	245,000	4.6 U	4.2 U	5 U	5 U
sec-Butylbenzene	--	9.3 U	8.5 U	10 U	10 U
Styrene	--	9.3 U	8.5 U	10 U	10 U
tert-Butylbenzene	--	9.3 U	8.5 U	10 U	10 U
Tetrachloroethene	3,000	4.6 U	4.2 U	5 U	5 U
Tetrahydrofuran	--	9.3 U	8.5 U	10 U	10 U
Toluene	2,390,000	4.6 U	4.2 U	5 U	5 U
trans-1,2-Dichloroethene	135,000	4.6 U	4.2 U	5 U	5 U
trans-1,3-Dichloropropene	--	4.6 U	4.2 U	5 U	5 U
Trichloroethene	19,000	4.6 U	4.2 U	5 U	5 U
Trichlorofluoromethane	--	4.6 U	4.2 U	5 U	5 U
Vinyl Acetate	--	9.3 U	8.5 U	10 U	10 U
Vinyl Chloride	40	4.6 U	4.2 U	5 U	5 U
Xylene O	10,000,000 (total)	4.6 U	4.2 U	5 U	5 U
Xylene P,M	10,000,000 (total)	9.3 U	8.5 U	10 U	10 U

Please see notes page at end of Table 4-2.

SUMMARY OF NOTES AND DATA QUALIFIERS
SOIL SAMPLE ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)
FORMER NIKE LO-58 LAUNCH SITE
CARIBOU, MAINE

Notes:
U = Not detected above associated Method Reporting Limit (MRL)
J = Reported below MRL; Estimated value.
TB = Methylene Chloride was detected in the trip blank; therefore, all results in the samples for $MeCl_2$ which are below the action level (4.8 x 5 = 24.0) have been qualified as "TB".
-- = Value not listed in MEDEP Remedial Action Guidelines, Revised 6/1/98
QC-01 = Duplicate sample of SB-29
QC-02 = Duplicate sample of SB-04
All values shown are in units of µg/kg (ppb)

TABLE 4-3
SOIL SAMPLE ANALYTICAL RESULTS
TOTAL PETROLEUM HYDROCARBONS - GRO AND DRO
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (mg/kg)	MEDEP Remedial Action Guideline	SB-01	SB-04	QC-02	SB-09	SB-10	SB-11	SB-13
TPH - Gasoline Range Organics (GRO)	5	1.9 U	2.2 U	2.5 U	1.7 U	1.4 U	2.2 U	1.4 U
TPH - Diesel Range Organics (DRO)	10	8 UJ	8 J	8 UJ	10 J	10 U	8 UJ	**36**

Notes:

TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

U = Not detected above associated Method Reporting Limit (MRL).

J = Estimated due to result below MRL.

UJ = Non-detect qualified as estimated due to result below MRL.

BOLD value indicates that the concentration is above MEDEP Remedial Action Guideline (6/1/98).

-- = Trip Blanks were not submitted for analysis of TPH-DRO.

All values shown are in units of mg/kg (ppm).

TABLE 4-3
SOIL SAMPLE ANALYTICAL RESULTS
TOTAL PETROLEUM HYDROCARBONS - GRO AND DRO
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (mg/kg)	MEDEP Remedial Action Guideline	SB-16	SB-20	SB-21	SB-22	SB-27	SB-29
TPH - Gasoline Range Organics (GRO)	5	1.4 U	1.3 U	1.5 U	2.1 U	1.2 U	1.6 U
TPH - Diesel Range Organics (DRO)	10	9 U	10 U	7 UJ	7 UJ	6 UJ	7 UJ

Notes:

TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

U = Not detected above associated Method Reporting Limit (MRL).

J = Estimated due to result below MRL.

UJ = Non-detect qualified as estimated due to result below MRL.

BOLD value indicates that the concentration is above MEDEP Remedial Action Guideline (6/1/98).

-- = Trip Blanks were not submitted for analysis of TPH-DRO.

All values shown are in units of mg/kg (ppm).

TABLE 4-3
SOIL SAMPLE ANALYTICAL RESULTS
TOTAL PETROLEUM HYDROCARBONS - GRO AND DRO
FORMER NIKE LO-58 LAUNCH AREA
CARIBOU, MAINE

Compound (mg/kg)	MEDEP Remedial Action Guideline	QC-01	SB-34	SB-37	SB-39	TB-01	TB-02
TPH - Gasoline Range Organics (GRO)	5	1.9 U	1.7 U	1.9 U	1.8 U	2 U	2 U
TPH - Diesel Range Organics (DRO)	10	8 UJ	8 UJ	8 UJ	7 UJ	--	--

Notes:

TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

U = Not detected above associated Method Reporting Limit (MRL).

J = Estimated due to result below MRL.

UJ = Non-detect qualified as estimated due to result below MRL.

BOLD value indicates that the concentration is above MEDEP Remedial Action Guideline (6/1/98).

-- = Trip Blanks were not submitted for analysis of TPH-DRO.

All values shown are in units of mg/kg (ppm).

wells at the property. However, these activities were not performed due to the lack of saturated overburden at the Site. A summary of the lithology and depth to bedrock encountered at each of the 40 soil boring locations is summarized in Table 4-4.

Table 4-4

Soil Boring Summary

Soil Boring ID	Approx. Depth to Bedrock (ft bgs)	Max. PID Reading (Interval)	Generalized Borehole Lithology
SB-01	8	1.6 (4-8 ft)	Brown silt, m-f sand, c-m-f angular gravel (FILL). Collected soil sample from approximately 5.5 to 6.0 ft
SB-02	7	1.4 (4-8 ft)	Dark brown silt, f-m angular gravel, some f-sand (FILL)
SB-03	8.5	0.8 (0-4 ft)	Dark brown silt, f-m sand, f-m-c angular gravel underlain by yellow-brown silt, some f-m-c sand and f-gravel, cohesive (TILL)
SB-04	7	3.8 (0-4 ft)	Orange-brown f-m-c sand, some f-m gravel, trace silt (FILL). Collected soil sample from approximately 2.0 to 2.5 ft bgs.
SB-05	5	0.6 (0-4 ft)	Dark brown silt, some f-m gravel, trace f-sand and c-gravel (FILL)
SB-06	4.5	1.0 (0-4 ft)	Orange-brown c-m-f sand, trace f-gravel (FILL)
SB-07	6	0.6 (0-4 ft)	Brown silt, m-f sand, c-m-f angular gravel (FILL)
SB-08	9	0.4 (0-4 ft)	Medium brown c-m-f sand, c-m-f gravel, silt (FILL) underlain by orange-brown silt, f-sand, trace f-gravel, cohesive (TILL)
SB-09	9	0.4 (0-4 ft)	Dark brown c-f-m sand, c-m-f gravel, silt (FILL) underlain by orange-brown silt, trace f-sand and f-m gravel, cohesive (TILL). Collected soil sample from approximately 2.0 to 2.5 ft bgs.
SB-10	4	0.6 (0-4 ft)	Dark brown/black f-m-c sand, f-m-c angular gravel, trace brick and concrete fragments (FILL). Collected soil sample at approximately 2.0 to 2.5 ft bgs.
SB-11	8	0.6 (8-12 ft)	Orange-brown c-m-f sand, some c-m-f gravel (FILL) underlain by yellow-brown silt, f-sand, weathered BR fragments (TILL). Collected soil sample from approximately 2.5 to 3.0 ft bgs.
SB-12	4	1.3 (0-4 ft)	Dark brown c-m-f sand, c-f-m angular gravel, weathered BR (FILL)

Table 4-4

Soil Boring Summary (continued)

Soil Boring ID	Approx. Depth to Bedrock (ft bgs)	Max. PID Reading (Interval)	Generalized Borehole Lithology
SB-13	11.5	0.0	Dark brown c-m-f sand and gravel, silt (FILL) underlain by orange-brown c-m-f angular gravel, silt, trace f-sand (TILL). Collected soil sample from approximately 9.0 to 9.5 ft bgs.
SB-14	2	1.1 (0-4 ft)	Orange-brown silt, f-m angular gravel, trace f-m sand (TILL)
SB-15	12	0.4 (0-4 ft)	Dark brown f-m-c sand and gravel, silt (FILL) underlain by orange-brown silt, f-m-c sand, f-gravel, cohesive (TILL)
SB-16	4	0.6 (0-4 ft)	Dark brown c-m-f sand, c-m-f gravel, silt (FILL). Collected soil sample from approximately 0.5 to 1.0 ft bgs.
SB-17	3	0.3 (0-4 ft)	Orange-brown m-f-c sand, some f-m-c angular gravel (FILL)
SB-18	3	0.8 (0-4 ft)	Dark brown c-m-f sand, some c-m-f angular gravel, trace silt (FILL)
SB-19	3	0.1 (0-4 ft)	Brown f-sand, silt, weathered BR fragments (FILL)
SB-20	2	0.5 (0-4 ft)	Orange-brown c-m-f sand, c-m-f gravel, trace silt (FILL). Collected soil sample from approximately 1.0 to 1.5 ft bgs.
SB-21	19	1.5 (4-8 ft)	Gray f-sand, silt, and m-c-f gravel (FILL) underlain by medium brown silt, f-sand, m-f gravel, trace clay (TILL). Collected soil sample from approximately 5.0 to 5.5 ft bgs.
SB-22	4	1.3 (0-4 ft)	Yellow-brown silt, some m-f sand, trace m-f angular gravel (FILL). Collected soil sample from approximately 3.5 to 4.0 ft bgs.
SB-23	1	0.7 (0-4 ft)	Dark brown f-m-c sand and angular gravel (FILL)
SB-24	2	0.0 (0-4 ft)	Medium brown c-m-f sand, c-m-f angular gravel, trace silt (FILL)
SB-25	2	0.4 (0-4 ft)	Medium brown c-m-f sand, c-m-f angular gravel, trace silt (FILL)
SB-26	2	0.1 (0-4 ft)	Black f-sand, silt, trace c-m-f gravel (FILL)
SB-27	2	0.0 (0-4 ft)	Dark brown sand, c-m-f angular gravel, trace silt (FILL). Collected soil sample from approximately 0.8 to 1.3 ft bgs.
SB-28	3.5	1.2 (0-4 ft)	Light brown silt, some f-m-c angular gravel, trace f-sand (FILL)

Table 4-4

Soil Boring Summary (continued)

Soil Boring ID	Approx. Depth to Bedrock (ft bgs)	Max. PID Reading (Interval)	Generalized Borehole Lithology
SB-29	4.5	0.6 (0-4 ft)	Dark brown m-f sand, some silt, f-m angular gravel (FILL). Collected soil sample from approximately 2.0 to 2.5 ft bgs.
SB-30	5	1.6 (0-4 ft)	Dark brown c-m-f sand, silt, trace angular f-gravel (FILL)
SB-31	9.5	1.7 (0-4 ft)	Orange-brown silt, some f-m sand, f-m-c angular gravel (FILL)
SB-32	6	1.5 (0-4 ft)	Orange-brown silt, some f-m ang gravel, trace m-sand (FILL)
SB-33	4	1.3 (0-4 ft)	Gray c-m-f ang gravel, some silt and f-sand (FILL/WBR)
SB-34	15	1.4 (10-15 ft)	Medium brown f-sand, silt, trace f-m angular gravel (FILL). Collected soil sample from approximately 12.0 to 12.5 ft bgs.
SB-35	2.5	1.7 (0-4 ft)	Medium brown silt, trace f-sand and f-gravel (FILL)
SB-36	3	1.6 (0-4 ft)	Orange-brown silt, some f-sand, m-f angular gravel (TILL)
SB-37	4	1.0 (0-4 ft)	Orange-brown silt, some f-sand, trace m-f angular gravel (TILL). Collected soil sample from approximately 1.0 to 1.5 ft bgs.
SB-38	4	1.2 (0-4 ft)	Medium brown silt, some f-sand, m-f angular gravel (TILL)
SB-39	8	1.6 (0-4 ft)	Orange-brown silt, some f-sand, trace m-f angular gravel (FILL) underlain by orange-brown silt, f-sand, c-m-f gravel (TILL). Collected soil sample from approximately 1.5 to 2.0 ft bgs.
SB-40	8	1.6 (0-4 ft)	Medium-brown silt, some f-sand and m-f angular gravel (TILL) underlain by orange-brown silt, some f-sand, m-f-c gravel (TILL/WBR)

Notes: Soil Boring ID's shown in **Bold** indicate that a laboratory analytical sample was collected from this location.
WBR = Weathered Bedrock
Bgs = Below Ground Surface

SECTION 5

CONCLUSIONS AND RECOMMENDATIONS

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The following section presents WESTON's conclusions and recommendations based on the results of the GPR survey, passive soil-gas survey, and Geoprobe soil boring and soil sampling investigation at the Nike LO-58 property. Analytical results of soil samples collected by WESTON during the Geoprobe investigation were compared with the Remedial Action Guidelines outlined in the MEDEP's Direct Contact residential scenario of the March 24, 1999 Internet web page titled "Implementation of Remedial Action Guidelines", as well as the Remediation Standards outlined in the MEDEP's Procedural Guidelines For Establishing Standards for the Remediation of Oil Contaminated Soil and Groundwater in Maine (1995). After following the decision tree process provided in this guideline, the Stringent Cleanup Standards were used in order to establish the most conservative approach possible in assessing any potential impact to human health and the environment.

5.2 CONCLUSIONS

5.2.1 Ground-Penetrating Radar (GPR) Survey

WESTON concludes that a buried underground tank does not exist in the area of the GPR investigation. The results of the GPR survey presented in Subsection 4.2 indicate that the metallic response observed during the magnetometer survey by representatives of the MEDEP was not due to the presence of an underground storage tank in the area (NGS, 1999). GPR profiles crossing this anomaly show strong but narrow hyperbolic reflectors that are indicative of a small-diameter metal pipe extending outwards from the corner of the former Generator building. This interpretation is supported by the presence of a piece of four-inch diameter cast iron pipe that was found nearby the area on the ground surface. The pipe that remains buried approximately two feet below the ground surface in this area is likely a section of older metal pipe that was either cut or broken when a new septic system was installed. Additional anomalies detected in the vicinity of the AMAC building are believed to be caused by old fence post

anchors for a former chain-link fence, a buried plastic drain pipe for the building foundation, and a PVC sewer pipe leading to the septic tank (NGS, 1999).

5.2.2 Passive Soil-Gas Survey

WESTON concludes that low levels of VOCs and/or TPH-DRO may exist in bedrock groundwater beneath the Site. The results of the summer 1999 soil-gas survey indicated that low levels of BTEX, PCE, and 1,2,4-Trimethylbenzene contamination may be present in soil and/or groundwater beneath the former Launcher Pad and Acid Neutralization/Refueling areas (BEACON, 1999). As indicated on Figures 4-2 and 4-3, these areas extend from the former Launcher Pad area towards the southwestern property margin, where low levels of total BTEX and PCE were also noted at soil-gas perimeter probe location PR-05. It should be noted that 16 of the 75 soil-gas probes installed at the Site were lost prior to removal, and therefore the evaluation of the data had to be made with some data gaps. Using the available soil-gas information, WESTON selected the locations of the 40 Geoprobe soil borings shown on Figure 3-2 and approved by CENAE in the 1999 Final Supplemental SAP. The analytical results of soil samples collected during this investigation were previously addressed in Subsection 4.3. Conclusions based on the results of the Geoprobe investigation are presented in Subsection 5.2.3 below.

5.2.3 Geoprobe Soil Boring And Soil Sampling Program

Based on the results of the Geoprobe soil boring and soil sampling program at the Site, no apparent source areas were identified in the overburden that could be contributing to the low levels of VOC contamination recently detected in on-site drinking water supplies. As previously indicated, the results of the soil-gas survey suggested that low levels of BTEX, PCE, and 1,2,4-Trimethylbenzene contamination may be present in soil and/or groundwater beneath the Site. Although soil-gas surveys may not be able to accurately measure the presence of contaminants in the bedrock water-bearing zone, the soil sampling data do not indicate that the detections are due to a significant impact to the overlying soils. The analytical results of the soil samples collected from the overburden at the Site indicate the presence of only two VOCs (acetone and TCE) in on-site soils, and at concentrations that are four to five orders of magnitude

lower than their respective MEDEP RAGs (MEDEP, 1998). Therefore, due to the limited number of TCE detections in the soil samples collected and the lack of saturated overburden at the property, the low levels of VOCs detected during the soil-gas survey are likely the result of VOCs present in the bedrock water-bearing zone. This conclusion is supported by the presence of TCE in the drinking water samples collected by MEDEP from the on-site bedrock water supply well.

Analytical results of two soil samples collected from the Site indicated the presence of TPH-DRO at concentrations equal to, or in excess of, the Remediation Standard for that substance (MEDEP, 1995). These samples (10 ppm in SB-09 and 36 ppm in SB-13) are located at the northern corner of the former Launch Pad area, approximately 200 feet east of the AMAC bedrock water supply well. This area is also where BTEX compounds were detected during the passive soil-gas survey, and is topographically the approximate high spot for the surrounding area.

5.3 RECOMMENDATIONS

WESTON recommends that no further action be taken to locate and remove an existing UST from the area adjacent to the AMAC building. As indicated in the "GPR and Soil-Gas Survey Letter Report" prepared by WESTON and submitted to CENAE on December 14, 1999, the actual cause of the anomalies previously described in Subsection 5.2.1 can only be conclusively determined by direct observation. During the October 1999 Geoprobe investigation, an attempt was made by WESTON personnel to locate the cast iron pipe believed to be the cause of the anomaly. However, due to snow and freezing temperatures at the time of the fieldwork, the ground surface could not be excavated to the depths required to locate the pipe using a shovel and post-hole digger. WESTON recommends that an additional attempt be made during a subsequent visit to the Site during warmer temperatures to confirm the identity of this anomaly.

WESTON also recommends the installation and sampling of bedrock monitoring wells and additional soil borings at the property. To further confirm that no source area currently exists in the soil, a portion of the additional soil boring locations should focus on the areas where soil-gas probes were either removed or lost prior to retrieval during the passive soil-gas survey. These areas include the southwest corner of the AMAC building; the impacted bedrock water supply

well at the AMAC; the northern portion of the former Test Building; and the former AFN area/Warhead Building. The remainder of the additional soil borings should be located in areas where the soil-gas and soil boring programs conducted during the Preliminary Site Investigation detected low levels of VOCs and/or TPH-DRO. These areas include the former Launcher Area (soil-gas locations LP-13 through LP-22); the northern corner of the former Launcher Area (soil boring locations SB-09 and SB-13); the northwest corner of the AMAC building; and the drainage swales adjacent to the former acid fueling station.

Areas where bedrock well installations should be considered include the AFN area, perimeter areas of the former Launch Pad, the grassy area to the southwest of the former Launch Pad, and the grassy area to the northwest of the AMAC. The samples collected from these monitoring wells should be submitted for laboratory analysis of VOCs by EPA Method 8260B and TPH-DRO by Maine Method 4.1.25. WESTON also recommends continued sampling and laboratory analysis of the on-site bedrock water supply wells at the AMAC and Lister-Knowlton VFW for VOCs by EPA Method 524.2, as well as for TPH-DRO by Maine Method 4.1.25. At a minimum, the groundwater and drinking water sampling should be performed on a twice-a-year basis (April and November) for a period of two years. After the two year period has elapsed, the data will be evaluated to determine if a change in, or additional monitoring, is warranted. The objective of performing the additional investigative work is to assess whether or not activities formerly conducted at the property have resulted in an impact to bedrock water quality at the Site, and if so, the magnitude of that impact. Water level measurements taken in the newly installed bedrock wells will also assist in estimating the direction of groundwater flow in the bedrock water-bearing zone, so that potential receptors of VOC contamination can be evaluated.

SECTION 6

REFERENCES

6. REFERENCES

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APPENDIX A

NORTHEAST GEOPHYSICAL SERVICES REPORT

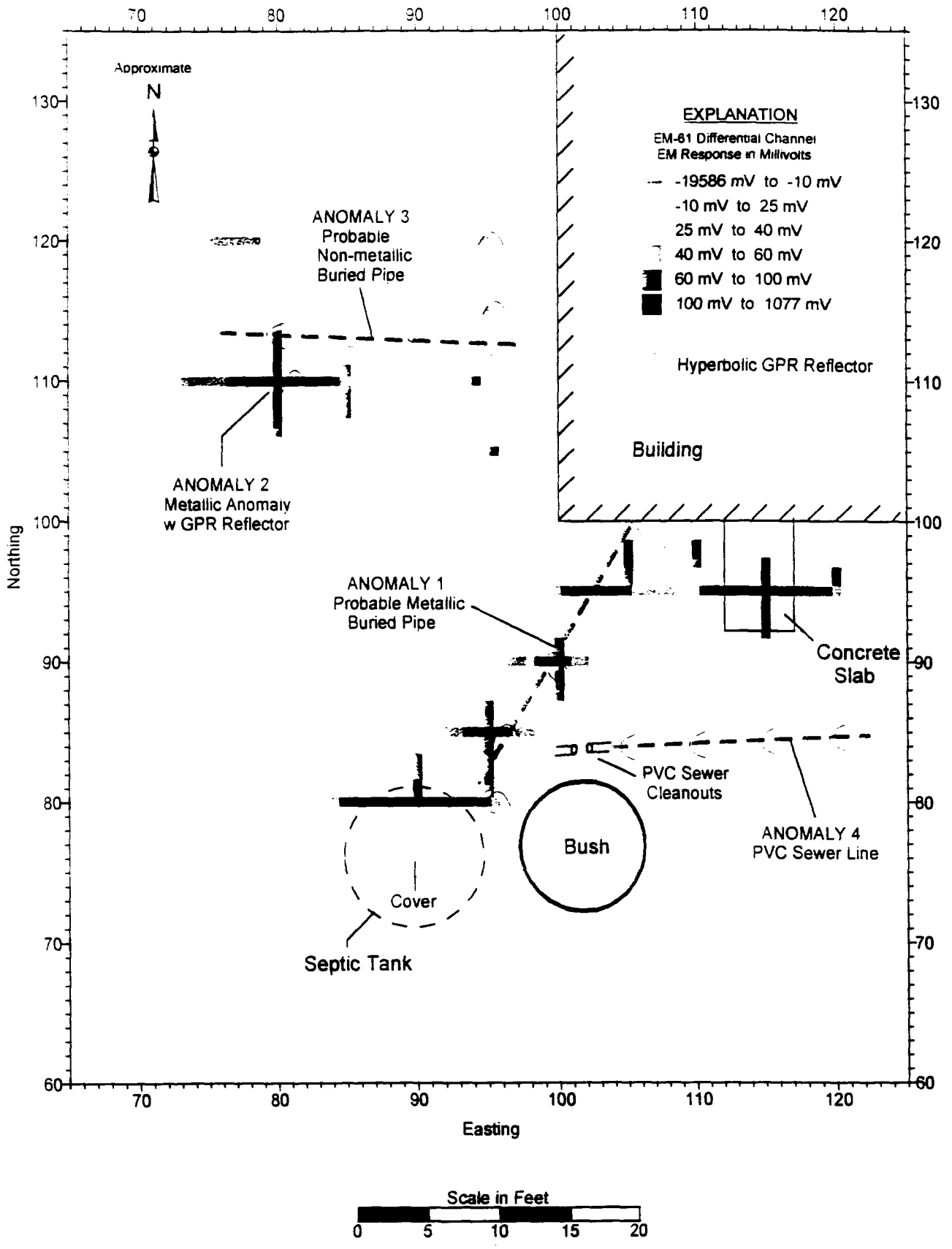
Northeast Geophysical Services
4 Union Street, Suite 3, Bangor, ME 04401
Phone: 207-942-2700 Fax: 207-942-8798

METAL DETECTION AND GROUND PENETRATING RADAR SURVEY AT A FORMER NIKE MISSILE SITE CARIBOU, MAINE

For:
ROY F. WESTON, INC.

JUNE, 1999

Division of NGS, Inc.



Surveyed June 23, 1999 By:

Northeast Geophysical Services
4 Union Street, Suite 3
Bangor, Maine

Figure 1. Plot of GPR and Metal Detection Survey Results
Former Nike Missile Site, Caribou, Maine

Ground Penetrating Radar (GPR)

Ground penetrating radar utilizes high frequency radio waves to probe the subsurface. Radar waves are transmitted into the ground from an antenna that is pulled across the ground surface. In the subsurface, radar waves are reflected at interfaces of materials with contrasting dielectric properties. The returning signal is intercepted by a receiver and converted to a graphic image. The horizontal axis of the image is distance along the traverse. The vertical axis is two-way travel time of the radar pulses, in nanoseconds (ns).

The GPR graphic images are examined and features noted on the images are then transferred to a map. Tanks, pipelines and other objects with rounded tops (boulders, tree roots, or segments of old foundations, for example) may show up on the profiles as hyperbola-shaped reflections. Tanks and pipelines usually appear on more than one survey line as hyperbolic reflectors on lines perpendicular to the tank or pipe axis and as horizontal reflectors on lines along the axis. The GPR instrument used was a GSSI, SIR System-3. A 500 MHz antennae was used with a time range set at 60 nanoseconds. At this setting the depth surveyed is approximately 10 feet. The GPR surveys were conducted at a slow walking pace along lines spaced 5 feet apart.

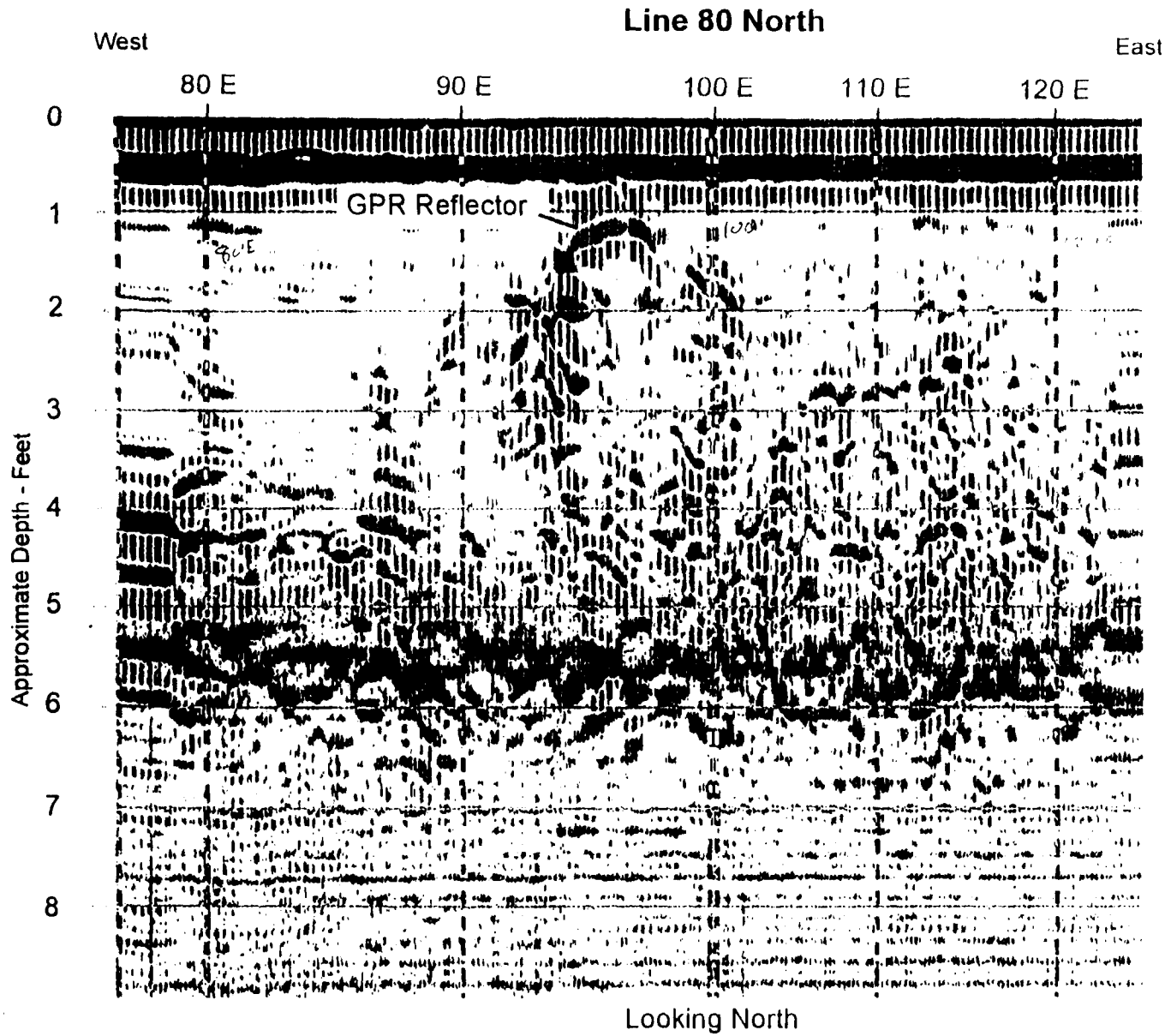
Field Survey Procedures

The field survey area was marked with a 10-ft. by 10-ft. orthogonal grid using a tape measure and pin flags. A grid coordinate system was arbitrarily assigned and the grid was referenced to the southwest corner of the AMAC building (see Figure 1.) The metal detection and GPR surveys were conducted along north-south and east-west lines spaced five feet apart. Surveying was conducted south to north and west to east along the lines. Following the survey a sketch map was made of the survey grid and prominent features seen there. This sketch map was later digitized and serves as a base for Figure 1.

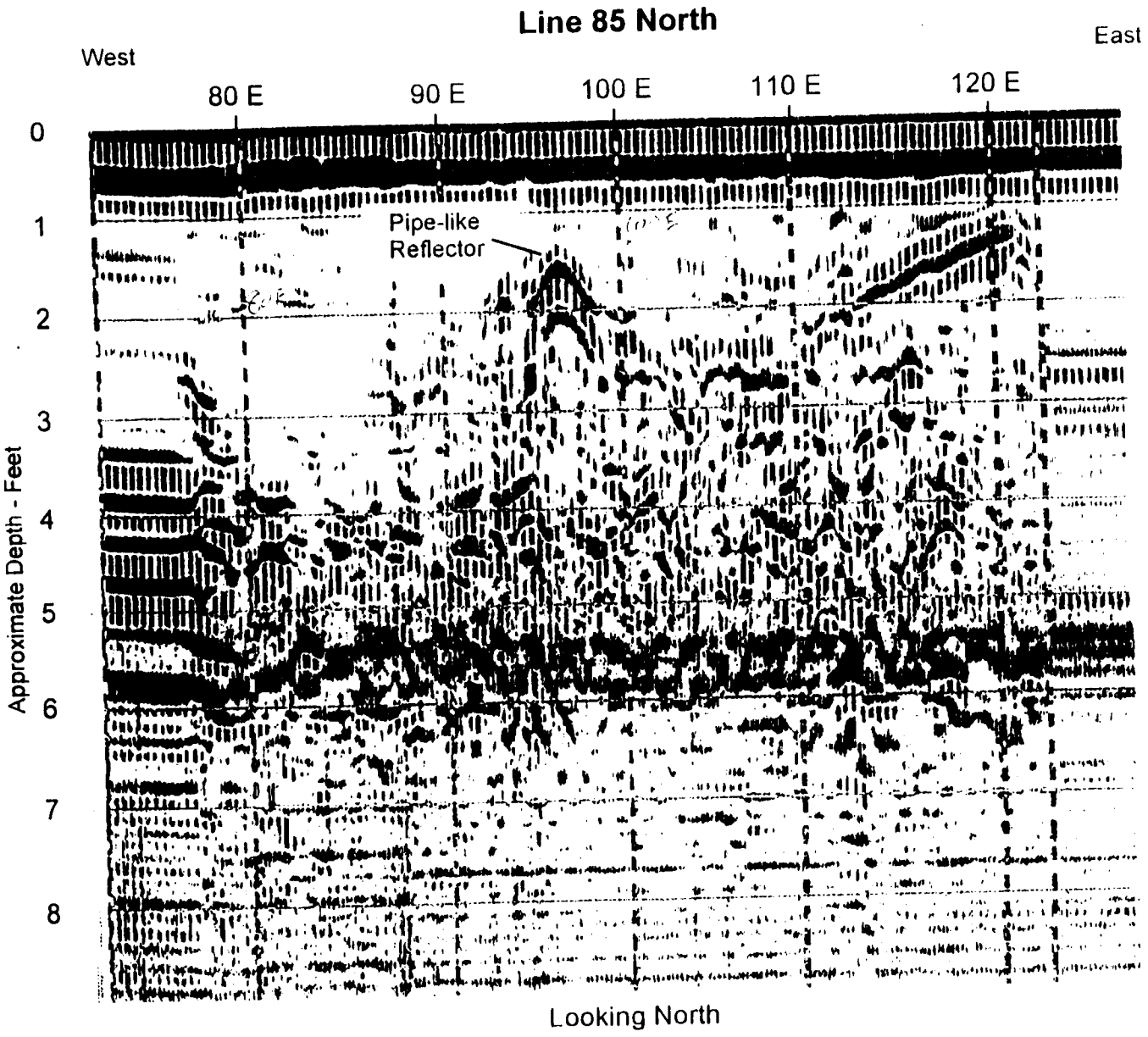
SURVEY RESULTS

EM-61 and GPR survey results are shown on Figure 1. Individual GPR profiles for each survey line are also appended. Positive metal detection results are shown on Figure 1 as colored blocks ranging in color from yellow for weakly anomalous to black for strongly anomalous. EM-61 data collected within a few feet of the building were eliminated from the data for Figure 1 because they were extremely high due to reinforcing steel in the concrete slab. Hyperbolic GPR reflectors are shown on Figure 1 as small hyperbolic symbols. Four anomalies shown on Figure 1 are discussed below.

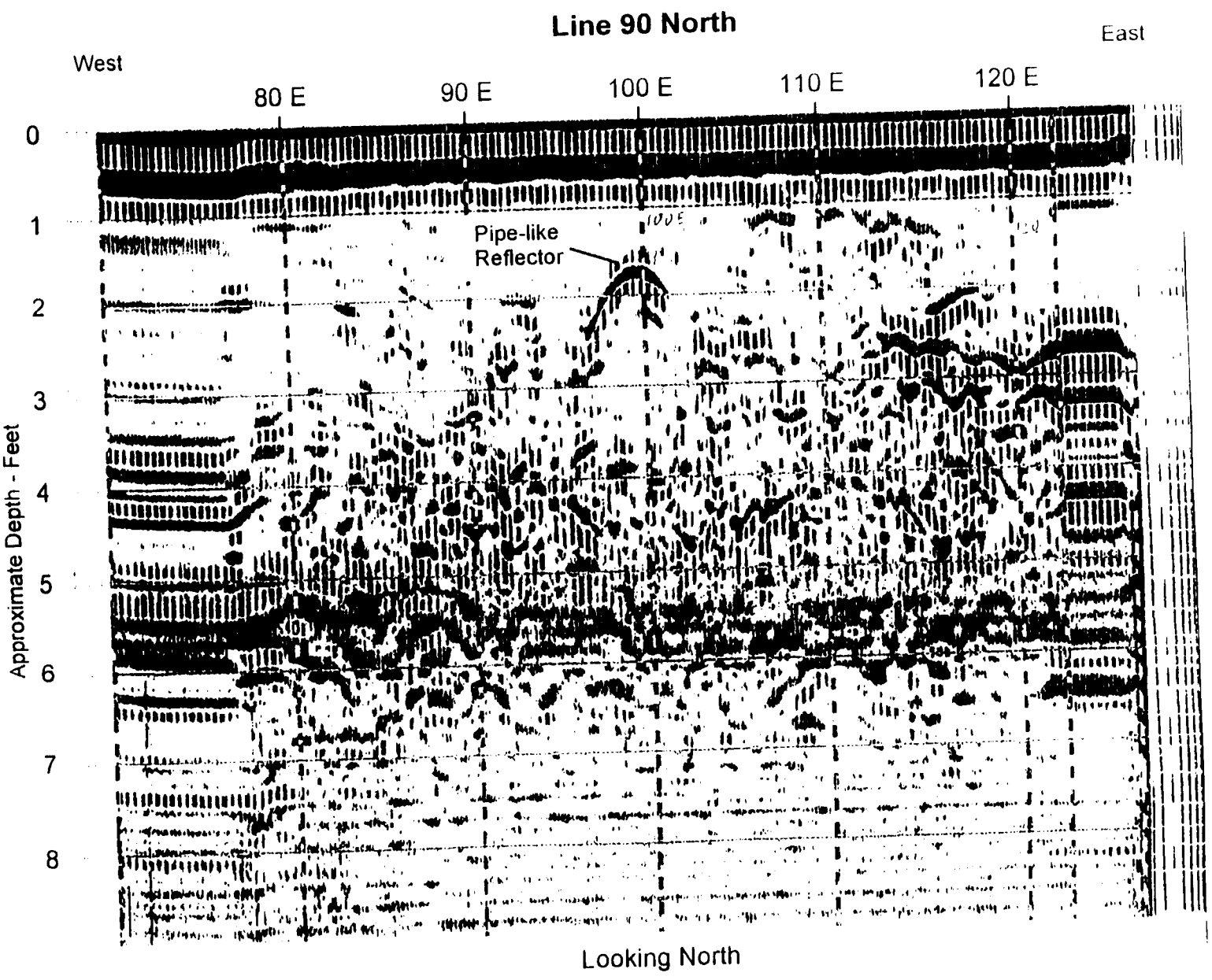
Anomaly 1: Anomaly 1 is located in the area of the magnetometer anomaly detected by ME DEP staff. This was the primary area of concern for the possible presence of an underground tank. Em-61 results show a moderate to strong metallic anomaly trending from the south wall of the building, approximately 5 feet east of the southwest corner,- running approximately 20 feet southwest towards the septic tank. East-west GPR profiles crossing this anomaly show strong but narrow hyperbolic reflectors indicative of a buried metal pipe at this location. Supporting this interpretation, a small piece of 4-inch cast iron pipe was found on the surface nearby. It is



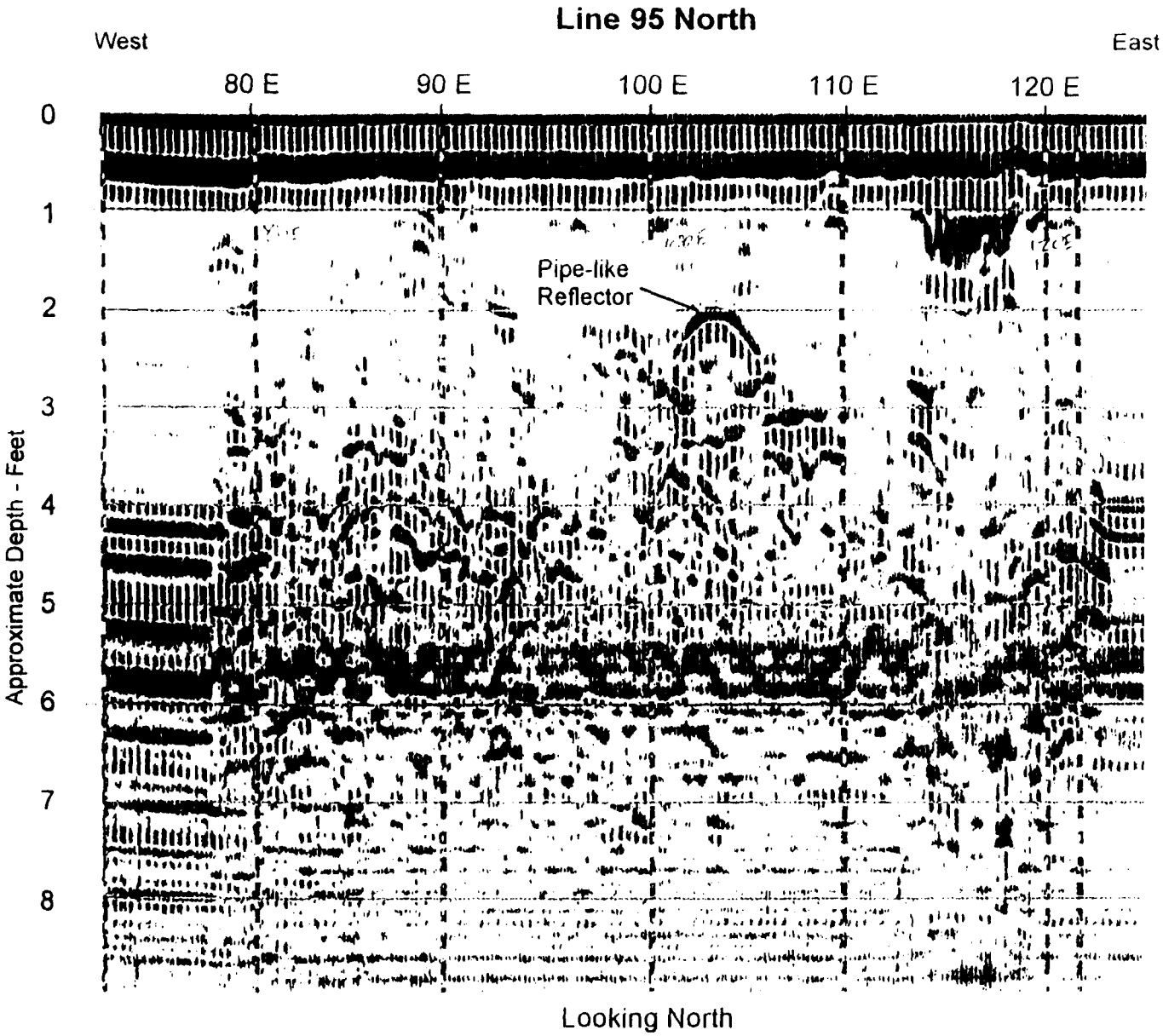
GPR Profile 80 North - Former Nike Missile Site, Caribou, ME.



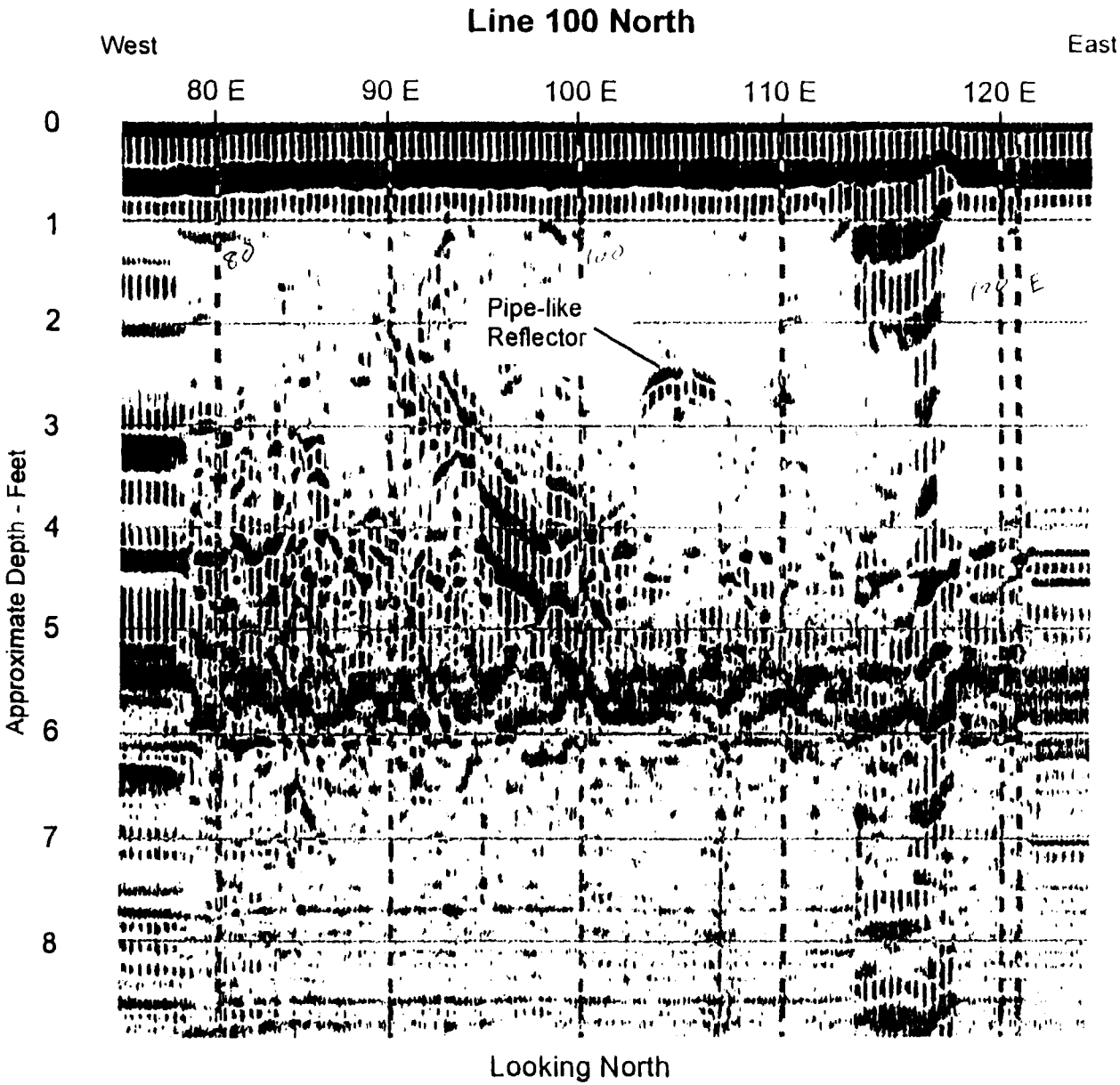
GPR Profile 85 North - Former Nike Missile Site, Carbou ME.



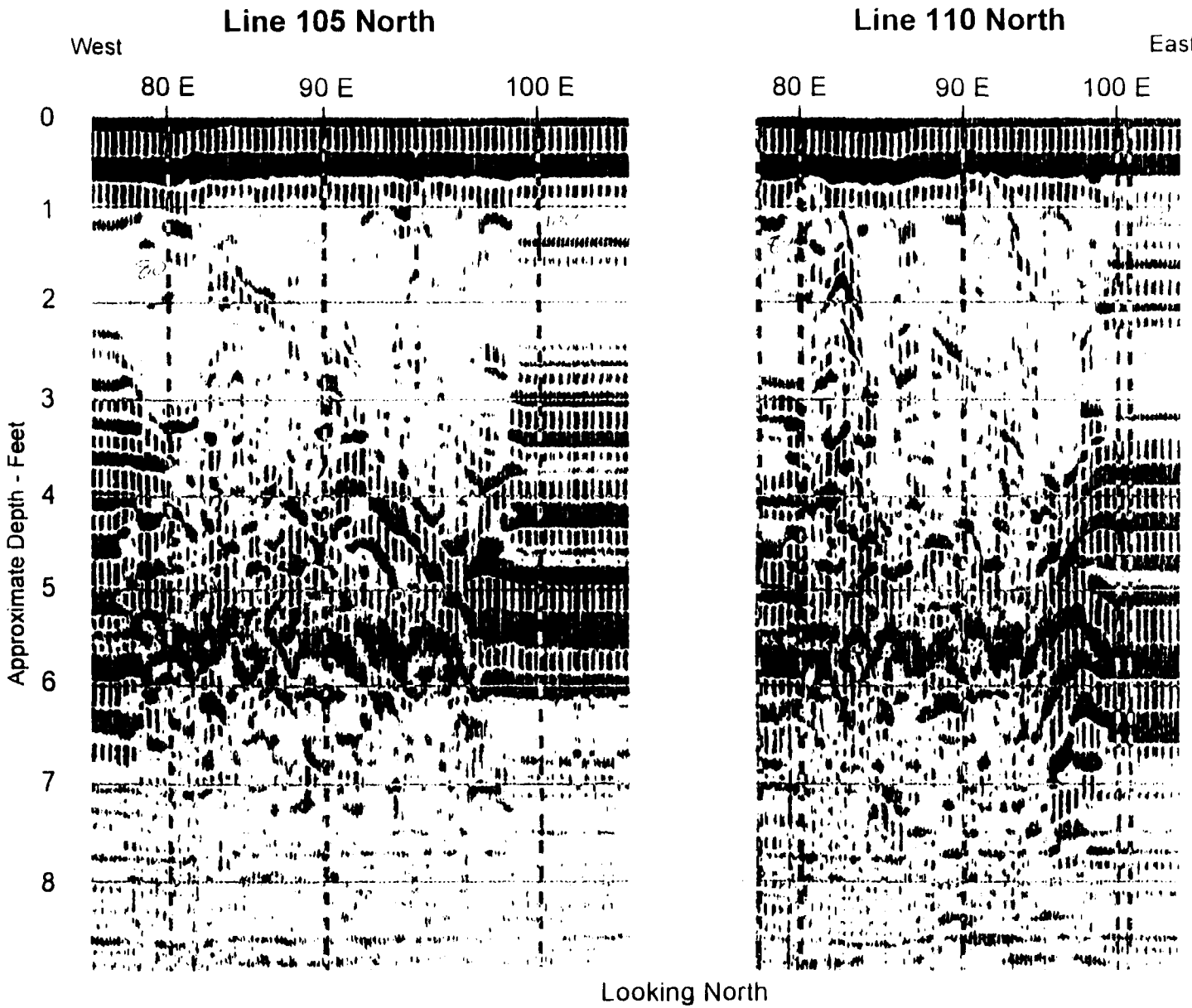
GPR Profile 90 North - Former Nike Missile Site, Carbou ME.



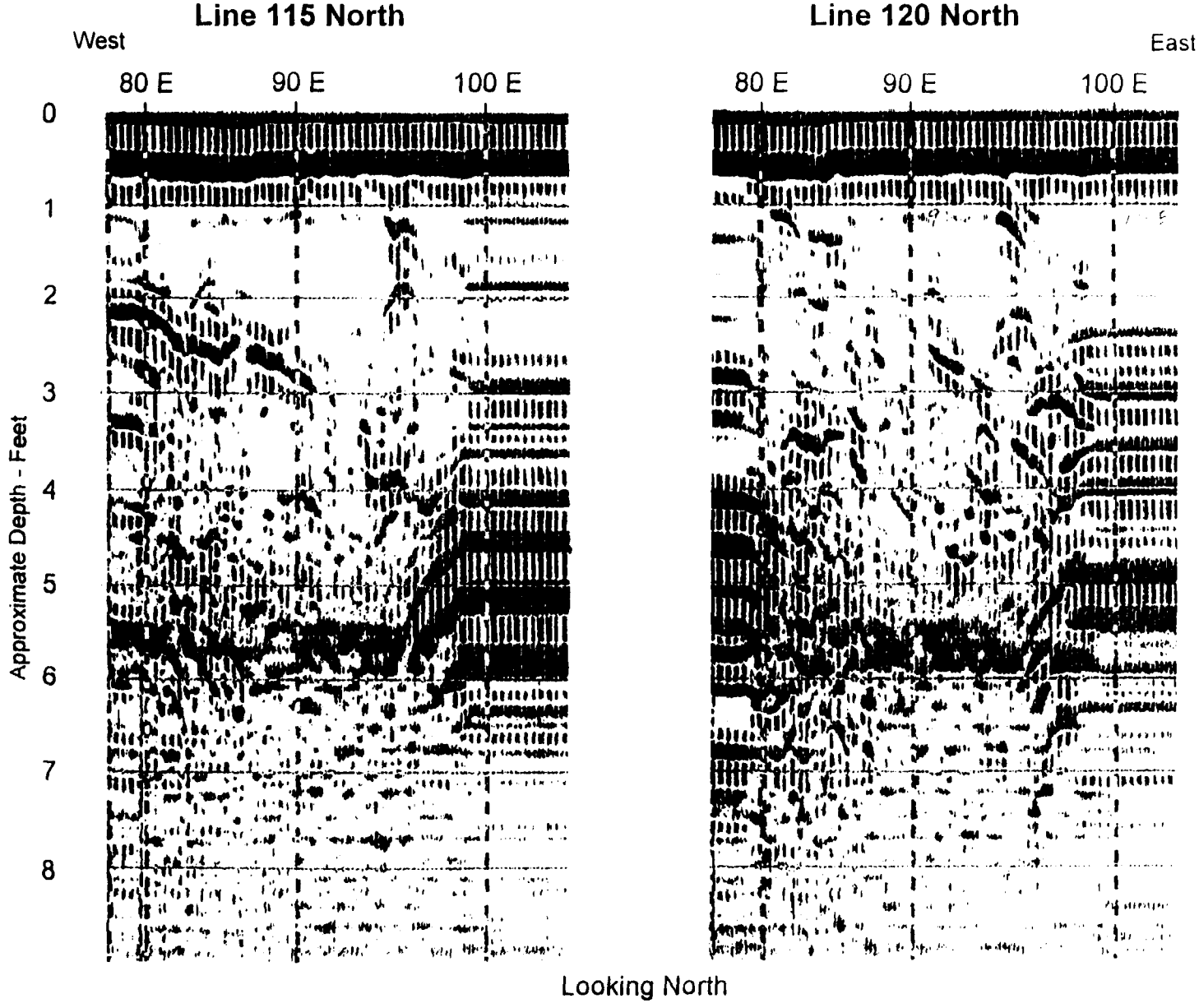
GPR Profile 95 North - Former Nike Missile Site, Carbou ME.



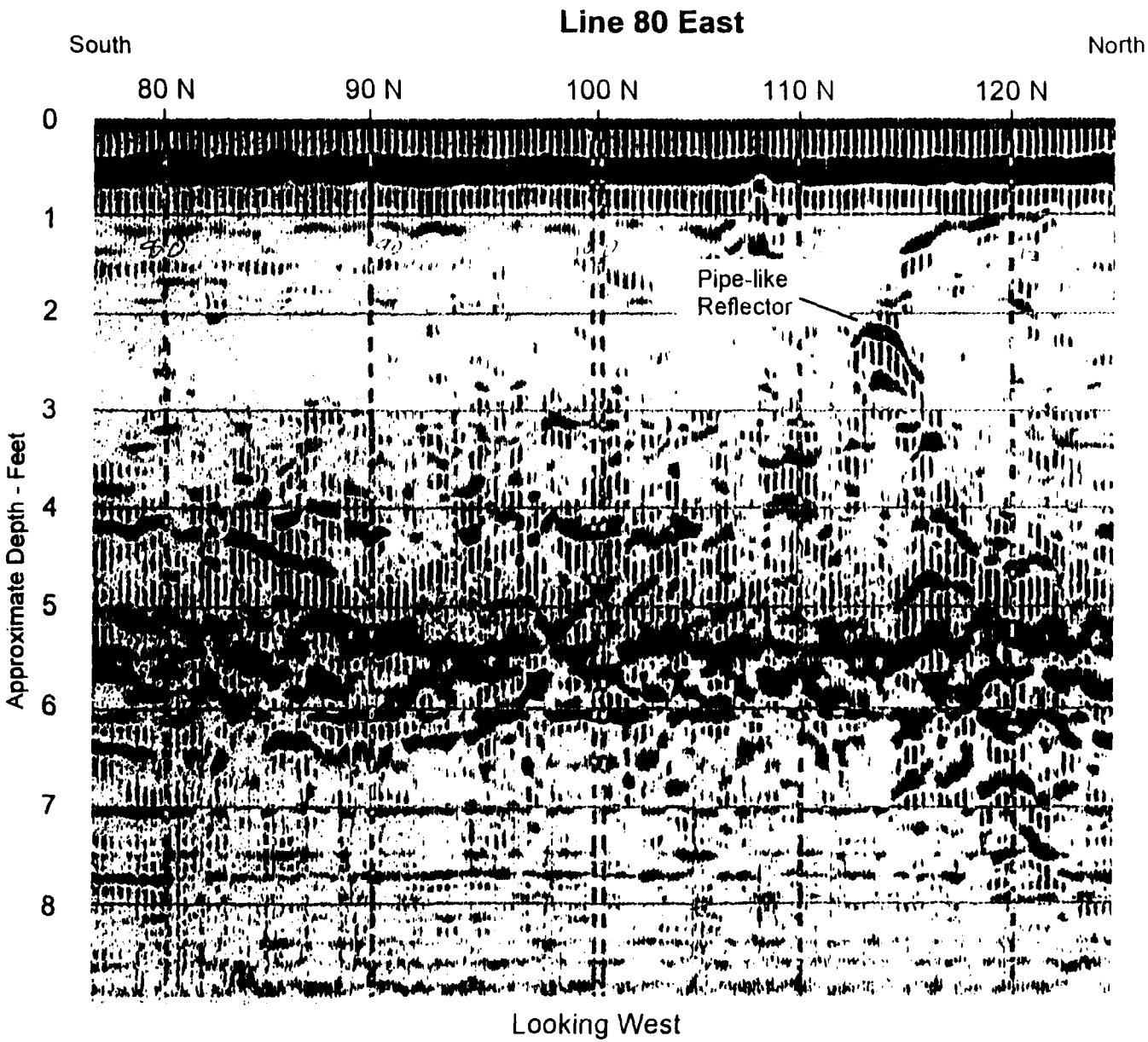
GPR Profile 100 North - Former Nike Missile Site, Carbou ME.



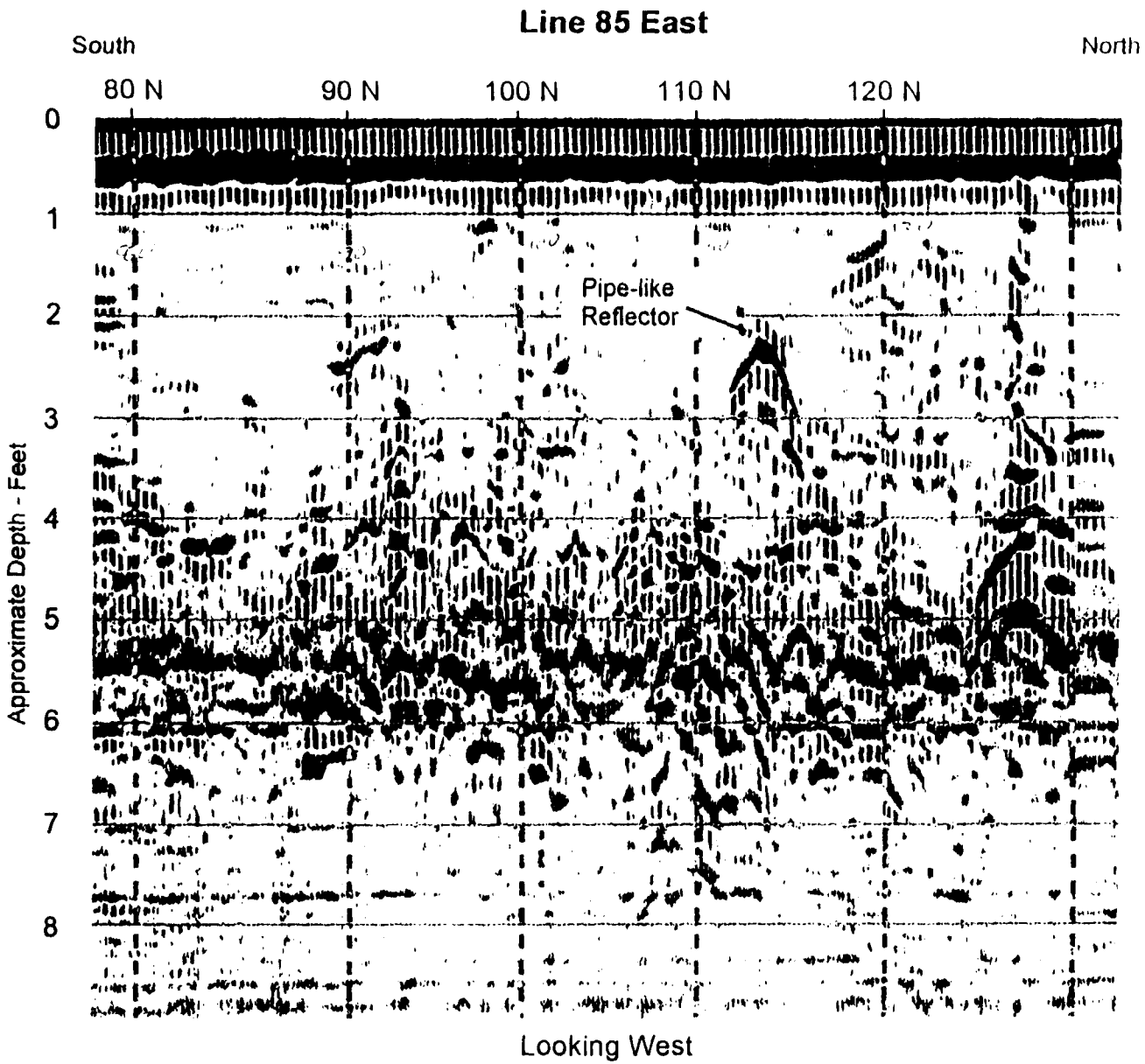
GPR Profiles 105 & 110 North - Former Nike Missile Site, Carbou ME.



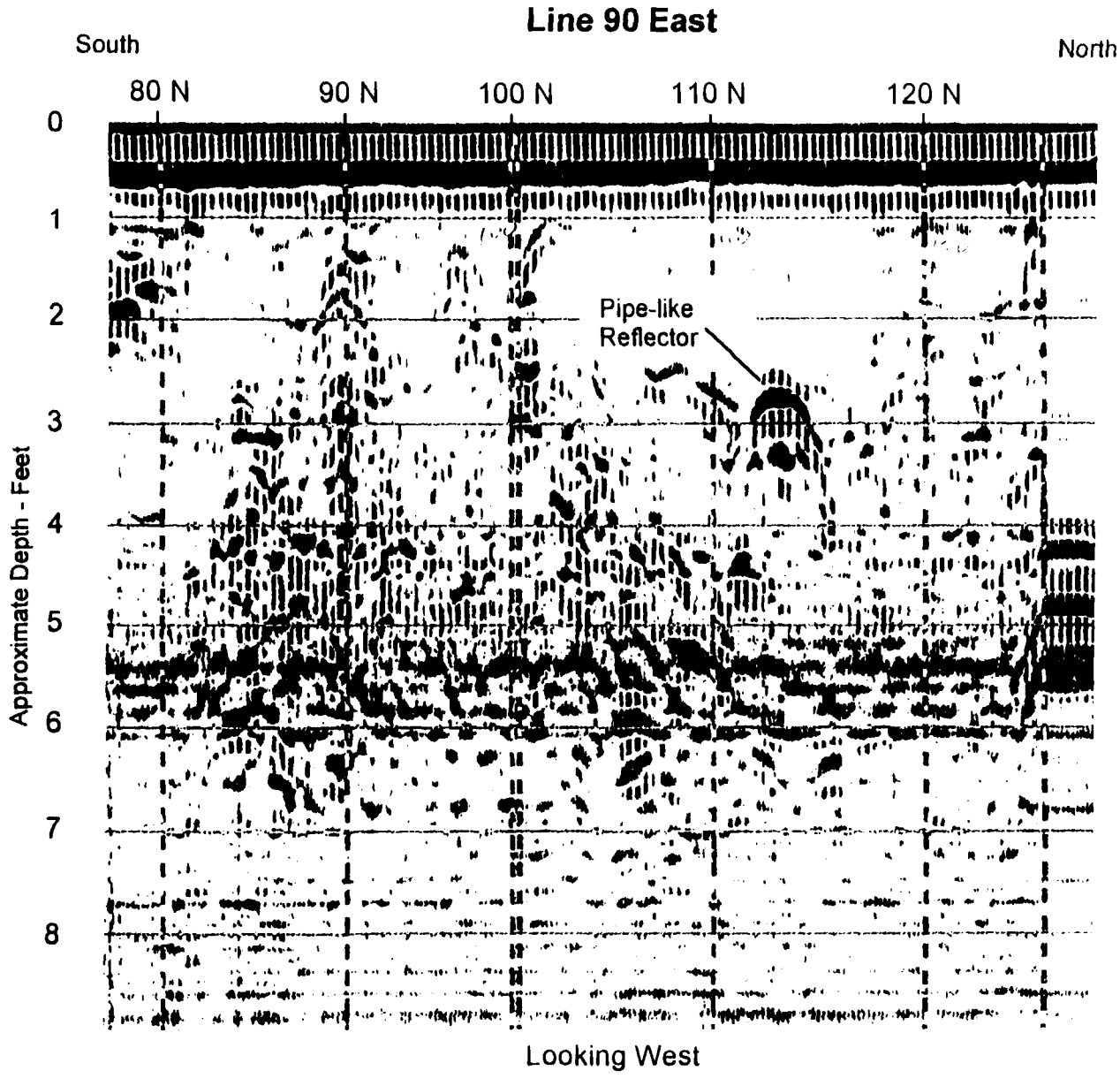
GPR Profiles 115 & 120 North - Former Nike Missile Site, Carbou ME.



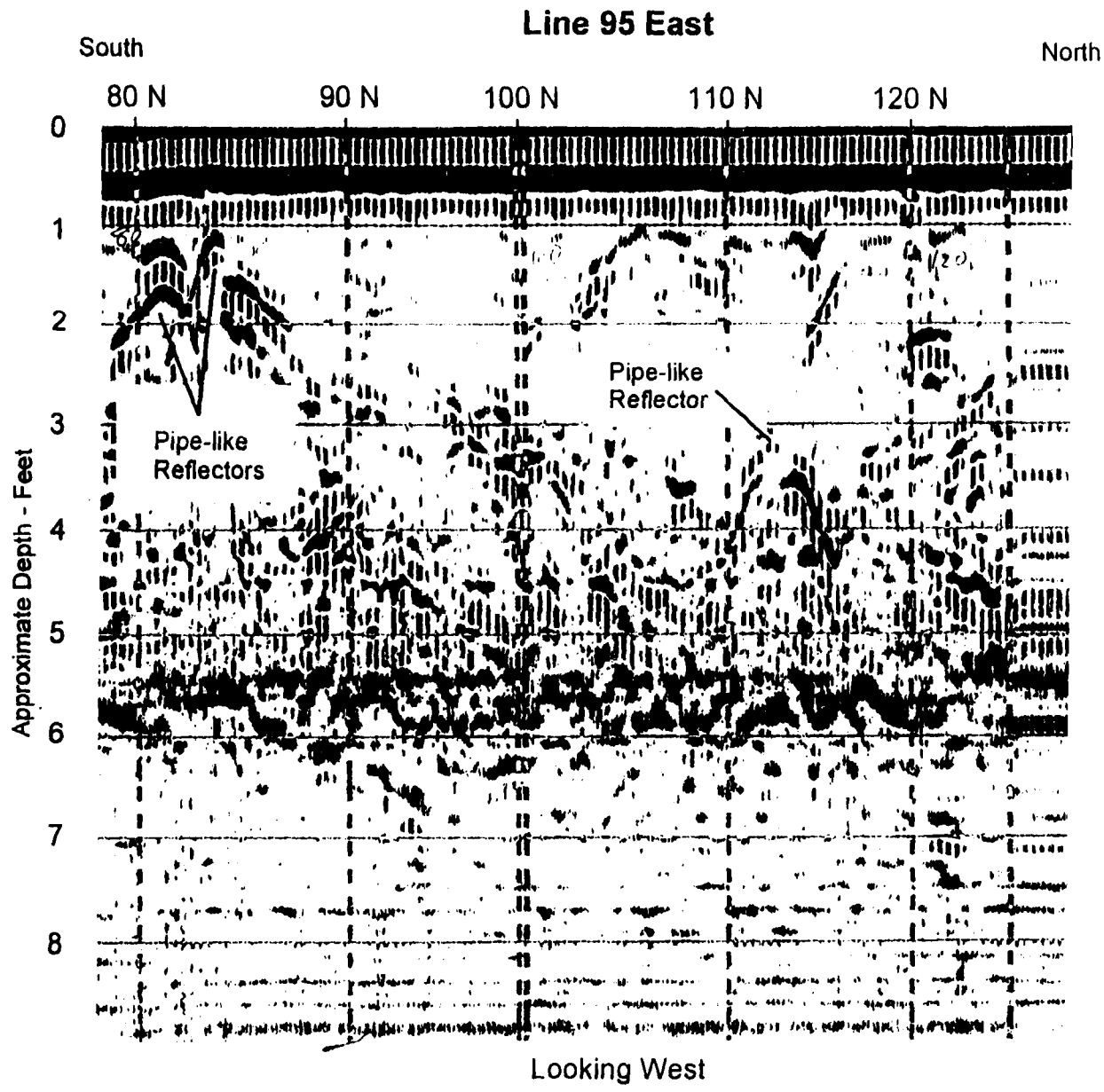
GPR Profile 80 East - Former Nike Missile Site, Carbou ME.



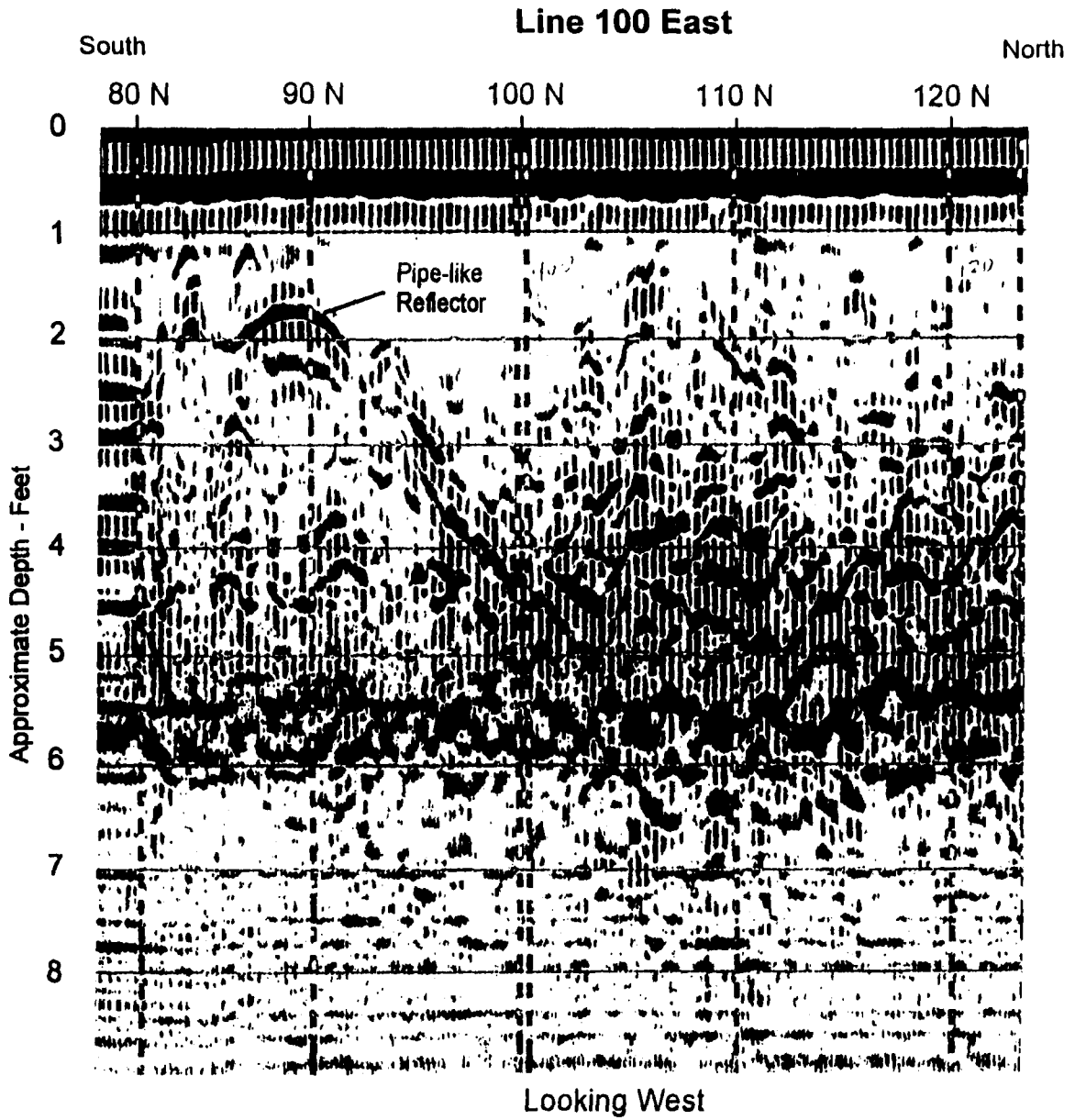
GPR Profile 85 East - Former Nike Missile Site, Carbou ME.



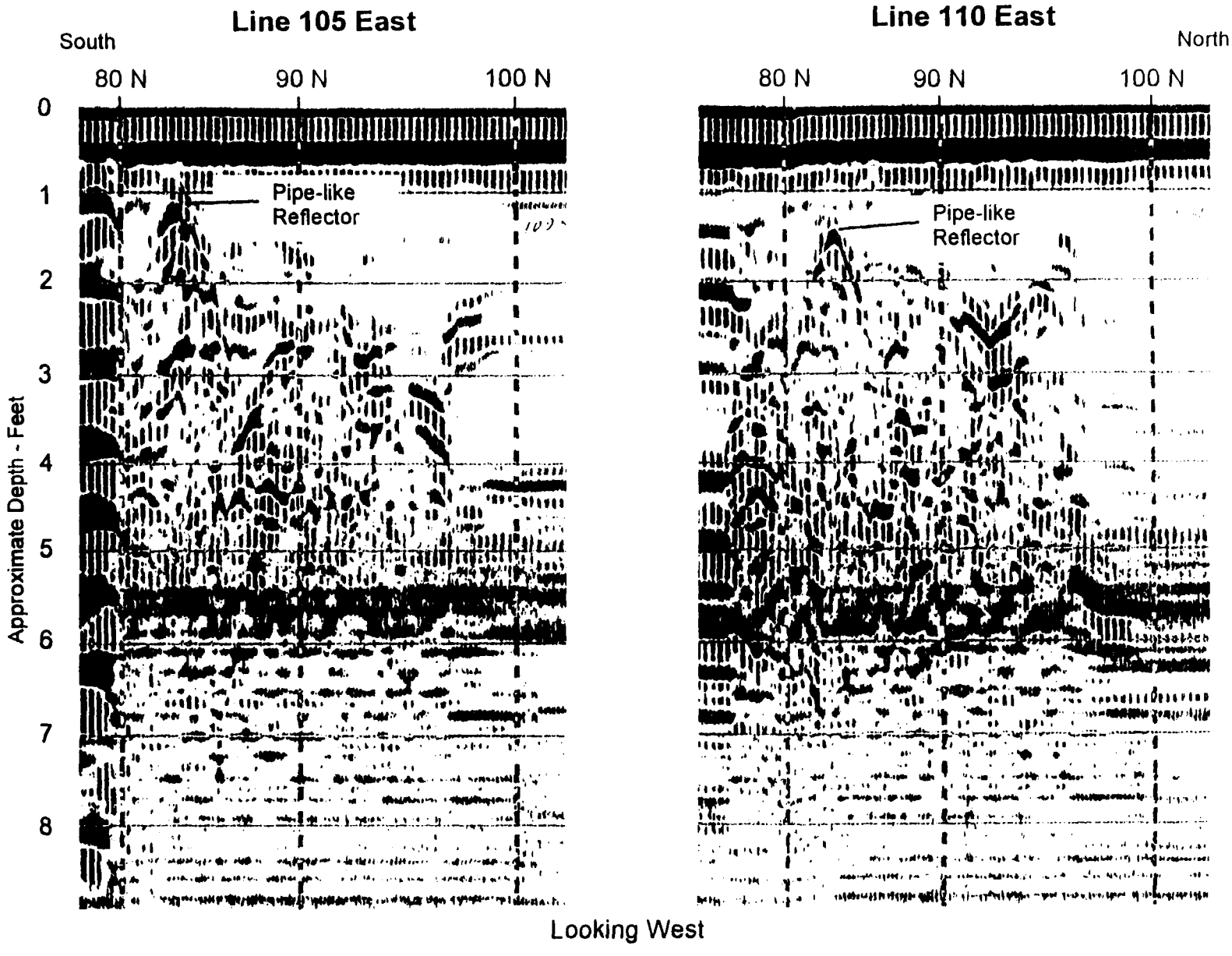
GPR Profile 90 East - Former Nike Missile Site, Carbou ME.



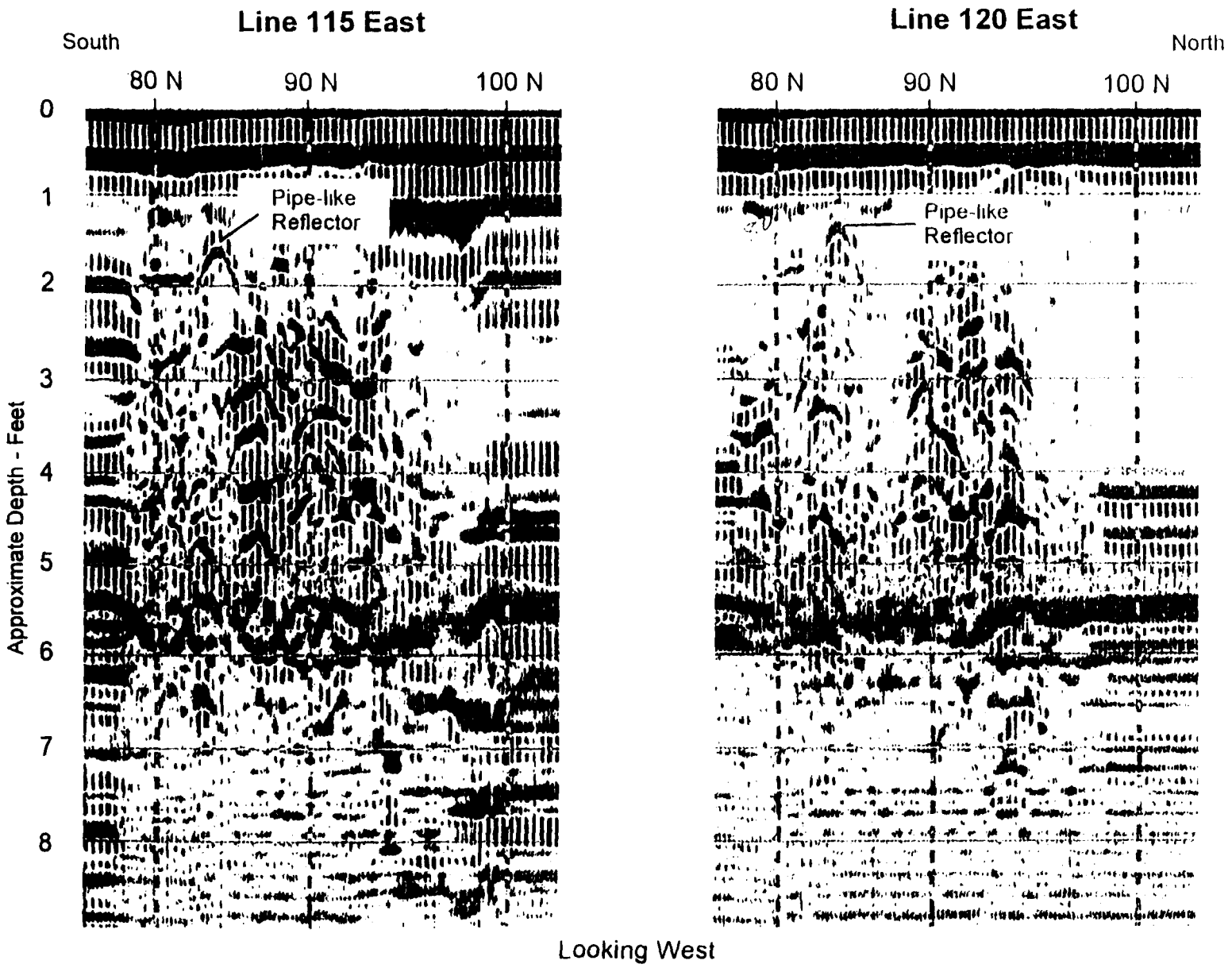
GPR Profile 95 East - Former Nike Missile Site, Carbou ME.



GPR Profile 100 East - Former Nike Missile Site, Carbou ME.



GPR Profiles 105 & 110 East - Former Nike Missile Site, Carbou ME.



GPR Profiles 115 & 120 East - Former Nike Missile Site, Carbou ME.

APPENDIX B

ESS LABORATORY DATA SHEETS

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE

CLIENT: R.F. Weston
CLIENT PROJECT ID: LO-58.Caribou.ME
ESS PROJECT ID: 99100362

Sample Receipt
19 Soil samples were received on October 28, 1999 for the analysis specified on the enclosed Chain of Custody Record.

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan.

No unusual observations noted.

This signed Certificate of Analysis is our approved release of your analytical results. Beginning with this Project Narrative, the entire report has been paginated. The Chain of Custody is the final report page. This report should not be copied except in full without the approval of the laboratory.

End of project narrative.

Laurel Stoddard/Eric Baanante
Laboratory Director/Operations Manager

11/24/99
Date

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB29 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-05
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 85
Sample Amount: 7.3 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4	0.3
1,1,1-Trichloroethane	ND	4	0.6
1,1,2,2-Tetrachloroethane	ND	4	0.6
1,1,2-Trichloroethane	ND	4	0.3
1,1-Dichloroethane	ND	4	0.6
1,1-Dichloroethene	ND	4	1
1,1-Dichloropropene	ND	4	0.6
1,2,3-Trichlorobenzene	ND	8.1	2
1,2,3-Trichloropropane	ND	4	0.6
1,2,4-Trichlorobenzene	ND	4	2
1,2,4-Trimethylbenzene	ND	4	1
1,2-Dibromo-3-Chloropropane	ND	4	0.6
1,2-Dibromoethane	ND	4	0.6
1,2-Dichlorobenzene	ND	4	1
1,2-Dichloroethane	ND	4	0.6
1,2-Dichloropropane	ND	4	1
1,3,5-Trimethylbenzene	ND	4	2
1,3-Dichlorobenzene	ND	4	1
1,3-Dichloropropane	ND	4	0.3
1,4-Dichlorobenzene	ND	4	1
2,2-Dichloropropane	ND	4	1
2-Butanone	ND	32.2	5.2
2-Chlorotoluene	ND	4	1
2-Hexanone	ND	20.1	0.6
4-Chlorotoluene	ND	4	1
4-Methyl-2-Pentanone	ND	20.1	3
Acetone	**30**	30	2.98
Benzene	ND	4	0.6
Bromobenzene	ND	4	1
Bromochloromethane	ND	4	0.6
Bromodichloromethane	ND	4	0.6
Bromoform	ND	4	0.6
Bromomethane	ND	4	0.6
Carbon Tetrachloride	ND	4	1
Chlorobenzene	ND	4	1
Chloroethane	ND	4	0.6
Chloroform	ND	4	0.6

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB29 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-05

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4	1
cis-1.2-Dichloroethene	ND	4	1
cis-1.3-Dichloropropene	ND	4	0.6
Dibromochloromethane	ND	4	0.6
Dibromomethane	ND	4	0.6
Dichlorodifluoromethane	ND	4	2
Ethylbenzene	ND	4	1
Hexachlorobutadiene	ND	8.1	3
Isopropylbenzene	ND	4	2
Methyl tert-Butyl Ether	ND	4	0.6
Methylene Chloride	**2 J**	4	0.6
n-Butylbenzene	ND	4	2
n-Propylbenzene	ND	4	2
Napthalene	ND	4	2
sec-Butylbenzene	ND	8.1	2
Styrene	ND	8.1	2
tert-Butylbenzene	ND	8.1	2
Tetrachloroethene	ND	4	1
Tetrahydrofuran	ND	8.1	3
Toluene	ND	4	1
trans-1.2-Dichloroethene	ND	4	1
trans-1.3-Dichloropropene	ND	4	0.6
Trichloroethene	ND	4	0.6
Trichlorofluoromethane	ND	4	1
Vinyl Acetate	ND	8.1	2
Vinyl Chloride	ND	4	0.6
Xylene O	ND	4	1
Xylene P.M	ND	8.1	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 10/12/11

185 Frances Avenue. Cranston. RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB29 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-05
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 85
Sample Amount: 21.5 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.6	0.5

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	107	70-130
Trifluorotoluene (FID)	97	70-130

Approved By: _____ Date: _____

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB29 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-05
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 85
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	11	7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	80	47-114

Approved By: _____ Date: _____

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB04 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-08
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 71
Sample Amount: 6.2 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5.7	0.5
1,1,1-Trichloroethane	ND	5.7	0.9
1,1,2,2-Tetrachloroethane	ND	5.7	0.9
1,1,2-Trichloroethane	ND	5.7	0.5
1,1-Dichloroethane	ND	5.7	0.9
1,1-Dichloroethene	ND	5.7	2
1,1-Dichloropropene	ND	5.7	0.9
1,2,3-Trichlorobenzene	ND	11.4	3
1,2,3-Trichloropropane	ND	5.7	0.9
1,2,4-Trichlorobenzene	ND	5.7	2
1,2,4-Trimethylbenzene	ND	5.7	2
1,2-Dibromo-3-Chloropropane	ND	5.7	0.9
1,2-Dibromoethane	ND	5.7	0.9
1,2-Dichlorobenzene	ND	5.7	2
1,2-Dichloroethane	ND	5.7	0.9
1,2-Dichloropropane	ND	5.7	1
1,3,5-Trimethylbenzene	ND	5.7	2
1,3-Dichlorobenzene	ND	5.7	2
1,3-Dichloropropane	ND	5.7	0.5
1,4-Dichlorobenzene	ND	5.7	2
2,2-Dichloropropane	ND	5.7	1
2-Butanone	ND	45.4	7.3
2-Chlorotoluene	ND	5.7	1
2-Hexanone	ND	28.4	0.9
4-Chlorotoluene	ND	5.7	2
4-Methyl-2-Pentanone	ND	28.4	4
Acetone	**26.7 J**	45.4	8.2
Benzene	ND	5.7	0.9
Bromobenzene	ND	5.7	1
Bromochloromethane	ND	5.7	0.9
Bromodichloromethane	ND	5.7	0.9
Bromoform	ND	5.7	0.9
Bromomethane	ND	5.7	0.9
Carbon Tetrachloride	ND	5.7	2
Chlorobenzene	ND	5.7	1
Chloroethane	ND	5.7	0.9
Chloroform	ND	5.7	0.9

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB04 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-08

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5.7	1
cis-1.2-Dichloroethene	ND	5.7	1
cis-1.3-Dichloropropene	ND	5.7	0.9
Dibromochloromethane	ND	5.7	0.9
Dibromomethane	ND	5.7	0.9
Dichlorodifluoromethane	ND	5.7	2
Ethylbenzene	ND	5.7	1
Hexachlorobutadiene	ND	11.4	5
Isopropylbenzene	ND	5.7	2
Methyl tert-Butyl Ether	ND	5.7	0.9
Methylene Chloride	**4.3 J**	5.7	0.9
n-Butylbenzene	ND	5.7	3
n-Propylbenzene	ND	5.7	2
Napthalene	ND	5.7	2
sec-Butylbenzene	ND	11.4	3
Styrene	ND	11.4	3
tert-Butylbenzene	ND	11.4	2
Tetrachloroethene	ND	5.7	2
Tetrahydrofuran	ND	11.4	4
Toluene	ND	5.7	1
trans-1.2-Dichloroethene	ND	5.7	1
trans-1.3-Dichloropropene	ND	5.7	0.9
Trichloroethene	ND	5.7	0.9
Trichlorofluoromethane	ND	5.7	2
Vinyl Acetate	ND	11.4	3
Vinyl Chloride	ND	5.7	0.9
Xylene O	ND	5.7	2
Xylene P.M	ND	11.4	3

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 6/2/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB04 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-08
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 71
Sample Amount: 18.9 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2.2	0.7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	88	70-130

Approved By: _____ Date: _____

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB04 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-08
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 71
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	8 J	13	8

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.
MDL = Method Detection Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	84	47-114

Approved By: _____ Date: 11/8/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB21 - 102599
Date Sampled: 10/25/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-01
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 9.2 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	3.2	0.3
1,1,1-Trichloroethane	ND	3.2	0.5
1,1,2,2-Tetrachloroethane	ND	3.2	0.5
1,1,2-Trichloroethane	ND	3.2	0.3
1,1-Dichloroethane	ND	3.2	0.5
1,1-Dichloroethene	ND	3.2	1
1,1-Dichloropropene	ND	3.2	0.5
1,2,3-Trichlorobenzene	ND	6.5	2
1,2,3-Trichloropropane	ND	3.2	0.5
1,2,4-Trichlorobenzene	ND	3.2	1
1,2,4-Trimethylbenzene	ND	3.2	1
1,2-Dibromo-3-Chloropropane	ND	3.2	0.5
1,2-Dibromoethane	ND	3.2	0.5
1,2-Dichlorobenzene	ND	3.2	1
1,2-Dichloroethane	ND	3.2	0.5
1,2-Dichloropropane	ND	3.2	0.8
1,3,5-Trimethylbenzene	ND	3.2	1
1,3-Dichlorobenzene	ND	3.2	1
1,3-Dichloropropane	ND	3.2	0.3
1,4-Dichlorobenzene	ND	3.2	1
2,2-Dichloropropane	ND	3.2	0.8
2-Butanone	ND	25.9	4.1
2-Chlorotoluene	ND	3.2	0.8
2-Hexanone	ND	16.2	0.5
4-Chlorotoluene	ND	3.2	1
4-Methyl-2-Pentanone	ND	16.2	2
Acetone	**32.7**	25.9	4.7
Benzene	ND	3.2	0.5
Bromobenzene	ND	3.2	0.8
Bromochloromethane	ND	3.2	0.5
Bromodichloromethane	ND	3.2	0.5
Bromoform	ND	3.2	0.5
Bromomethane	ND	3.2	0.5
Carbon Tetrachloride	ND	3.2	1
Chlorobenzene	ND	3.2	0.8
Chloroethane	ND	3.2	0.5
Chloroform	ND	3.2	0.5

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB21 - 102500

ESS Project ID: 99100362
ESS Sample ID: 99100362-01

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.2	0.8
cis-1.2-Dichloroethene	ND	3.2	0.8
cis-1.3-Dichloropropene	ND	3.2	0.5
Dibromochloromethane	ND	3.2	0.5
Dibromomethane	ND	3.2	0.5
Dichlorodifluoromethane	ND	3.2	1
Ethylbenzene	ND	3.2	0.8
Hexachlorobutadiene	ND	6.5	3
Isopropylbenzene	ND	3.2	1
Methyl tert-Butyl Ether	ND	3.2	0.5
Methylene Chloride	**1.6 J**	3.2	0.5
n-Butylbenzene	ND	3.2	2
n-Propylbenzene	ND	3.2	1
Napthalene	ND	3.2	1
sec-Butylbenzene	ND	6.5	2
Styrene	ND	6.5	2
tert-Butylbenzene	ND	6.5	1
Tetrachloroethene	ND	3.2	1
Tetrahydrofuran	ND	6.5	2
Toluene	ND	3.2	0.8
trans-1.2-Dichloroethene	ND	3.2	0.8
trans-1.3-Dichloropropene	ND	3.2	0.5
Trichloroethene	ND	3.2	0.5
Trichlorofluoromethane	ND	3.2	1
Vinyl Acetate	ND	6.5	2
Vinyl Chloride	ND	3.2	0.5
Xylene O	ND	3.2	1
Xylene P.M	ND	6.5	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB21 - 102599
Date Sampled: 10/25/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-01
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 23.3 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.5	0.5

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	98	70-130

Approved By: _____ Date: _____

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB21 - 102599
Date Sampled: 10/25/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-01
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	11	7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	82	47-114

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB34 - [illegible]2599
Date Sampled: 10/25/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-02
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 8.0 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.1	0.3
1,1,1-Trichloroethane	ND	4.1	0.6
1,1,2,2-Tetrachloroethane	ND	4.1	0.6
1,1,2-Trichloroethane	ND	4.1	0.3
1,1-Dichloroethane	ND	4.1	0.6
1,1-Dichloroethene	ND	4.1	1
1,1-Dichloropropene	ND	4.1	0.6
1,2,3-Trichlorobenzene	ND	8.1	2
1,2,3-Trichloropropane	ND	4.1	0.6
1,2,4-Trichlorobenzene	ND	4.1	2
1,2,4-Trimethylbenzene	ND	4.1	1
1,2-Dibromo-3-Chloropropane	ND	4.1	0.6
1,2-Dibromoethane	ND	4.1	0.6
1,2-Dichlorobenzene	ND	4.1	1
1,2-Dichloroethane	ND	4.1	0.6
1,2-Dichloropropane	ND	4.1	1
1,3,5-Trimethylbenzene	ND	4.1	2
1,3-Dichlorobenzene	ND	4.1	1
1,3-Dichloropropane	ND	4.1	0.3
1,4-Dichlorobenzene	ND	4.1	1
2,2-Dichloropropane	ND	4.1	1
2-Butanone	ND	32.5	5.2
2-Chlorotoluene	ND	4.1	1
2-Hexanone	ND	20.3	0.6
4-Chlorotoluene	ND	4.1	1
4-Methyl-2-Pentanone	ND	20.3	3
Acetone	**47.6**	32.5	5.8
Benzene	ND	4.1	0.6
Bromobenzene	ND	4.1	1
Bromochloromethane	ND	4.1	0.6
Bromodichloromethane	ND	4.1	0.6
Bromoform	ND	4.1	0.6
Bromomethane	ND	4.1	0.6
Carbon Tetrachloride	ND	4.1	1
Chlorobenzene	ND	4.1	1
Chloroethane	ND	4.1	0.6
Chloroform	ND	4.1	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB34 - 102599

ESS Project ID: 99100362
ESS Sample ID: 99100362-02

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.1	1
cis-1.2-Dichloroethene	ND	4.1	1
cis-1.3-Dichloropropene	ND	4.1	0.6
Dibromochloromethane	ND	4.1	0.6
Dibromomethane	ND	4.1	0.6
Dichlorodifluoromethane	ND	4.1	2
Ethylbenzene	ND	4.1	1
Hexachlorobutadiene	ND	8.1	3
Isopropylbenzene	ND	4.1	2
Methyl tert-Butyl Ether	ND	4.1	0.6
Methylene Chloride	**1.9 J**	4.1	0.6
n-Butylbenzene	ND	4.1	2
n-Propylbenzene	ND	4.1	2
Napthalene	ND	4.1	2
sec-Butylbenzene	ND	8.1	2
Styrene	ND	8.1	2
tert-Butylbenzene	ND	8.1	2
Tetrachloroethene	ND	4.1	1
Tetrahydrofuran	ND	8.1	3
Toluene	ND	4.1	1
trans-1.2-Dichloroethene	ND	4.1	1
trans-1.3-Dichloropropene	ND	4.1	0.6
Trichloroethene	**9**	4.1	0.6
Trichlorofluoromethane	ND	4.1	1
Vinyl Acetate	ND	8.1	2
Vinyl Chloride	ND	4.1	0.6
Xylene O	ND	4.1	1
Xylene P.M	ND	8.1	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 7/6/10

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB34 - 102599
Date Sampled: 10/25/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-02
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 23.3 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.7	0.5

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	90	70-130

Approved By: _____ Date: 11/8/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB34 - 102599
Date Sampled: 10/25.99
Extraction Date: 11/2.99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-02
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 30g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	12	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	86	47-114

Approved By: _____ Date: 11/15/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB37 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-03
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 76
Sample Amount: 7.1 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.6	0.4
1,1,1-Trichloroethane	ND	4.6	0.7
1,1,2,2-Tetrachloroethane	ND	4.6	0.7
1,1,2-Trichloroethane	ND	4.6	0.4
1,1-Dichloroethane	ND	4.6	0.7
1,1-Dichloroethene	ND	4.6	1
1,1-Dichloropropene	ND	4.6	0.7
1,2,3-Trichlorobenzene	ND	9.3	2
1,2,3-Trichloropropane	ND	4.6	0.7
1,2,4-Trichlorobenzene	ND	4.6	2
1,2,4-Trimethylbenzene	ND	4.6	1
1,2-Dibromo-3-Chloropropane	ND	4.6	0.7
1,2-Dibromoethane	ND	4.6	0.7
1,2-Dichlorobenzene	ND	4.6	1
1,2-Dichloroethane	ND	4.6	0.7
1,2-Dichloropropane	ND	4.6	1
1,3,5-Trimethylbenzene	ND	4.6	2
1,3-Dichlorobenzene	ND	4.6	1
1,3-Dichloropropane	ND	4.6	0.4
1,4-Dichlorobenzene	ND	4.6	1
2,2-Dichloropropane	ND	4.6	1
2-Butanone	ND	37.1	5.9
2-Chlorotoluene	ND	4.6	1
2-Hexanone	ND	23.2	0.7
4-Chlorotoluene	ND	4.6	1
4-Methyl-2-Pentanone	ND	23.2	3
Acetone	**19.4 J**	37.1	6.7
Benzene	ND	4.6	0.7
Bromobenzene	ND	4.6	1
Bromochloromethane	ND	4.6	0.7
Bromodichloromethane	ND	4.6	0.7
Bromoform	ND	4.6	0.7
Bromomethane	ND	4.6	0.7
Carbon Tetrachloride	ND	4.6	1
Chlorobenzene	ND	4.6	1
Chloroethane	ND	4.6	0.7
Chloroform	ND	4.6	0.7

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB37 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-03

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.6	1
cis-1.2-Dichloroethene	ND	4.6	1
cis-1.3-Dichloropropene	ND	4.6	0.7
Dibromochloromethane	ND	4.6	0.7
Dibromomethane	ND	4.6	0.7
Dichlorodifluoromethane	ND	4.6	2
Ethylbenzene	ND	4.6	1
Hexachlorobutadiene	ND	9.3	4
Isopropylbenzene	ND	4.6	2
Methyl tert-Butyl Ether	ND	4.6	0.7
Methylene Chloride	**2.4 J**	4.6	0.7
n-Butylbenzene	ND	4.6	3
n-Propylbenzene	ND	4.6	2
Napthalene	ND	4.6	2
sec-Butylbenzene	ND	9.3	2
Styrene	ND	9.3	3
tert-Butylbenzene	ND	9.3	2
Tetrachloroethene	ND	4.6	1
Tetrahydrofuran	ND	9.3	3
Toluene	ND	4.6	1
trans-1.2-Dichloroethene	ND	4.6	1
trans-1.3-Dichloropropene	ND	4.6	0.7
Trichloroethene	ND	4.6	0.7
Trichlorofluoromethane	ND	4.6	1
Vinyl Acetate	ND	9.3	2
Vinyl Chloride	ND	4.6	0.7
Xylene O	ND	4.6	1
Xylene P.M	ND	9.3	3

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 11/16/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB37 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-03
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 76
Sample Amount: 20.8 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.9	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	105	70-130
Trifluorotoluene (FID)	100	70-130

Approved By: _____ Date: 11/8/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB37 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-03
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 76
Sample Amount: 29.9g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	12	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	79	47-114

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB39 - 102699
Date Sampled: 10/26 99
Analyst: DMH
Date Analyzed: 11 2 99

ESS Project ID: 99100362
ESS Sample ID: 99100362-04
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 83
Sample Amount: 7.1 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.2	0.3
1,1,1-Trichloroethane	ND	4.2	0.7
1,1,2,2-Tetrachloroethane	ND	4.2	0.7
1,1,2-Trichloroethane	ND	4.2	0.3
1,1-Dichloroethane	ND	4.2	0.7
1,1-Dichloroethene	ND	4.2	1
1,1-Dichloropropene	ND	4.2	0.7
1,2,3-Trichlorobenzene	ND	8.5	2
1,2,3-Trichloropropane	ND	4.2	0.7
1,2,4-Trichlorobenzene	ND	4.2	2
1,2,4-Trimethylbenzene	ND	4.2	1
1,2-Dibromo-3-Chloropropane	ND	4.2	0.7
1,2-Dibromoethane	ND	4.2	0.7
1,2-Dichlorobenzene	ND	4.2	1
1,2-Dichloroethane	ND	4.2	0.7
1,2-Dichloropropane	ND	4.2	1
1,3,5-Trimethylbenzene	ND	4.2	2
1,3-Dichlorobenzene	ND	4.2	1
1,3-Dichloropropane	ND	4.2	0.3
1,4-Dichlorobenzene	ND	4.2	1
2,2-Dichloropropane	ND	4.2	1
2-Butanone	ND	33.9	5.4
2-Chlorotoluene	ND	4.2	1
2-Hexanone	ND	21.2	0.7
4-Chlorotoluene	ND	4.2	1
4-Methyl-2-Pentanone	ND	21.2	3
Acetone	**30**	30	3.14
Benzene	ND	4.2	0.7
Bromobenzene	ND	4.2	1
Bromochloromethane	ND	4.2	0.7
Bromodichloromethane	ND	4.2	0.7
Bromoform	ND	4.2	0.7
Bromomethane	ND	4.2	0.7
Carbon Tetrachloride	ND	4.2	1
Chlorobenzene	ND	4.2	1
Chloroethane	ND	4.2	0.7
Chloroform	ND	4.2	0.7

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB39 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-04

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.2	1
cis-1.2-Dichloroethene	ND	4.2	1
cis-1.3-Dichloropropene	ND	4.2	0.7
Dibromochloromethane	ND	4.2	0.7
Dibromomethane	ND	4.2	0.7
Dichlorodifluoromethane	ND	4.2	2
Ethylbenzene	ND	4.2	1
Hexachlorobutadiene	ND	8.5	3
Isopropylbenzene	ND	4.2	2
Methyl tert-Butyl Ether	ND	4.2	0.7
Methylene Chloride	**2.4 J**	4.2	0.7
n-Butylbenzene	ND	4.2	2
n-Propylbenzene	ND	4.2	2
Napthalene	ND	4.2	2
sec-Butylbenzene	ND	8.5	2
Styrene	ND	8.5	2
tert-Butylbenzene	ND	8.5	2
Tetrachloroethene	ND	4.2	1
Tetrahydrofuran	ND	8.5	3
Toluene	ND	4.2	1
trans-1.2-Dichloroethene	ND	4.2	1
trans-1.3-Dichloropropene	ND	4.2	0.7
Trichloroethene	ND	4.2	0.7
Trichlorofluoromethane	ND	4.2	1
Vinyl Acetate	ND	8.5	2
Vinyl Chloride	ND	4.2	0.7
Xylene O	ND	4.2	1
Xylene P.M	ND	8.5	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 11/22/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB39 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-04
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 83
Sample Amount: 19.5 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.8	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	106	70-130
Trifluorotoluene (FID)	96	70-130

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB39 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-04
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 83
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	11	7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	80	47-114

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB22 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-07
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 81
Sample Amount: 6.7 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.6	0.4
1,1,1-Trichloroethane	ND	4.6	0.7
1,1,2,2-Tetrachloroethane	ND	4.6	0.7
1,1,2-Trichloroethane	ND	4.6	0.4
1,1-Dichloroethane	ND	4.6	0.7
1,1-Dichloroethene	ND	4.6	1
1,1-Dichloropropene	ND	4.6	0.7
1,2,3-Trichlorobenzene	ND	9.2	2
1,2,3-Trichloropropane	ND	4.6	0.7
1,2,4-Trichlorobenzene	ND	4.6	2
1,2,4-Trimethylbenzene	ND	4.6	1
1,2-Dibromo-3-Chloropropane	ND	4.6	0.7
1,2-Dibromoethane	ND	4.6	0.7
1,2-Dichlorobenzene	ND	4.6	1
1,2-Dichloroethane	ND	4.6	0.7
1,2-Dichloropropane	ND	4.6	1
1,3,5-Trimethylbenzene	ND	4.6	2
1,3-Dichlorobenzene	ND	4.6	1
1,3-Dichloropropane	ND	4.6	0.4
1,4-Dichlorobenzene	ND	4.6	1
2,2-Dichloropropane	ND	4.6	1
2-Butanone	ND	36.9	5.9
2-Chlorotoluene	ND	4.6	1
2-Hexanone	ND	23	0.7
4-Chlorotoluene	ND	4.6	1
4-Methyl-2-Pentanone	ND	23	3
Acetone	**31.6 J**	36.9	6.6
Benzene	ND	4.6	0.7
Bromobenzene	ND	4.6	1
Bromochloromethane	ND	4.6	0.7
Bromodichloromethane	ND	4.6	0.7
Bromoform	ND	4.6	0.7
Bromomethane	ND	4.6	0.7
Carbon Tetrachloride	ND	4.6	1
Chlorobenzene	ND	4.6	1
Chloroethane	ND	4.6	0.7
Chloroform	ND	4.6	0.7

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB22 - [illegible]2699

ESS Project ID: 99100362
ESS Sample ID: 99100362-07

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.6	1
cis-1.2-Dichloroethene	ND	4.6	1
cis-1.3-Dichloropropene	ND	4.6	0.7
Dibromochloromethane	ND	4.6	0.7
Dibromomethane	ND	4.6	0.7
Dichlorodifluoromethane	ND	4.6	2
Ethylbenzene	ND	4.6	1
Hexachlorobutadiene	ND	9.2	4
Isopropylbenzene	ND	4.6	2
Methyl tert-Butyl Ether	ND	4.6	0.7
Methylene Chloride	**2.2 J**	4.6	0.7
n-Butylbenzene	ND	4.6	3
n-Propylbenzene	ND	4.6	2
Napthalene	ND	4.6	2
sec-Butylbenzene	ND	9.2	2
Styrene	ND	9.2	3
tert-Butylbenzene	ND	9.2	2
Tetrachloroethene	ND	4.6	1
Tetrahydrofuran	ND	9.2	3
Toluene	ND	4.6	1
trans-1.2-Dichloroethene	ND	4.6	1
trans-1.3-Dichloropropene	ND	4.6	0.7
Trichloroethene	ND	4.6	0.7
Trichlorofluoromethane	ND	4.6	1
Vinyl Acetate	ND	9.2	2
Vinyl Chloride	ND	4.6	0.7
Xylene O	ND	4.6	1
Xylene P.M	ND	9.2	3

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: _____

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB22 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-07
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 81
Sample Amount: 17.3 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2.1	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	107	70-130
Trifluorotoluene (FID)	94	70-130

Approved By: _____ Date: 11/8/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB22 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-07
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 81
Sample Amount: 30.1g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	11	7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	63	47-114

Approved By: _____ Date: 11/15/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-55.Caribou.ME
Client Sample ID: SB01 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-10
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 6.5 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5	0.4
1,1,1-Trichloroethane	ND	5	0.8
1,1,2,2-Tetrachloroethane	ND	5	0.8
1,1,2-Trichloroethane	ND	5	0.4
1,1-Dichloroethane	ND	5	0.8
1,1-Dichloroethene	ND	5	2
1,1-Dichloropropene	ND	5	0.8
1,2,3-Trichlorobenzene	ND	10	2
1,2,3-Trichloropropane	ND	5	0.8
1,2,4-Trichlorobenzene	ND	5	2
1,2,4-Trimethylbenzene	ND	5	2
1,2-Dibromo-3-Chloropropane	ND	5	0.8
1,2-Dibromoethane	ND	5	0.8
1,2-Dichlorobenzene	ND	5	2
1,2-Dichloroethane	ND	5	0.8
1,2-Dichloropropane	ND	5	1
1,3,5-Trimethylbenzene	ND	5	2
1,3-Dichlorobenzene	ND	5	2
1,3-Dichloropropane	ND	5	0.4
1,4-Dichlorobenzene	ND	5	2
2,2-Dichloropropane	ND	5	1
2-Butanone	ND	40	6.4
2-Chlorotoluene	ND	5	1
2-Hexanone	ND	25	0.8
4-Chlorotoluene	ND	5	2
4-Methyl-2-Pentanone	ND	25	3
Acetone	**55.1**	40	7.2
Benzene	ND	5	0.8
Bromobenzene	ND	5	1
Bromochloromethane	ND	5	0.8
Bromodichloromethane	ND	5	0.8
Bromoform	ND	5	0.8
Bromomethane	ND	5	0.8
Carbon Tetrachloride	ND	5	2
Chlorobenzene	ND	5	1
Chloroethane	ND	5	0.8
Chloroform	ND	5	0.8

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB01 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-10

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5	1
cis-1.2-Dichloroethene	ND	5	1
cis-1.3-Dichloropropene	ND	5	0.8
Dibromochloromethane	ND	5	0.8
Dibromomethane	ND	5	0.8
Dichlorodifluoromethane	ND	5	2
Ethylbenzene	ND	5	1
Hexachlorobutadiene	ND	10	4
Isopropylbenzene	ND	5	2
Methyl tert-Butyl Ether	ND	5	0.8
Methylene Chloride	ND	5	0.8
n-Butylbenzene	ND	5	3
n-Propylbenzene	ND	5	2
Napthalene	ND	5	2
sec-Butylbenzene	ND	10	2
Styrene	ND	10	3
tert-Butylbenzene	ND	10	2
Tetrachloroethene	ND	5	2
Tetrahydrofuran	ND	10	3
Toluene	ND	5	1
trans-1.2-Dichloroethene	ND	5	1
trans-1.3-Dichloropropene	ND	5	0.8
Trichloroethene	ND	5	0.8
Trichlorofluoromethane	ND	5	2
Vinyl Acetate	ND	10	2
Vinyl Chloride	ND	5	0.8
Xylene O	ND	5	2
Xylene P.M	ND	10	3

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: _____ Date: _____

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB01 - 102699
Date Sampled: 10/26 99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-10
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 20.2 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.9	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	107	70-130
Trifluorotoluene (FID)	89	70-130

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB01 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-10
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 30g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	12	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	69	47-114

Approved By: _____

Date: 11/8/99 Revised.

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB27 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11.2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-11
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 6.5 g

Test Name	Result	MRL	2*MDL
1.1.1.2-Tetrachloroethane	ND	4.1	0.3
1.1.1-Trichloroethane	ND	4.1	0.7
1.1.2.2-Tetrachloroethane	ND	4.1	0.7
1.1.2-Trichloroethane	ND	4.1	0.3
1.1-Dichloroethane	ND	4.1	0.7
1.1-Dichloroethene	ND	4.1	1
1.1-Dichloropropene	ND	4.1	0.7
1.2.3-Trichlorobenzene	ND	8.3	2
1.2.3-Trichloropropane	ND	4.1	0.7
1.2.4-Trichlorobenzene	ND	4.1	2
1.2.4-Trimethylbenzene	ND	4.1	1
1.2-Dibromo-3-Chloropropane	ND	4.1	0.7
1.2-Dibromoethane	ND	4.1	0.7
1.2-Dichlorobenzene	ND	4.1	1
1.2-Dichloroethane	ND	4.1	0.7
1.2-Dichloropropane	ND	4.1	1
1.3.5-Trimethylbenzene	ND	4.1	2
1.3-Dichlorobenzene	ND	4.1	1
1.3-Dichloropropane	ND	4.1	0.3
1.4-Dichlorobenzene	ND	4.1	1
2.2-Dichloropropane	ND	4.1	1
2-Butanone	ND	33.1	5.3
2-Chlorotoluene	ND	4.1	1
2-Hexanone	ND	20.7	0.7
4-Chlorotoluene	ND	4.1	1
4-Methyl-2-Pentanone	ND	20.7	3
Acetone	**24 J**	33.1	6
Benzene	ND	4.1	0.7
Bromobenzene	ND	4.1	1
Bromochloromethane	ND	4.1	0.7
Bromodichloromethane	ND	4.1	0.7
Bromoform	ND	4.1	0.7
Bromomethane	ND	4.1	0.7
Carbon Tetrachloride	ND	4.1	1
Chlorobenzene	ND	4.1	1
Chloroethane	ND	4.1	0.7
Chloroform	ND	4.1	0.7

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: LO-58,Caribou,ME
Client Sample ID: SB27 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-11

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.1	1
cis-1,2-Dichloroethene	ND	4.1	1
cis-1,3-Dichloropropene	ND	4.1	0.7
Dibromochloromethane	ND	4.1	0.7
Dibromomethane	ND	4.1	0.7
Dichlorodifluoromethane	ND	4.1	2
Ethylbenzene	ND	4.1	1
Hexachlorobutadiene	ND	8.3	3
Isopropylbenzene	ND	4.1	2
Methyl tert-Butyl Ether	ND	4.1	0.7
Methylene Chloride	**2.8 J**	4.1	0.7
n-Butylbenzene	ND	4.1	2
n-Propylbenzene	ND	4.1	2
Napthalene	ND	4.1	2
sec-Butylbenzene	ND	8.3	2
Styrene	ND	8.3	2
tert-Butylbenzene	ND	8.3	2
Tetrachloroethene	ND	4.1	1
Tetrahydrofuran	ND	8.3	3
Toluene	ND	4.1	1
trans-1,2-Dichloroethene	ND	4.1	1
trans-1,3-Dichloropropene	ND	4.1	0.7
Trichloroethene	ND	4.1	0.7
Trichlorofluoromethane	ND	4.1	1
Vinyl Acetate	ND	8.3	2
Vinyl Chloride	ND	4.1	0.7
Xylene O	ND	4.1	1
Xylene P,M	ND	8.3	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 10/19/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB27 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-11
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 26.3 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.2	0.4

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	110	70-130
Trifluorotoluene (FID)	99	70-130

Approved By: _____ Date: 11/8/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB27 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-11
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 30.1g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	10	6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	81	41-136

Approved By: _____ Date: 10/18/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB20 - 102699
Date Sampled: 10/26.99
Analyst: DMH
Date Analyzed: 11/2.99

ESS Project ID: 99100362
ESS Sample ID: 99100362-12
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 7.2 g

Test Name	Result	MRL	2*MDL
1.1.1.2-Tetrachloroethane	ND	3.7	0.3
1.1.1-Trichloroethane	ND	3.7	0.6
1.1.2.2-Tetrachloroethane	ND	3.7	0.6
1.1.2-Trichloroethane	ND	3.7	0.3
1.1-Dichloroethane	ND	3.7	0.6
1.1-Dichloroethene	ND	3.7	1
1.1-Dichloropropene	ND	3.7	0.6
1.2.3-Trichlorobenzene	ND	7.5	2
1.2.3-Trichloropropane	ND	3.7	0.6
1.2.4-Trichlorobenzene	ND	3.7	1
1.2.4-Trimethylbenzene	ND	3.7	1
1.2-Dibromo-3-Chloropropane	ND	3.7	0.6
1.2-Dibromoethane	ND	3.7	0.6
1.2-Dichlorobenzene	ND	3.7	1
1.2-Dichloroethane	ND	3.7	0.6
1.2-Dichloropropane	ND	3.7	0.9
1.3.5-Trimethylbenzene	ND	3.7	1
1.3-Dichlorobenzene	ND	3.7	1
1.3-Dichloropropane	ND	3.7	0.3
1.4-Dichlorobenzene	ND	3.7	1
2.2-Dichloropropane	ND	3.7	0.9
2-Butanone	ND	29.9	4.8
2-Chlorotoluene	ND	3.7	0.9
2-Hexanone	ND	18.7	0.6
4-Chlorotoluene	ND	3.7	1
4-Methyl-2-Pentanone	ND	18.7	2
Acetone	**19.3 J**	29.9	5.4
Benzene	ND	3.7	0.6
Bromobenzene	ND	3.7	0.9
Bromochloromethane	ND	3.7	0.6
Bromodichloromethane	ND	3.7	0.6
Bromoform	ND	3.7	0.6
Bromomethane	ND	3.7	0.6
Carbon Tetrachloride	ND	3.7	1
Chlorobenzene	ND	3.7	0.9
Chloroethane	ND	3.7	0.6
Chloroform	ND	3.7	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB20 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-12

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.7	0.9
cis-1.2-Dichloroethene	ND	3.7	0.9
cis-1.3-Dichloropropene	ND	3.7	0.6
Dibromochloromethane	ND	3.7	0.6
Dibromomethane	ND	3.7	0.6
Dichlorodifluoromethane	ND	3.7	1
Ethylbenzene	ND	3.7	0.9
Hexachlorobutadiene	ND	7.5	3
Isopropylbenzene	ND	3.7	1
Methyl tert-Butyl Ether	ND	3.7	0.6
Methylene Chloride	**2.8 J**	3.7	0.6
n-Butylbenzene	ND	3.7	2
n-Propylbenzene	ND	3.7	1
Napthalene	ND	3.7	1
sec-Butylbenzene	ND	7.5	2
Styrene	ND	7.5	2
tert-Butylbenzene	ND	7.5	1
Tetrachloroethene	ND	3.7	1
Tetrahydrofuran	ND	7.5	2
Toluene	ND	3.7	0.9
trans-1.2-Dichloroethene	ND	3.7	0.9
trans-1.3-Dichloropropene	ND	3.7	0.6
Trichloroethene	ND	3.7	0.6
Trichlorofluoromethane	ND	3.7	1
Vinyl Acetate	ND	7.5	2
Vinyl Chloride	ND	3.7	0.6
Xylene O	ND	3.7	1
Xylene P.M	ND	7.5	2

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB20 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11 5 99

ESS Project ID: 99100362
ESS Sample ID: 99100362-12
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 24.1 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.3	0.4

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	112	70-130
Trifluorotoluene (FID)	104	70-130

Approved By: _____ Date: 11/8/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB20 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-12
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 93
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	10	6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	74	41-136

Approved By: _____ Date: 11/5/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-55.Caribou.ME
Client Sample ID: SB11 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-13
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 6.6 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.9	0.4
1,1,1-Trichloroethane	ND	4.9	0.8
1,1,2,2-Tetrachloroethane	ND	4.9	0.8
1,1,2-Trichloroethane	ND	4.9	0.4
1,1-Dichloroethane	ND	4.9	0.8
1,1-Dichloroethene	ND	4.9	2
1,1-Dichloropropene	ND	4.9	0.8
1,2,3-Trichlorobenzene	ND	9.8	2
1,2,3-Trichloropropane	ND	4.9	0.8
1,2,4-Trichlorobenzene	ND	4.9	2
1,2,4-Trimethylbenzene	ND	4.9	2
1,2-Dibromo-3-Chloropropane	ND	4.9	0.8
1,2-Dibromoethane	ND	4.9	0.8
1,2-Dichlorobenzene	ND	4.9	2
1,2-Dichloroethane	ND	4.9	0.8
1,2-Dichloropropane	ND	4.9	1
1,3,5-Trimethylbenzene	ND	4.9	2
1,3-Dichlorobenzene	ND	4.9	2
1,3-Dichloropropane	ND	4.9	0.4
1,4-Dichlorobenzene	ND	4.9	2
2,2-Dichloropropane	ND	4.9	1
2-Butanone	ND	39.4	6.3
2-Chlorotoluene	ND	4.9	1
2-Hexanone	ND	24.6	0.8
4-Chlorotoluene	ND	4.9	2
4-Methyl-2-Pentanone	ND	24.6	3
Acetone	**18.3 J**	39.4	7.1
Benzene	ND	4.9	0.8
Bromobenzene	ND	4.9	1
Bromochloromethane	ND	4.9	0.8
Bromodichloromethane	ND	4.9	0.8
Bromoform	ND	4.9	0.8
Bromomethane	ND	4.9	0.8
Carbon Tetrachloride	ND	4.9	2
Chlorobenzene	ND	4.9	1
Chloroethane	ND	4.9	0.8
Chloroform	ND	4.9	0.8

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58,Caribou,ME
Client Sample ID: SB11 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-13

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.9	1
cis-1,2-Dichloroethene	ND	4.9	1
cis-1,3-Dichloropropene	ND	4.9	0.8
Dibromochloromethane	ND	4.9	0.8
Dibromomethane	ND	4.9	0.8
Dichlorodifluoromethane	ND	4.9	2
Ethylbenzene	ND	4.9	1
Hexachlorobutadiene	ND	9.8	4
Isopropylbenzene	ND	4.9	2
Methyl tert-Butyl Ether	ND	4.9	0.8
Methylene Chloride	3.7 J	4.9	0.8
n-Butylbenzene	ND	4.9	3
n-Propylbenzene	ND	4.9	2
Napthalene	ND	4.9	2
sec-Butylbenzene	ND	9.8	2
Styrene	ND	9.8	3
tert-Butylbenzene	ND	9.8	2
Tetrachloroethene	ND	4.9	2
Tetrahydrofuran	ND	9.8	3
Toluene	ND	4.9	1
trans-1,2-Dichloroethene	ND	4.9	1
trans-1,3-Dichloropropene	ND	4.9	0.8
Trichloroethene	ND	4.9	0.8
Trichlorofluoromethane	ND	4.9	2
Vinyl Acetate	ND	9.8	2
Vinyl Chloride	ND	4.9	0.8
Xylene O	ND	4.9	2
Xylene P,M	ND	9.8	3

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 7/28/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB11 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-13
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: [illegible]
Sample Amount: 18 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2.2	0.7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	110	70-130
Trifluorotoluene (FID)	93	70-130

Approved By: _____ Date: 11/15/99 fax.

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB11 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-13
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 30g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	12	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	78	47-114

Approved By: _____ Date: 11/8/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB10 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-14
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 92
Sample Amount: 7.8 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	3.5	0.3
1,1,1-Trichloroethane	ND	3.5	0.6
1,1,2,2-Tetrachloroethane	ND	3.5	0.6
1,1,2-Trichloroethane	ND	3.5	0.3
1,1-Dichloroethane	ND	3.5	0.6
1,1-Dichloroethene	ND	3.5	1
1,1-Dichloropropene	ND	3.5	0.6
1,2,3-Trichlorobenzene	ND	7	2
1,2,3-Trichloropropane	ND	3.5	0.6
1,2,4-Trichlorobenzene	ND	3.5	1
1,2,4-Trimethylbenzene	ND	3.5	1
1,2-Dibromo-3-Chloropropane	ND	3.5	0.6
1,2-Dibromoethane	ND	3.5	0.6
1,2-Dichlorobenzene	ND	3.5	1
1,2-Dichloroethane	ND	3.5	0.6
1,2-Dichloropropane	ND	3.5	0.8
1,3,5-Trimethylbenzene	ND	3.5	1
1,3-Dichlorobenzene	ND	3.5	1
1,3-Dichloropropane	ND	3.5	0.3
1,4-Dichlorobenzene	ND	3.5	1
2,2-Dichloropropane	ND	3.5	0.8
2-Butanone	ND	27.9	4.5
2-Chlorotoluene	ND	3.5	0.8
2-Hexanone	ND	17.4	0.6
4-Chlorotoluene	ND	3.5	1
4-Methyl-2-Pentanone	ND	17.4	2
Acetone	**23 J**	27.9	5
Benzene	ND	3.5	0.6
Bromobenzene	ND	3.5	0.8
Bromochloromethane	ND	3.5	0.6
Bromodichloromethane	ND	3.5	0.6
Bromoform	ND	3.5	0.6
Bromomethane	ND	3.5	0.6
Carbon Tetrachloride	ND	3.5	1
Chlorobenzene	ND	3.5	0.8
Chloroethane	ND	3.5	0.6
Chloroform	ND	3.5	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB10 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-14

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.5	0.8
cis-1.2-Dichloroethene	ND	3.5	0.8
cis-1.3-Dichloropropene	ND	3.5	0.6
Dibromochloromethane	ND	3.5	0.6
Dibromomethane	ND	3.5	0.6
Dichlorodifluoromethane	ND	3.5	1
Ethylbenzene	ND	3.5	0.8
Hexachlorobutadiene	ND	7	3
Isopropylbenzene	ND	3.5	1
Methyl tert-Butyl Ether	ND	3.5	0.6
Methylene Chloride	**2.1 J**	3.5	0.6
n-Butylbenzene	ND	3.5	2
n-Propylbenzene	ND	3.5	1
Napthalene	ND	3.5	1
sec-Butylbenzene	ND	7	2
Styrene	ND	7	2
tert-Butylbenzene	ND	7	1
Tetrachloroethene	ND	3.5	1
Tetrahydrofuran	ND	7	2
Toluene	ND	3.5	0.8
trans-1.2-Dichloroethene	ND	3.5	0.8
trans-1.3-Dichloropropene	ND	3.5	0.6
Trichloroethene	ND	3.5	0.6
Trichlorofluoromethane	ND	3.5	1
Vinyl Acetate	ND	7	2
Vinyl Chloride	ND	3.5	0.6
Xylene O	ND	3.5	1
Xylene P.M	ND	7	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: _____

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB10 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-14
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 92
Sample Amount: 23.7 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.4	0.4

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	107	70-130
Trifluorotoluene (FID)	105	70-130

Approved By: _____ Date: 11/8/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB10 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-14
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 92
Sample Amount: 30g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	10	7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	70	47-114

Approved By: _____ Date: 11/13/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB09 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/1/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-15
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 8.3 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	3.6	0.3
1,1,1-Trichloroethane	ND	3.6	0.6
1,1,2,2-Tetrachloroethane	ND	3.6	0.6
1,1,2-Trichloroethane	ND	3.6	0.3
1,1-Dichloroethane	ND	3.6	0.6
1,1-Dichloroethene	ND	3.6	1
1,1-Dichloropropene	ND	3.6	0.6
1,2,3-Trichlorobenzene	ND	7.2	2
1,2,3-Trichloropropane	ND	3.6	0.6
1,2,4-Trichlorobenzene	ND	3.6	1
1,2,4-Trimethylbenzene	ND	3.6	1
1,2-Dibromo-3-Chloropropane	ND	3.6	0.6
1,2-Dibromoethane	ND	3.6	0.6
1,2-Dichlorobenzene	ND	3.6	1
1,2-Dichloroethane	ND	3.6	0.6
1,2-Dichloropropane	ND	3.6	0.9
1,3,5-Trimethylbenzene	ND	3.6	1
1,3-Dichlorobenzene	ND	3.6	1
1,3-Dichloropropane	ND	3.6	0.3
1,4-Dichlorobenzene	ND	3.6	1
2,2-Dichloropropane	ND	3.6	0.9
2-Butanone	ND	28.7	4.6
2-Chlorotoluene	ND	3.6	0.9
2-Hexanone	ND	17.9	0.6
4-Chlorotoluene	ND	3.6	1
4-Methyl-2-Pentanone	ND	17.9	2
Acetone	**6.8 J**	28.7	5.2
Benzene	ND	3.6	0.6
Bromobenzene	ND	3.6	0.9
Bromochloromethane	ND	3.6	0.6
Bromodichloromethane	ND	3.6	0.6
Bromoform	ND	3.6	0.6
Bromomethane	ND	3.6	0.6
Carbon Tetrachloride	ND	3.6	1
Chlorobenzene	ND	3.6	0.9
Chloroethane	ND	3.6	0.6
Chloroform	ND	3.6	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB09 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-15

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.6	0.9
cis-1.2-Dichloroethene	ND	3.6	0.9
cis-1.3-Dichloropropene	ND	3.6	0.6
Dibromochloromethane	ND	3.6	0.6
Dibromomethane	ND	3.6	0.6
Dichlorodifluoromethane	ND	3.6	1
Ethylbenzene	ND	3.6	0.9
Hexachlorobutadiene	ND	7.2	3
Isopropylbenzene	ND	3.6	1
Methyl tert-Butyl Ether	ND	3.6	0.6
Methylene Chloride	**1.5 J**	3.6	0.6
n-Butylbenzene	ND	3.6	2
n-Propylbenzene	ND	3.6	1
Napthalene	ND	3.6	1
sec-Butylbenzene	ND	7.2	2
Styrene	ND	7.2	2
tert-Butylbenzene	ND	7.2	1
Tetrachloroethene	ND	3.6	1
Tetrahydrofuran	ND	7.2	2
Toluene	ND	3.6	0.9
trans-1.2-Dichloroethene	ND	3.6	0.9
trans-1.3-Dichloropropene	ND	3.6	0.6
Trichloroethene	ND	3.6	0.6
Trichlorofluoromethane	ND	3.6	1
Vinyl Acetate	ND	7.2	2
Vinyl Chloride	ND	3.6	0.6
Xylene O	ND	3.6	1
Xylene P.M	ND	7.2	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 10/20/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB09 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-15
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 20.7 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.7	0.5

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	111	70-130
Trifluorotoluene (FID)	102	70-130

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB09 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-15
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	**10 J**	11	7

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.
MDL = Method Detection Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	87	47-114

Approved By: _____ Date: 11/10/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-5S.Caribou.ME
Client Sample ID: SB16 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-16
Units: ug/Kg dry weight
Dilution: 1
Percent Solid: 95
Sample Amount: 7.5 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	3.5	0.3
1,1,1-Trichloroethane	ND	3.5	0.6
1,1,2,2-Tetrachloroethane	ND	3.5	0.6
1,1,2-Trichloroethane	ND	3.5	0.3
1,1-Dichloroethane	ND	3.5	0.6
1,1-Dichloroethene	ND	3.5	1
1,1-Dichloropropene	ND	3.5	0.6
1,2,3-Trichlorobenzene	ND	7	2
1,2,3-Trichloropropane	ND	3.5	0.6
1,2,4-Trichlorobenzene	ND	3.5	1
1,2,4-Trimethylbenzene	ND	3.5	1
1,2-Dibromo-3-Chloropropane	ND	3.5	0.6
1,2-Dibromoethane	ND	3.5	0.6
1,2-Dichlorobenzene	ND	3.5	1
1,2-Dichloroethane	ND	3.5	0.6
1,2-Dichloropropane	ND	3.5	0.8
1,3,5-Trimethylbenzene	ND	3.5	1
1,3-Dichlorobenzene	ND	3.5	1
1,3-Dichloropropane	ND	3.5	0.3
1,4-Dichlorobenzene	ND	3.5	1
2,2-Dichloropropane	ND	3.5	0.8
2-Butanone	ND	28.1	4.5
2-Chlorotoluene	ND	3.5	0.8
2-Hexanone	ND	17.5	0.6
4-Chlorotoluene	ND	3.5	1
4-Methyl-2-Pentanone	ND	17.5	2
Acetone	**9.7 J**	28.1	5
Benzene	ND	3.5	0.6
Bromobenzene	ND	3.5	0.8
Bromochloromethane	ND	3.5	0.6
Bromodichloromethane	ND	3.5	0.6
Bromoform	ND	3.5	0.6
Bromomethane	ND	3.5	0.6
Carbon Tetrachloride	ND	3.5	1
Chlorobenzene	ND	3.5	0.8
Chloroethane	ND	3.5	0.6
Chloroform	ND	3.5	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB16 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-16

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.5	0.8
cis-1.2-Dichloroethene	ND	3.5	0.8
cis-1.3-Dichloropropene	ND	3.5	0.6
Dibromochloromethane	ND	3.5	0.6
Dibromomethane	ND	3.5	0.6
Dichlorodifluoromethane	ND	3.5	1
Ethylbenzene	ND	3.5	0.8
Hexachlorobutadiene	ND	7	3
Isopropylbenzene	ND	3.5	1
Methyl tert-Butyl Ether	ND	3.5	0.6
Methylene Chloride	**1.5 J**	3.5	0.6
n-Butylbenzene	ND	3.5	2
n-Propylbenzene	ND	3.5	1
Napthalene	ND	3.5	1
sec-Butylbenzene	ND	7	2
Styrene	ND	7	2
tert-Butylbenzene	ND	7	1
Tetrachloroethene	ND	3.5	1
Tetrahydrofuran	ND	7	2
Toluene	ND	3.5	0.8
trans-1.2-Dichloroethene	ND	3.5	0.8
trans-1.3-Dichloropropene	ND	3.5	0.6
Trichloroethene	ND	3.5	0.6
Trichlorofluoromethane	ND	3.5	1
Vinyl Acetate	ND	7	2
Vinyl Chloride	ND	3.5	0.6
Xylene O	ND	3.5	1
Xylene P.M	ND	7	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 9/16/99

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CERTIFICATE OF ANALYSIS .

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB16 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-16
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 95
Sample Amount: 22.7 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.4	0.4

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	101	70-130

Approved By: _____ Date: 11/9/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB16 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-16
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 95
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	9	6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	76	41-136

Approved By: _____ Date: 11/3/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB13 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-17
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 88
Sample Amount: 7.3 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	3.9	0.3
1,1,1-Trichloroethane	ND	3.9	0.6
1,1,2,2-Tetrachloroethane	ND	3.9	0.6
1,1,2-Trichloroethane	ND	3.9	0.3
1,1-Dichloroethane	ND	3.9	0.6
1,1-Dichloroethene	ND	3.9	1
1,1-Dichloropropene	ND	3.9	0.6
1,2,3-Trichlorobenzene	ND	7.8	2
1,2,3-Trichloropropane	ND	3.9	0.6
1,2,4-Trichlorobenzene	ND	3.9	2
1,2,4-Trimethylbenzene	ND	3.9	1
1,2-Dibromo-3-Chloropropane	ND	3.9	0.6
1,2-Dibromoethane	ND	3.9	0.6
1,2-Dichlorobenzene	ND	3.9	1
1,2-Dichloroethane	ND	3.9	0.6
1,2-Dichloropropane	ND	3.9	0.9
1,3,5-Trimethylbenzene	ND	3.9	2
1,3-Dichlorobenzene	ND	3.9	1
1,3-Dichloropropane	ND	3.9	0.3
1,4-Dichlorobenzene	ND	3.9	1
2,2-Dichloropropane	ND	3.9	0.9
2-Butanone	ND	31.1	5
2-Chlorotoluene	ND	3.9	0.9
2-Hexanone	ND	19.5	0.6
4-Chlorotoluene	ND	3.9	1
4-Methyl-2-Pentanone	ND	19.5	2
Acetone	**8.3 J**	31.1	5.6
Benzene	ND	3.9	0.6
Bromobenzene	ND	3.9	0.9
Bromochloromethane	ND	3.9	0.6
Bromodichloromethane	ND	3.9	0.6
Bromoform	ND	3.9	0.6
Bromomethane	ND	3.9	0.6
Carbon Tetrachloride	ND	3.9	1
Chlorobenzene	ND	3.9	0.9
Chloroethane	ND	3.9	0.6
Chloroform	ND	3.9	0.6

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB13 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-17

Test Name	Result	MRL	2*MDL
Chloromethane	ND	3.9	0.9
cis-1.2-Dichloroethene	ND	3.9	0.9
cis-1.3-Dichloropropene	ND	3.9	0.6
Dibromochloromethane	ND	3.9	0.6
Dibromomethane	ND	3.9	0.6
Dichlorodifluoromethane	ND	3.9	2
Ethylbenzene	ND	3.9	0.9
Hexachlorobutadiene	ND	7.8	3
Isopropylbenzene	ND	3.9	2
Methyl tert-Butyl Ether	ND	3.9	0.6
Methylene Chloride	**1.6 J**	3.9	0.6
n-Butylbenzene	ND	3.9	2
n-Propylbenzene	ND	3.9	2
Napthalene	ND	3.9	2
sec-Butylbenzene	ND	7.8	2
Styrene	ND	7.8	2
tert-Butylbenzene	ND	7.8	2
Tetrachloroethene	ND	3.9	1
Tetrahydrofuran	ND	7.8	2
Toluene	ND	3.9	0.9
trans-1.2-Dichloroethene	ND	3.9	0.9
trans-1.3-Dichloropropene	ND	3.9	0.6
Trichloroethene	**1.1 J**	3.9	0.6
Trichlorofluoromethane	ND	3.9	1
Vinyl Acetate	ND	7.8	2
Vinyl Chloride	ND	3.9	0.6
Xylene O	ND	3.9	1
Xylene P.M	ND	7.8	2

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: _____

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB13 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-17
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 88
Sample Amount: 25 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.4	0.4

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	92	70-130

Approved By: _____ Date: 11/8/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: SB13 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-17
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 88
Sample Amount: 30.1g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	36	10	7

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.
MDL = Method Detection Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	87	41-136

Approved By: _____ Date: 10/8/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: TB01 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-18
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 5.0 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5	0.4
1,1,1-Trichloroethane	ND	5	0.8
1,1,2,2-Tetrachloroethane	ND	5	0.8
1,1,2-Trichloroethane	ND	5	0.4
1,1-Dichloroethane	ND	5	0.8
1,1-Dichloroethene	ND	5	2
1,1-Dichloropropene	ND	5	0.8
1,2,3-Trichlorobenzene	ND	10	2
1,2,3-Trichloropropane	ND	5	0.8
1,2,4-Trichlorobenzene	ND	5	2
1,2,4-Trimethylbenzene	ND	5	2
1,2-Dibromo-3-Chloropropane	ND	5	0.8
1,2-Dibromoethane	ND	5	0.8
1,2-Dichlorobenzene	ND	5	2
1,2-Dichloroethane	ND	5	0.8
1,2-Dichloropropane	ND	5	1
1,3,5-Trimethylbenzene	ND	5	2
1,3-Dichlorobenzene	ND	5	2
1,3-Dichloropropane	ND	5	0.4
1,4-Dichlorobenzene	ND	5	2
2,2-Dichloropropane	ND	5	1
2-Butanone	ND	40	6.4
2-Chlorotoluene	ND	5	1
2-Hexanone	ND	25	0.8
4-Chlorotoluene	ND	5	2
4-Methyl-2-Pentanone	ND	25	3
Acetone	ND	40	7.2
Benzene	ND	5	0.8
Bromobenzene	ND	5	1
Bromochloromethane	ND	5	0.8
Bromodichloromethane	ND	5	0.8
Bromoform	ND	5	0.8
Bromomethane	ND	5	0.8
Carbon Tetrachloride	ND	5	2
Chlorobenzene	ND	5	1
Chloroethane	ND	5	0.8
Chloroform	ND	5	0.8

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ESS Laboratory

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58,Caribou,ME
Client Sample ID: TB01 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-18

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5	1
cis-1,2-Dichloroethene	ND	5	1
cis-1,3-Dichloropropene	ND	5	0.8
Dibromochloromethane	ND	5	0.8
Dibromomethane	ND	5	0.8
Dichlorodifluoromethane	ND	5	2
Ethylbenzene	ND	5	1
Hexachlorobutadiene	ND	10	4
Isopropylbenzene	ND	5	2
Methyl tert-Butyl Ether	ND	5	0.8
Methylene Chloride	**4.8 J**	5	0.8
n-Butylbenzene	ND	5	3
n-Propylbenzene	ND	5	2
Napthalene	ND	5	2
sec-Butylbenzene	ND	10	2
Styrene	ND	10	3
tert-Butylbenzene	ND	10	2
Tetrachloroethene	ND	5	2
Tetrahydrofuran	ND	10	3
Toluene	ND	5	1
trans-1,2-Dichloroethene	ND	5	1
trans-1,3-Dichloropropene	ND	5	0.8
Trichloroethene	ND	5	0.8
Trichlorofluoromethane	ND	5	2
Vinyl Acetate	ND	10	2
Vinyl Chloride	ND	5	0.8
Xylene O	ND	5	2
Xylene P,M	ND	10	3

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 10/18/05

Rev.

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07i

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: TB01 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-18
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 15 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	111	70-130
Trifluorotoluene (FID)	104	70-130

Approved By: _____ Date: 10/8/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: TB02 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-19
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 5.0 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5	0.4
1,1,1-Trichloroethane	ND	5	0.8
1,1,2,2-Tetrachloroethane	ND	5	0.8
1,1,2-Trichloroethane	ND	5	0.4
1,1-Dichloroethane	ND	5	0.8
1,1-Dichloroethene	ND	5	2
1,1-Dichloropropene	ND	5	0.8
1,2,3-Trichlorobenzene	ND	10	2
1,2,3-Trichloropropane	ND	5	0.8
1,2,4-Trichlorobenzene	ND	5	2
1,2,4-Trimethylbenzene	ND	5	2
1,2-Dibromo-3-Chloropropane	ND	5	0.8
1,2-Dibromoethane	ND	5	0.8
1,2-Dichlorobenzene	ND	5	2
1,2-Dichloroethane	ND	5	0.8
1,2-Dichloropropane	ND	5	1
1,3,5-Trimethylbenzene	ND	5	2
1,3-Dichlorobenzene	ND	5	2
1,3-Dichloropropane	ND	5	0.4
1,4-Dichlorobenzene	ND	5	2
2,2-Dichloropropane	ND	5	1
2-Butanone	ND	40	6.4
2-Chlorotoluene	ND	5	1
2-Hexanone	ND	25	0.8
4-Chlorotoluene	ND	5	2
4-Methyl-2-Pentanone	ND	25	3
Acetone	ND	40	7.2
Benzene	ND	5	0.8
Bromobenzene	ND	5	1
Bromochloromethane	ND	5	0.8
Bromodichloromethane	ND	5	0.8
Bromoform	ND	5	0.8
Bromomethane	ND	5	0.8
Carbon Tetrachloride	ND	5	2
Chlorobenzene	ND	5	1
Chloroethane	ND	5	0.8
Chloroform	ND	5	0.8

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: TB02 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-19

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5	1
cis-1.2-Dichloroethene	ND	5	1
cis-1.3-Dichloropropene	ND	5	0.8
Dibromochloromethane	ND	5	0.8
Dibromomethane	ND	5	0.8
Dichlorodifluoromethane	ND	5	2
Ethylbenzene	ND	5	1
Hexachlorobutadiene	ND	10	4
Isopropylbenzene	ND	5	2
Methyl tert-Butyl Ether	ND	5	0.8
Methylene Chloride	1.7 J	5	0.8
n-Butylbenzene	ND	5	3
n-Propylbenzene	ND	5	2
Napthalene	ND	5	2
sec-Butylbenzene	ND	10	2
Styrene	ND	10	3
tert-Butylbenzene	ND	10	2
Tetrachloroethene	ND	5	2
Tetrahydrofuran	ND	10	3
Toluene	ND	5	1
trans-1.2-Dichloroethene	ND	5	1
trans-1.3-Dichloropropene	ND	5	0.8
Trichloroethene	ND	5	0.8
Trichlorofluoromethane	ND	5	2
Vinyl Acetate	ND	10	2
Vinyl Chloride	ND	5	0.8
Xylene O	ND	5	2
Xylene P.M	ND	10	3

J = Reported below MRL: Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: ECC

Date: 10/18/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: TB02 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-19
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 15 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	119	70-130

Approved By: _____ Date: 10/8/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC02 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-09
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 75
Sample Amount: 7.5 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.4	0.4
1,1,1-Trichloroethane	ND	4.4	0.7
1,1,2,2-Tetrachloroethane	ND	4.4	0.7
1,1,2-Trichloroethane	ND	4.4	0.4
1,1-Dichloroethane	ND	4.4	0.7
1,1-Dichloroethene	ND	4.4	1
1,1-Dichloropropene	ND	4.4	0.7
1,2,3-Trichlorobenzene	ND	8.9	2
1,2,3-Trichloropropane	ND	4.4	0.7
1,2,4-Trichlorobenzene	ND	4.4	2
1,2,4-Trimethylbenzene	ND	4.4	1
1,2-Dibromo-3-Chloropropane	ND	4.4	0.7
1,2-Dibromoethane	ND	4.4	0.7
1,2-Dichlorobenzene	ND	4.4	1
1,2-Dichloroethane	ND	4.4	0.7
1,2-Dichloropropane	ND	4.4	1
1,3,5-Trimethylbenzene	ND	4.4	2
1,3-Dichlorobenzene	ND	4.4	1
1,3-Dichloropropane	ND	4.4	0.4
1,4-Dichlorobenzene	ND	4.4	1
2,2-Dichloropropane	ND	4.4	1
2-Butanone	ND	35.6	5.7
2-Chlorotoluene	ND	4.4	1
2-Hexanone	ND	22.2	0.7
4-Chlorotoluene	ND	4.4	1
4-Methyl-2-Pentanone	ND	22.2	3
Acetone	**24.7 J**	35.6	6.4
Benzene	ND	4.4	0.7
Bromobenzene	ND	4.4	1
Bromochloromethane	ND	4.4	0.7
Bromodichloromethane	ND	4.4	0.7
Bromoform	ND	4.4	0.7
Bromomethane	ND	4.4	0.7
Carbon Tetrachloride	ND	4.4	1
Chlorobenzene	ND	4.4	1
Chloroethane	ND	4.4	0.7
Chloroform	ND	4.4	0.7

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC02 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-09

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.4	1
cis-1.2-Dichloroethene	ND	4.4	1
cis-1.3-Dichloropropene	ND	4.4	0.7
Dibromochloromethane	ND	4.4	0.7
Dibromomethane	ND	4.4	0.7
Dichlorodifluoromethane	ND	4.4	2
Ethylbenzene	ND	4.4	1
Hexachlorobutadiene	ND	8.9	4
Isopropylbenzene	ND	4.4	2
Methyl tert-Butyl Ether	ND	4.4	0.7
Methylene Chloride	**1.1 J**	4.4	0.7
n-Butylbenzene	ND	4.4	2
n-Propylbenzene	ND	4.4	2
Napthalene	ND	4.4	2
sec-Butylbenzene	ND	8.9	2
Styrene	ND	8.9	2
tert-Butylbenzene	ND	8.9	2
Tetrachloroethene	ND	4.4	1
Tetrahydrofuran	ND	8.9	3
Toluene	ND	4.4	1
trans-1.2-Dichloroethene	ND	4.4	1
trans-1.3-Dichloropropene	ND	4.4	0.7
Trichloroethene	ND	4.4	0.7
Trichlorofluoromethane	ND	4.4	1
Vinyl Acetate	ND	8.9	2
Vinyl Chloride	ND	4.4	0.7
Xylene O	ND	4.4	1
Xylene P.M	ND	8.9	2

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 9/28/05 Revised.

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC02 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-09
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 75
Sample Amount: 16.1 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2.5	0.7

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	108	70-130
Trifluorotoluene (FID)	91	70-130

Approved By: CEC

Date: 10/18/99 Rev.

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC02 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-09
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 75
Sample Amount: 30.1g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	12	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.
ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	80	47-114

Approved By: _____ Date: 11/16/99 Revised

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC01 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-06
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 78
Sample Amount: 7.1 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	4.5	0.4
1,1,1-Trichloroethane	ND	4.5	0.7
1,1,2,2-Tetrachloroethane	ND	4.5	0.7
1,1,2-Trichloroethane	ND	4.5	0.4
1,1-Dichloroethane	ND	4.5	0.7
1,1-Dichloroethene	ND	4.5	1
1,1-Dichloropropene	ND	4.5	0.7
1,2,3-Trichlorobenzene	ND	9	2
1,2,3-Trichloropropane	ND	4.5	0.7
1,2,4-Trichlorobenzene	ND	4.5	2
1,2,4-Trimethylbenzene	ND	4.5	1
1,2-Dibromo-3-Chloropropane	ND	4.5	0.7
1,2-Dibromoethane	ND	4.5	0.7
1,2-Dichlorobenzene	ND	4.5	1
1,2-Dichloroethane	ND	4.5	0.7
1,2-Dichloropropane	ND	4.5	1
1,3,5-Trimethylbenzene	ND	4.5	2
1,3-Dichlorobenzene	ND	4.5	1
1,3-Dichloropropane	ND	4.5	0.4
1,4-Dichlorobenzene	ND	4.5	1
2,2-Dichloropropane	ND	4.5	1
2-Butanone	ND	36.1	5.8
2-Chlorotoluene	ND	4.5	1
2-Hexanone	ND	22.6	0.7
4-Chlorotoluene	ND	4.5	1
4-Methyl-2-Pentanone	ND	22.6	3
Acetone	**40**	40	3.34
Benzene	ND	4.5	0.7
Bromobenzene	ND	4.5	1
Bromochloromethane	ND	4.5	0.7
Bromodichloromethane	ND	4.5	0.7
Bromoform	ND	4.5	0.7
Bromomethane	ND	4.5	0.7
Carbon Tetrachloride	ND	4.5	1
Chlorobenzene	ND	4.5	1
Chloroethane	ND	4.5	0.7
Chloroform	ND	4.5	0.7

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC01 - 102699

ESS Project ID: 99100362
ESS Sample ID: 99100362-06

Test Name	Result	MRL	2*MDL
Chloromethane	ND	4.5	1
cis-1.2-Dichloroethene	ND	4.5	1
cis-1.3-Dichloropropene	ND	4.5	0.7
Dibromochloromethane	ND	4.5	0.7
Dibromomethane	ND	4.5	0.7
Dichlorodifluoromethane	ND	4.5	2
Ethylbenzene	ND	4.5	1
Hexachlorobutadiene	ND	9	4
Isopropylbenzene	ND	4.5	2
Methyl tert-Butyl Ether	ND	4.5	0.7
Methylene Chloride	**2.5 J**	4.5	0.7
n-Butylbenzene	ND	4.5	3
n-Propylbenzene	ND	4.5	2
Napthalene	ND	4.5	2
sec-Butylbenzene	ND	9	2
Styrene	ND	9	3
tert-Butylbenzene	ND	9	2
Tetrachloroethene	ND	4.5	1
Tetrahydrofuran	ND	9	3
Toluene	ND	4.5	1
trans-1.2-Dichloroethene	ND	4.5	1
trans-1.3-Dichloropropene	ND	4.5	0.7
Trichloroethene	ND	4.5	0.7
Trichlorofluoromethane	ND	4.5	1
Vinyl Acetate	ND	9	2
Vinyl Chloride	ND	4.5	0.7
Xylene O	ND	4.5	1
Xylene P.M	ND	9	3

J = Reported below MRL; Estimated value.
MRL = Method Reporting Limit.

MDL = Method Detection Limit.
ND = Not Detected above MDL.

Approved By: _____ Date: 10/13/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC01 - 102699
Date Sampled: 10/26/99
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: 99100362-06
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 78
Sample Amount: 20.4 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	1.9	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	107	70-130
Trifluorotoluene (FID)	97	70-130

Approved By: _____ Date: 10/18/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: QC01 - 102699
Date Sampled: 10/26/99
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: 99100362-06
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 78
Sample Amount: 30.2g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	11	8

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	RSL
Ortho-terphenyl (OTP)	84	47-114

Approved By: _____

Date: 11/13/99 Rev.

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QUALITY CONTROL SECTION

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou.ME
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: DMH
Date Analyzed: 11/8/99

ESS Project ID: 99100362
ESS Sample ID: VGB110899B1
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 15 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	109	70-130
Trifluorotoluene (FID)	108	70-130

Approved By: _____ Date: 11/24/11

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou,ME
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: DMH
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: VGB110599B1
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 15 g

Test Name	Result	MRL	2*MDL
Gasoline Range Organics	ND	2	0.6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Surrogate	% Recovery	Limits
Bromofluorobenzene (FID)	110	70-130
Trifluorotoluene (FID)	108	70-130

Approved By: _____ Date: 11/24/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou,ME
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Date Analyzed: 11/5/99
Analyst: DMH

ESS Project ID: 99100362
ESS Sample ID: VGB110599LCS
Units: %
Dilution: 1
Percent Solid: N/A
Sample Amount: 5ml

Test Name	Result	Limits
Gasoline Range Organics	**82**	70-130

MDL = Method Detection Limit.

ND = Not Detected above MDL.

** = Outside QC Limits.

Approved By: _____ Date: 11/12/99

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou.ME
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Date Analyzed: 11/8/99
Analyst: DMH

ESS Project ID: 99100362
ESS Sample ID: VGB110899LCS
Units: %
Dilution: 1
Percent Solid: N/A
Sample Amount: 5ml

Test Name	Result	Limits
Gasoline Range Organics	**80**	70-130

MDL = Method Detection Limit.

ND = Not Detected above MDL.

** = Outside QC Limits.

Approved By: ETP Date: 11/12/99

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080

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CERTIFICATE OF ANALYSIS

Gasoline Range Organics MEDEP 4.2.17

Client Name: R.F. Weston

ESS Project ID: 99100362

Client Project ID: LO-58.Caribou.ME

ESS Sample ID: 99100362-15 MS/MSD

Client Sample ID: Matrix Spike

Units: mg/Kg dry weight

Compound	Sample Conc.	Spike Added	MS Conc.	MS Percent Recovery	QC Recovery Limits
Gasoline Range Organics	ND	9	8.99	100	70-130

Compound	Spike Added	MSD Conc.	MSD Percent Recovery	Percent RPD	QC RPD Limits	QC Rec Limits
Gasoline Range Organics	9	8.31	92	8	20	70-130

Approved By: _____

Date: 11/18/99

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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25
8015M Diesel Range Organics

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: JM
Date Analyzed: 11/5/99

ESS Project ID: 99100362
ESS Sample ID: GC1102-B3
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30 g

Test Name	Result	MRL	2*MDL
Diesel Range Organics	ND	9	6

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: ETP Date: 11/24/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: Method Blank
Date Sampled: N/A
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: GC1102-B31BS
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30g

Compound	Spike Added	BS Concentration	BS Percent Recovery	QC Recovery Limits
Diesel Range Organics	667	540	81	50-150

Approved By: _____ Date: 11/17/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: Method Blank
Date Sampled: N/A
Extraction Date: 11/2/99
Date Analyzed: 11/5/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: GC1102-B32BS
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30g

Compound	Spike Added	BS Concentration	BS Percent Recovery	QC Recovery Limits
Diesel Range Organics	33	31	94	50-150

Approved By: _____ Date: 11/9/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston
Client Project ID: LO-58.Caribou.ME
Client Sample ID: Method Blank
Date Sampled: N/A
Extraction Date: 11/2/99
Date Analyzed: 11/6/99
Analyst: JM

ESS Project ID: 99100362
ESS Sample ID: GC1102-B33BS
Units: mg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30g

Compound	Spike Added	BS Concentration	BS Percent Recovery	QC Recovery Limits
Diesel Range Organics	33	30	91	50-150

Approved By: _____ Date: 11/17/99

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CERTIFICATE OF ANALYSIS

Diesel Range Organics MEDEP 4.1.25

Client Name: R.F. Weston

ESS Project ID: 99100362

Client Project ID: LO-58,Caribou,ME

ESS Sample ID: 99100362-15 MS/MSD

Client Sample ID: Matrix Spike

Units: mg/Kg dry weight

Compound	Sample Conc.	Spike Added	MS Conc.	MS Percent Recovery	QC Recovery Limits
Diesel Range Organics	ND	40	47	117	50-150

Compound	Spike Added	MSD Conc.	MSD Percent Recovery	Percent RPD	QC RPD Limits	QC Rec Limits
Diesel Range Organics	40	52	130	11	50	50-150

Approved By: CHP

Date: 11/18/97

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CERTIFICATE OF ANALYSIS

EPA Method 8260B Surrogate Report

Client Name: R.F. Weston

Client Project ID: LO-58.Caribou.ME

ESS Project ID: 99100362

Lab ID (Dilution Factor)	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
99100362-01 (1x)	93	86	88
99100362-02 (1x)	95	87	87
99100362-03 (1x)	99	84	86
99100362-04 (1x)	100	83	87
99100362-05 (1x)	99	83	86
99100362-06 (1x)	99	85	87
99100362-07 (1x)	96	84	86
99100362-08 (1x)	95	84	86
99100362-09 (1x)	99	85	87
99100362-10 (1x)	99	85	86
99100362-11 (1x)	99	82	86
99100362-12 (1x)	99	82	86
99100362-13 (1x)	100	84	86
99100362-14 (1x)	99	81	83
99100362-15MS (1x)	95	87	89
99100362-15MSD (1x)	94	86	88
99100362-15 (1x)	93	87	88
99100362-16 (1x)	97	83	85
99100362-17 (1x)	97	82	85
99100362-18 (1x)	95	85	83
99100362-19 (1x)	94	85	86
VMA110199B1 (1x)	84	82	91
VMA110199B2 (1x)	88	87	88

Approved by: JKM

Date: 11/15/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou,ME
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: DMH
Date Analyzed: 11/1/99

ESS Project ID: 99100362
ESS Sample ID: VMA110199B1
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 5 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5	0.4
1,1,1-Trichloroethane	ND	5	0.8
1,1,2,2-Tetrachloroethane	ND	5	0.8
1,1,2-Trichloroethane	ND	5	0.4
1,1-Dichloroethane	ND	5	0.8
1,1-Dichloroethene	ND	5	2
1,1-Dichloropropene	ND	5	0.8
1,2,3-Trichlorobenzene	ND	10	2
1,2,3-Trichloropropane	ND	5	0.8
1,2,4-Trichlorobenzene	ND	5	2
1,2,4-Trimethylbenzene	ND	5	2
1,2-Dibromo-3-Chloropropane	ND	5	0.8
1,2-Dibromoethane	ND	5	0.8
1,2-Dichlorobenzene	ND	5	2
1,2-Dichloroethane	ND	5	0.8
1,2-Dichloropropane	ND	5	1
1,3,5-Trimethylbenzene	ND	5	2
1,3-Dichlorobenzene	ND	5	2
1,3-Dichloropropane	ND	5	0.4
1,4-Dichlorobenzene	ND	5	2
2,2-Dichloropropane	ND	5	1
2-Butanone	ND	40	6.4
2-Chlorotoluene	ND	5	1
2-Hexanone	ND	25	0.8
4-Chlorotoluene	ND	5	2
4-Methyl-2-Pentanone	ND	25	3
Acetone	ND	40	7.2
Benzene	ND	5	0.8
Bromobenzene	ND	5	1
Bromochloromethane	ND	5	0.8
Bromodichloromethane	ND	5	0.8
Bromoform	ND	5	0.8
Bromomethane	ND	5	0.8
Carbon Tetrachloride	ND	5	2
Chlorobenzene	ND	5	1
Chloroethane	ND	5	0.8
Chloroform	ND	5	0.8

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58,Caribou.ME
Client Sample ID: Method Blank

ESS Project ID: 99100362
ESS Sample ID: VMA110199B1

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5	1
cis-1,2-Dichloroethene	ND	5	1
cis-1,3-Dichloropropene	ND	5	0.8
Dibromochloromethane	ND	5	0.8
Dibromomethane	ND	5	0.8
Dichlorodifluoromethane	ND	5	2
Ethylbenzene	ND	5	1
Hexachlorobutadiene	ND	10	4
Isopropylbenzene	ND	5	2
Methyl tert-Butyl Ether	ND	5	0.8
Methylene Chloride	ND	5	0.8
n-Butylbenzene	ND	5	3
n-Propylbenzene	ND	5	2
Napthalene	ND	5	2
sec-Butylbenzene	ND	10	2
Styrene	ND	10	3
tert-Butylbenzene	ND	10	2
Tetrachloroethene	ND	5	2
Tetrahydrofuran	ND	10	3
Toluene	ND	5	1
trans-1,2-Dichloroethene	ND	5	1
trans-1,3-Dichloropropene	ND	5	0.8
Trichloroethene	ND	5	0.8
Trichlorofluoromethane	ND	5	2
Vinyl Acetate	ND	10	2
Vinyl Chloride	ND	5	0.8
Xylene O	ND	5	2
Xylene P,M	ND	10	3

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: CTO Date: 11/14/99

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CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: R.F. Weston
Client Project ID: LO-58,Caribou,ME
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: DMH
Date Analyzed: 11/2/99

ESS Project ID: 99100362
ESS Sample ID: VMA110199B2
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 5.0 g

Test Name	Result	MRL	2*MDL
1,1,1,2-Tetrachloroethane	ND	5	0.4
1,1,1-Trichloroethane	ND	5	0.8
1,1,2,2-Tetrachloroethane	ND	5	0.8
1,1,2-Trichloroethane	ND	5	0.4
1,1-Dichloroethane	ND	5	0.8
1,1-Dichloroethene	ND	5	2
1,1-Dichloropropene	ND	5	0.8
1,2,3-Trichlorobenzene	ND	10	2
1,2,3-Trichloropropane	ND	5	0.8
1,2,4-Trichlorobenzene	ND	5	2
1,2,4-Trimethylbenzene	ND	5	2
1,2-Dibromo-3-Chloropropane	ND	5	0.8
1,2-Dibromoethane	ND	5	0.8
1,2-Dichlorobenzene	ND	5	2
1,2-Dichloroethane	ND	5	0.8
1,2-Dichloropropane	ND	5	1
1,3,5-Trimethylbenzene	ND	5	2
1,3-Dichlorobenzene	ND	5	2
1,3-Dichloropropane	ND	5	0.4
1,4-Dichlorobenzene	ND	5	2
2,2-Dichloropropane	ND	5	1
2-Butanone	ND	40	6.4
2-Chlorotoluene	ND	5	1
2-Hexanone	ND	25	0.8
4-Chlorotoluene	ND	5	2
4-Methyl-2-Pentanone	ND	25	3
Acetone	ND	40	7.2
Benzene	ND	5	0.8
Bromobenzene	ND	5	1
Bromochloromethane	ND	5	0.8
Bromodichloromethane	ND	5	0.8
Bromoform	ND	5	0.8
Bromomethane	ND	5	0.8
Carbon Tetrachloride	ND	5	2
Chlorobenzene	ND	5	1
Chloroethane	ND	5	0.8
Chloroform	ND	5	0.8

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CERTIFICATE OF ANALYSIS

Client Project ID: LO-58,Caribou,ME
Client Sample ID: Method Blank

ESS Project ID: 99100362
ESS Sample ID: VMA110199B2

Test Name	Result	MRL	2*MDL
Chloromethane	ND	5	1
cis-1,2-Dichloroethene	ND	5	1
cis-1,3-Dichloropropene	ND	5	0.8
Dibromochloromethane	ND	5	0.8
Dibromomethane	ND	5	0.8
Dichlorodifluoromethane	ND	5	2
Ethylbenzene	ND	5	1
Hexachlorobutadiene	ND	10	4
Isopropylbenzene	ND	5	2
Methyl tert-Butyl Ether	ND	5	0.8
Methylene Chloride	ND	5	0.8
n-Butylbenzene	ND	5	3
n-Propylbenzene	ND	5	2
Napthalene	ND	5	2
sec-Butylbenzene	ND	10	2
Styrene	ND	10	3
tert-Butylbenzene	ND	10	2
Tetrachloroethene	ND	5	2
Tetrahydrofuran	ND	10	3
Toluene	ND	5	1
trans-1,2-Dichloroethene	ND	5	1
trans-1,3-Dichloropropene	ND	5	0.8
Trichloroethene	ND	5	0.8
Trichlorofluoromethane	ND	5	2
Vinyl Acetate	ND	10	2
Vinyl Chloride	ND	5	0.8
Xylene O	ND	5	2
Xylene P,M	ND	10	3

MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: ETD Date: 11/24/99

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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B Matrix Spike Recovery

Client Name: R.F. Weston

ESS Project ID: 99100362

Client Project ID: LO-58,Caribou,ME

ESS Sample ID: 99100362-15 MS/MSD

Client Sample ID: SB09 - 102699

Units: µg/Kg dry weight

Compound	Sample Conc.	Spike Added	MS Conc.	MS Percent Recovery	QC Recovery Limits
1,1-Dichloroethene	ND	34	30	88	70-130
Benzene	ND	34	31	91	70-130
Chlorobenzene	ND	34	30	88	70-130
Toluene	ND	34	31	91	70-130
Trichloroethene	ND	34	30	88	70-130

Compound	Spike Added	MSD Conc.	MSD Percent Recovery	Percent RPD	QC RPD Limits	QC Rec Limits
1,1-Dichloroethene	35	33	94	7	25	70-130
Benzene	35	34	97	6	25	70-130
Chlorobenzene	35	32	91	3	25	70-130
Toluene	35	34	97	6	25	70-130
Trichloroethene	35	33	94	7	25	70-130

Approved By: TMN

Date: 11/15/99

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ESS LABORATORY CERTIFICATIONS

U.S. Army Corps of Engineers
Soil and Water

Rhode Island: 179

Connecticut: PH-0750

Maine: RI002

Massachusetts: M-RI002

New Hampshire:
Drinking Water: 242499-A
Wastewater: 242499-B

New York: 11313
Potable Water
Non Potable Water
Solid and Hazardous Waste