U.S. Department of Energy

Oakland Operations Office, Oakland, California

FINAL SITE CHARACTERIZATION SUMMARY REPORT

For the

DOE AREAS AT THE LABORATORY FOR ENERGY-RELATED HEALTH RESEARCH (LEHR) UNIVERSITY OF CALIFORNIA AT DAVIS, CALIFORNIA

Prepared for:

United States Department of Energy
Oakland Operations Office
1301 Clay Street
Oakland, California 95612-5208

Prepared by:

Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411

November, 1997
Rev. 0

DOE Oakland Operations Contract DE-AC03-96SF20686

Weiss Associates
Environmental and Geologic Services

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5500 Shellmound Street
Emeryville, CA 94608-2411

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Approved by: _____ Date: _____
Mary Stallard, R.G., C.E.G.
PQA Manager
Weiss Associates

Approved by: _____ Date: _____
Robert O. Devany, R.G., C.H.G.
Project Manager
Weiss Associates

Approved by: _____ Date: _____
Michael D. Dresen, R.G., C.H.G.
Program Manager
Weiss Associates

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LIST OF ABBREVIATIONS

µCi/ml	MicroCuries per Milliliter
µR	MicroRoentgens
ºF	Degrees Fahrenheit
Ac-228	Actinium-228
AEC	Atomic Energy Commission
AH-1 and AH-2	Animal Hospital Numbers 1 and 2
Am-241	Americium-241
bgs	Below Ground Surface
Bi-214	Bismuth-214
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
C-14	Carbon-14
CAL/OSHA	California/Occupational Safety and Health Administration
CDFG	California Natural Diversity Database
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act Of 1980
cfs	Cubic Feet per Second
Ci	Curie
cm/sec	Centimeters per second
cm^2	Square Centimeter
Co-60	Cobalt-60
cpm	Counts per Minute
Cs-137	Cesium-137
Cu. yd	Cubic Yards
D&D	Decontamination and Decommissioning
DDD	Dichlorodiphenyldichloroethane
DDE	4,4-dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DHS	California Department of Health Service
DOE	U.S. Department of Energy
dpm	Disintegrations per Minute

DQOs	Data Quality Objectives
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
Ex	Exploratory Trench
FEMA	Federal Emergency Management Administration
FS	Feasibility Study
FY97	Fiscal Year 1997
g/cc	Grams per Cubic Centimeter
GM	Geiger-Muller
GPR	Ground-Penetrating Radar
HEPA	High-efficiency Particulate Air
HSUs	Hydrostratigraphic Units
IDW	Investigative Derived Wastes
ITEH	Institute of Toxicology and Environmental Health
IVC	DOE Independent Verification Contractor
K-40	Potassium-40
LAS	Lockheed Analytical Services
LEHR	Laboratory for Energy-Related Health Research
LFI	Limited Field Investigation
mCi	MilliCuries
MCL	Maximum Contaminant Level
mg/kg	Milligrams per Kilogram
NaI	Sodium Iodide
ND	Non-Detect
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
OUs	Operable Units
PAHs	Polynuclear Aromatic Hydrocarbons
PARCC	Precision, Accuracy, Representativeness, Comparability, Completeness
Pb-212	Lead-212
Pb-214	Lead-214
PCBs	Polychlorinated Biphenyls
PCD	Putah Creek Downstream
pCi/g	Picocuries per Gram
pCi/L	Picocuries per Liter
PCU	Putah Creek Upstream

PID	Photoionization Detector
PNNL	Pacific Northwest National Laboratory
ppm	Parts per million
PRGs	Preliminary Remediation Goals
Pu-241	Plutonium-241
PVC	Polyvinylchloride
Ra-226	Radium-226
RAGs	Risk Assessment Guidance for Superfund
RCRA	Resources Conservation and Recovery Act
RI/FS-EA	Remedial Investigation, Feasibility Study, and Environmental Assessment
SARA	Superfund Amendments and Reauthorization Act Of 1986
SCIN	Scintillator
Sr-90	Strontium-90
SSR	Specimen Storage Room
STPO	Sewage Treatment Plant Outfall
SVOCs	Semivolatile Organic Compounds
TC	Toxicity Characteristic
TCLP	TC Leaching Procedure
TDS	Total Dissolved Solids
Th-232	Thorium-232
Th-228	Thorium-228
Tl-208	Thallium-208
TLDs	Thermoluminescent Dosimeters
TPHRL	Toxic Pollutant Health Research Laboratory
U-235	Uranium-235
UC Davis	University of California at Davis
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

This report presents the results of the Limited Field Investigation (LFI) conducted during July and August 1996 and the Data Gaps Investigation conducted in June 1997, and summarizes all other environmental characterization and restoration activities conducted at the former Laboratory for Energy-Related Health Research (LEHR) at the University of California at Davis (UC Davis).

The Atomic Energy Commission (AEC, now US Department of Energy, or DOE) began conducting radiological studies on laboratory animals, particularly beagles, at UC Davis in the early 1950s. Initial studies were carried out on the main campus; and the former LEHR Facility began operating in its present location in 1958 when full-scale experimental use of radioactive materials began. The LEHR Site occupies approximately 15 acres in the southeast portion of the UC Davis campus. DOE research at LEHR through the mid-1980s focused on the health effects from chronic exposure to radionuclides, primarily strontium-90 (Sr-90) and radium-226 (Ra-226). From the 1940s through the mid-1960s, parts of the LEHR Site were also used as the UC Davis campus landfill. DOE recently decontaminated and decommissioned most of the LEHR buildings and has removed the dog pens. The Site is presently occupied by the UC Davis Institute of Toxicology and Environmental Health (ITEH).

On May 31, 1994, the LEHR Site was listed on the U.S. Environmental Protection Agency's (EPA's) National Priorities List (NPL), and in September 1994, a Remedial Investigation, Feasibility Study, and Environmental Assessment (RI/FS-EA) Work Plan addressing the entire LEHR Site was submitted (Dames & Moore, 1994a). For the purposes of environmental characterization, the LEHR Site was divided into six Operable Units (OUs). OU-1 includes five disposal areas: the Southwest Trenches Area and DOE Disposal Box, which were used by DOE; and, the Southern Disposal Trenches, Eastern Disposal Trenches, and 49 Waste Holes, which were used by UC Davis. OU-2 through OU-4 are facilities formerly used by DOE: the Radium and Strontium Leach Systems (OU-2); the Dog Pens Area (OU-3); and, the Domestic Septic Systems (OU-4). OU-5 comprises landfills formerly used by UC Davis, and OU-6 is shallow ground water and surface water beneath and adjacent to the Site.

The primary objective of the LFI and subsequent Data Gaps Investigations in June 1997 was to collect the data necessary to evaluate if potential sources associated with the Southwest Trenches (OU-1), Radium and Strontium Leach Systems (OU-2), and Domestic Septic Tanks (OU-4) pose an unacceptable threat to human health and the environment. These data are primarily radiological and chemical analytic results for vadose zone soil samples, but also include field observations, soil physical property measurements, and geophysical logs. This report presents and evaluates all of the LFI data on a source by source basis, focusing on the most significant findings in each of the investigative areas.

In addition, all Dog Pens data collected since the RI/FS-EA Work Plan was submitted, and data from the 1994 background soil investigation conducted by Dames & Moore are presented and evaluated. The report also summarizes data collected prior to the RI/FS-EA Work Plan in each of the DOE investigative areas. Vadose zone investigations in the remainder of the Site, as well as ground and surface water data, are also summarized, and implications regarding ground water impact are discussed. Finally, the adequacy of all the data collected in the DOE investigative areas for proceeding with an Engineering Evaluation/Cost Analysis (EE/CA) is evaluated and any additional data needs are identified.

Based on the results of the LFI, Data Gaps Investigation, and previous investigations in the DOE areas the following general conclusions are drawn:

- DOE activities in the areas investigated in the LFI appear to have had limited, if any, impact on ground water;
- Contaminants in the vadose zone associated with DOE activities include radium-226, strontium-90, cesium-137, carbon-14, polynuclear aromatic hydrocarbons (PAHs), chlordane, hexavalent chromium, and nitrate; and,
- The nature and extent of the contamination in the DOE areas are defined sufficiently to proceed with the EE/CA, with the exception of:
  - a) some additional background soil data are needed;
  - b) the dog pens need to be further investigated; and,
  - c) the impact of surface run-off on the storm water ditch soil west of the LEHR Site need to be investigated further.

Additional investigations to collect more background soil data, to further characterize the Western Dog Pens, and to assess the impact of surface run-off on off-site storm water ditch soils are currently underway, and results should be available by March 1998.

1. INTRODUCTION

This report presents the results of the Limited Field Investigation (LFI) conducted during July and August 1996 and the Data Gaps Investigation conducted in June 1997, and summarizes all other environmental characterization and restoration activities conducted at the former Laboratory for Energy-Related Health Research (LEHR) at the University of California at Davis (UC Davis) (Figure 1-1).

On May 31, 1994, the LEHR Site was listed on the United States Environmental Protection Agency's (EPA's) National Priorities List (NPL). In September 1994, a draft Remedial Investigation, Feasibility Study and Environmental Assessment (RI/FS-EA) Work Plan was issued (Dames & Moore, 1994a). Therefore, the LFI and Data Gaps Investigation were conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

For the purposes of environmental characterization and remediation, the LEHR Site has been divided into six Operable Units (OUs) (Figure 1-2). As discussed further in Section 2.5, three of these OUs are facilities or disposal areas used by the U.S. Department of Energy (DOE), one comprises landfills formerly used by UC Davis for disposal of campus wastes, one includes both DOE and UC Davis disposal areas, and the other is shallow ground water and surface water beneath and adjacent to the Site. As discussed in Section 2.5, DOE and UC Davis have developed an agreement to allocate responsibility for environmental restoration of the OUs at the LEHR Site. Because at least one OU includes several distinct areas, some used in the past by DOE and some by UC Davis, this report discusses the Site by investigative area rather than by OU. Table 1-1 describes the investigative areas within each OU.

Table 1-1. Summary of Operable Units

Operable Unit	Investigative Area	Description
OU-1	Southwest Trenches	Disposal trenches and chemical dispensing area in the southwest corner of the LEHR Site.
OU-1	DOE Disposal Box	Subsurface disposal area defined by metal matting located between the two sets of dog pens.
OU-1	Southern Solid Waste Trenches	Trenches located along the south side of the Western Dog Pens.
OU-1	Eastern Solid Waste Trenches	Trenches located between Landfills Nos. 1 and 2.
OU-1	49 Waste Holes	Pits located along the south side of the Eastern Dog Pens

Table 1-1. Summary of Operable Units (continued)

Operable Unit	Investigative Area	Description
OU-2	Radium Treatment System	Radium-226 treatment tank and the associated leach field and dry wells.
OU-2	Strontium Treatment System	Strontium-90 treatment tanks and associated leach system.
OU-3	Dog Pens Area	Western set of dog pens, including the southern portion of the area currently occupied by the Cellular Biology Lab. The Eastern Dog Pens and North Chemical Dispensing Area are also included.
OU-4	Domestic Septic Systems	Seven domestic septic tanks at LEHR.
OU-5	Landfill Disposal Units	Three UC Davis landfill units.
OU-6	Ground Water	Ground water beneath LEHR.
OU-6	Surface Water	Surface water (includes Putah Creek and storm water runoff).

1.1 Objectives and Scope

As stated in the LFI Work Plan, the primary objective of the LFI was to collect the data necessary to evaluate if potential sources associated with the Southwest Trenches (OU-1), Radium and Strontium Leach Systems (OU-2), and Domestic Septic Tanks (OU-4) (Figure 1-2) pose an unacceptable threat to ground water (IT Corporation, 1996). The Work Plan proposed radiological and chemical analyses of soil samples to provide those data. In addition to the proposed soil analyses, borehole geophysical logging and soil physical properties testing was also conducted. A vadose zone model incorporating the LFI data has been developed and used to assess the potential for ground water impact.

In addition to the three DOE investigative areas covered by the LFI, this report also addresses the DOE Dog Pens Area (OU-3). In addition to assessing the threat to ground water, the LFI and Data Gaps Investigation data, background soil data, and other previously collected data have been used to determine action standards and to evaluate and select remedial actions in accordance with U.S. EPA guidance, including the Risk Assessment Guidance for Superfund (RAGs) and Guidance for Conducting Feasibility Studies (FS) under CERCLA (U.S. EPA, 1988, 1989). The data have been used in these evaluations to: 1) assess the nature and extent of impact associated with each source; 2) evaluate potential contaminant migration pathways; and, 3) compare no action, removal, and possibly other remedial alternatives for each source area based on technical, economic, and environmental considerations. The “Draft Final Determination of Risk-Based Action Standards for DOE Areas” (WA, 1997a) has been completed and the “Engineering Evaluation/Cost Analysis (EE/CA) for the Southwest Trenches, Radium-226/Strontium-90 (Ra/Sr) Treatment Systems, and Domestic Septic System Areas” is in progress. An EE/CA for the Western Dog Pens will be prepared in 1998.

Figure 1-3 illustrates this report in the context of the overall CERCLA process. As shown, this report is a key building block supporting fiscal year 1997 and 1998 (FY97 and FY98) activities including calculating risk-based action standards, vadose zone modeling and removal actions.

The data collected during the LFI are presented on a source by source basis, focusing on the most significant findings in each of the investigative areas. In addition, data from the 1994 background soil investigation conducted by Dames & Moore are presented and discussed. The report also summarizes all data collected prior to the LFI in each of the DOE investigative areas. Vadose zone investigations for the remainder of the Site, as well as ground and surface water data, are also summarized, and implications regarding ground water impact are discussed. Finally, the adequacy of all the data collected in the DOE investigative areas for making removal action decisions is evaluated and any additional data needs are identified.

1.2 Report Organization

This report consists of 8 sections, including this Introduction. Section 2 describes the LEHR Facility, its history of operations, and its physical setting. Section 2 also explains the rationale for dividing the Site into six Operable Units (OUs), and the party responsible for characterization and environmental restoration of each OU. Section 3 summarizes all past investigations, including OU-specific soil and water investigations and site-wide ground and surface water, storm water, air and biota investigations. Section 4 briefly describes all remedial actions to date, including building decontamination and decommissioning (D&D) and waste removal.

Section 5 presents details of the LFI and Data Gaps Investigation, including field observations and measurements and laboratory analytical data. Section 6 presents an evaluation of the data for each OU, focusing on the adequacy of the data for conducting an engineering evaluation/cost analysis (EE/CA) in compliance with CERCLA guidance. Section 6 also presents preliminary conclusions regarding potential contaminant sources, the nature and extent of contamination, and identifies the areas most significantly impacted. Section 7 summarizes the conclusions from Section 6 and provides recommendations for additional work. Section 8 is the list of references cited.

The report appendices (A-K): 1) summarize the LEHR Site hydrology; 2) tabulate all LFI, recent Dog Pen, and recent background analytical data; and, 3) present detailed information from the LFI. Appendices A through C present figures and tables from previous investigations and Appendices D through J contain LFI data, including a sample collection data log, photographs, radiation survey data, soil boring and geophysical logs, analytic data tables, and the geotechnical data laboratory report. Appendix K presents responses to regulatory agency comments on the “Draft Final Site Characterization Summary Report” (WA, 1997b).

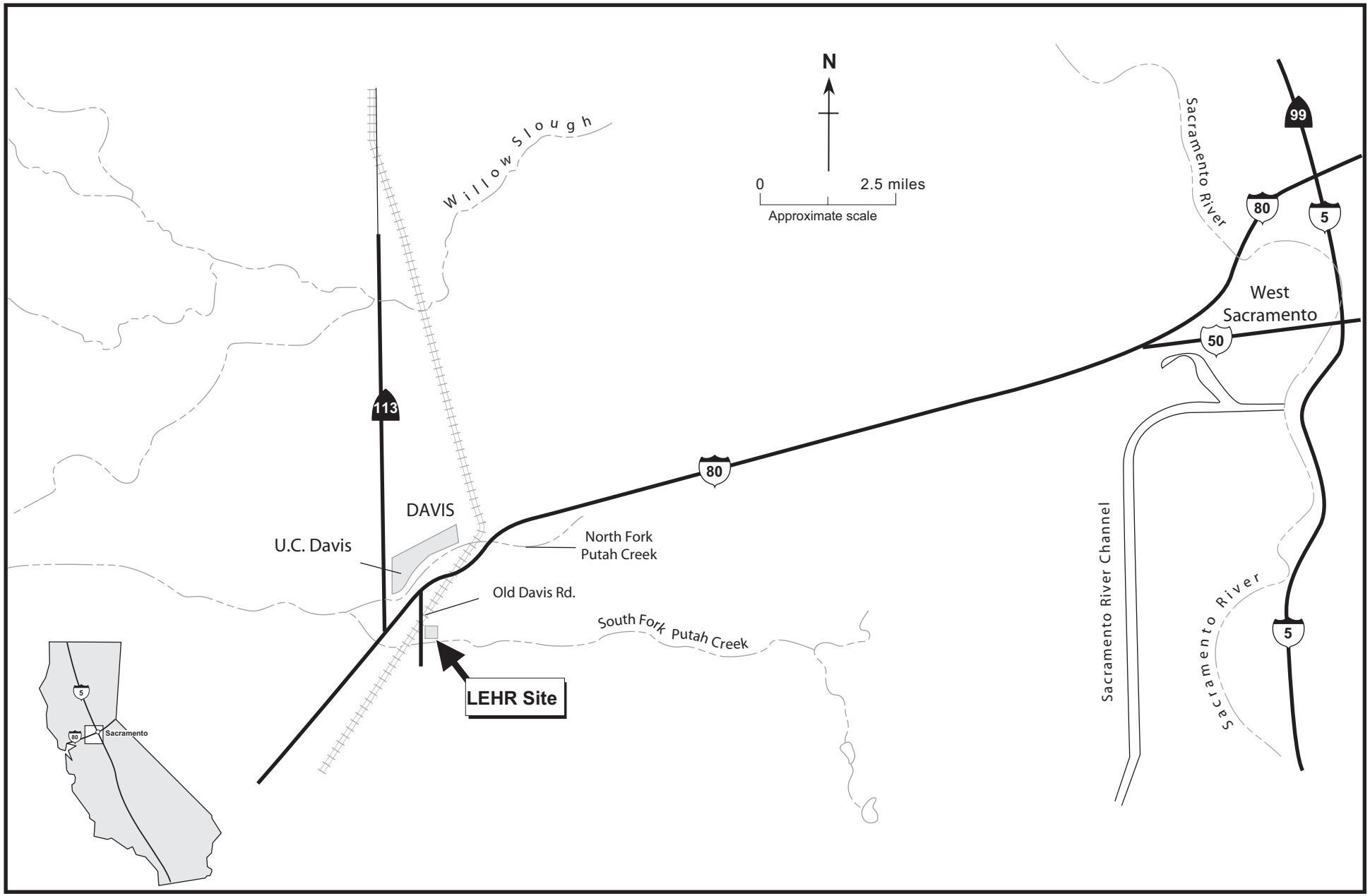

Figure 1-1. LEHR Site Location Map

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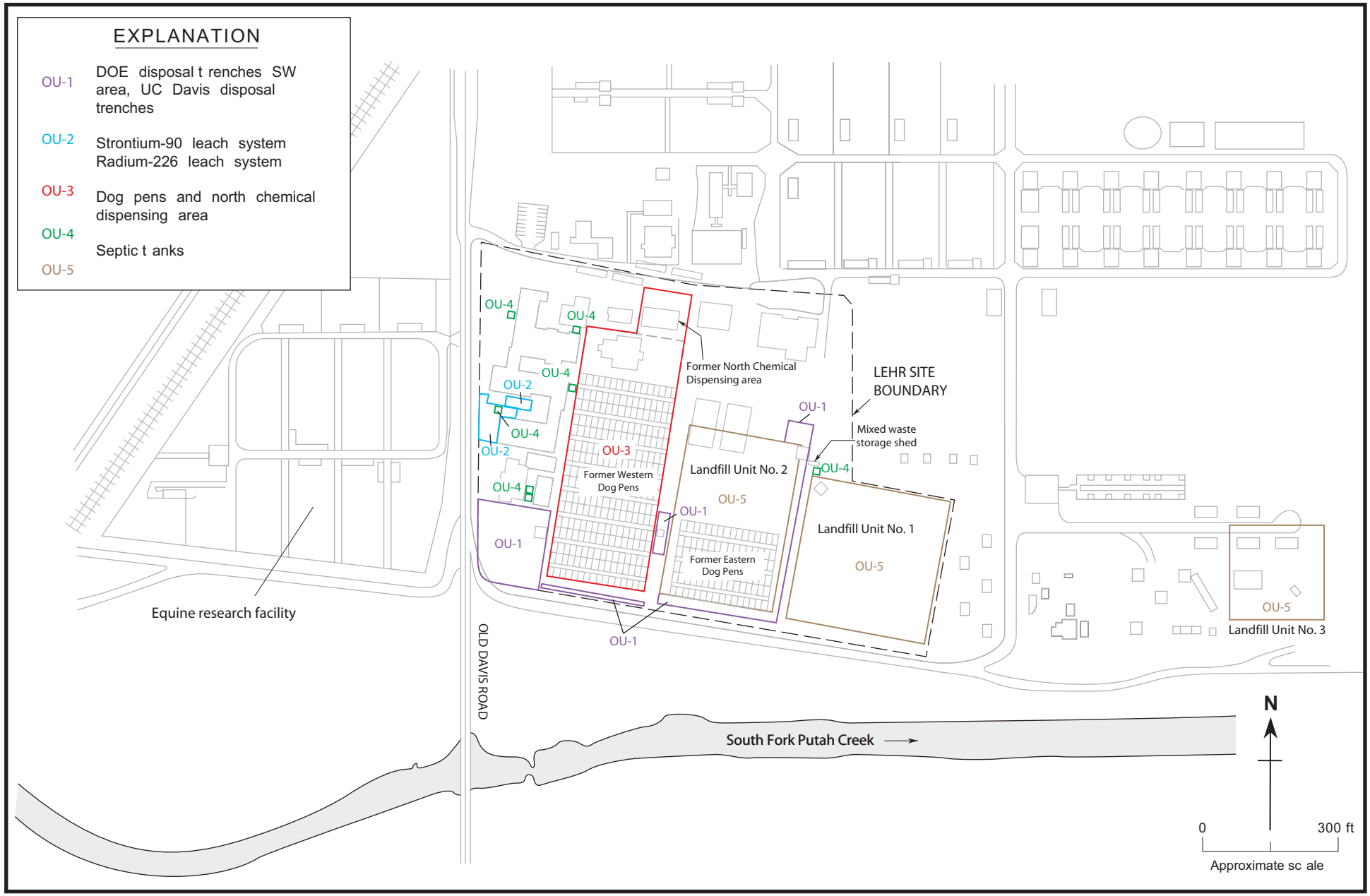

Figure 1-2. LEHR Operable Unit Locations

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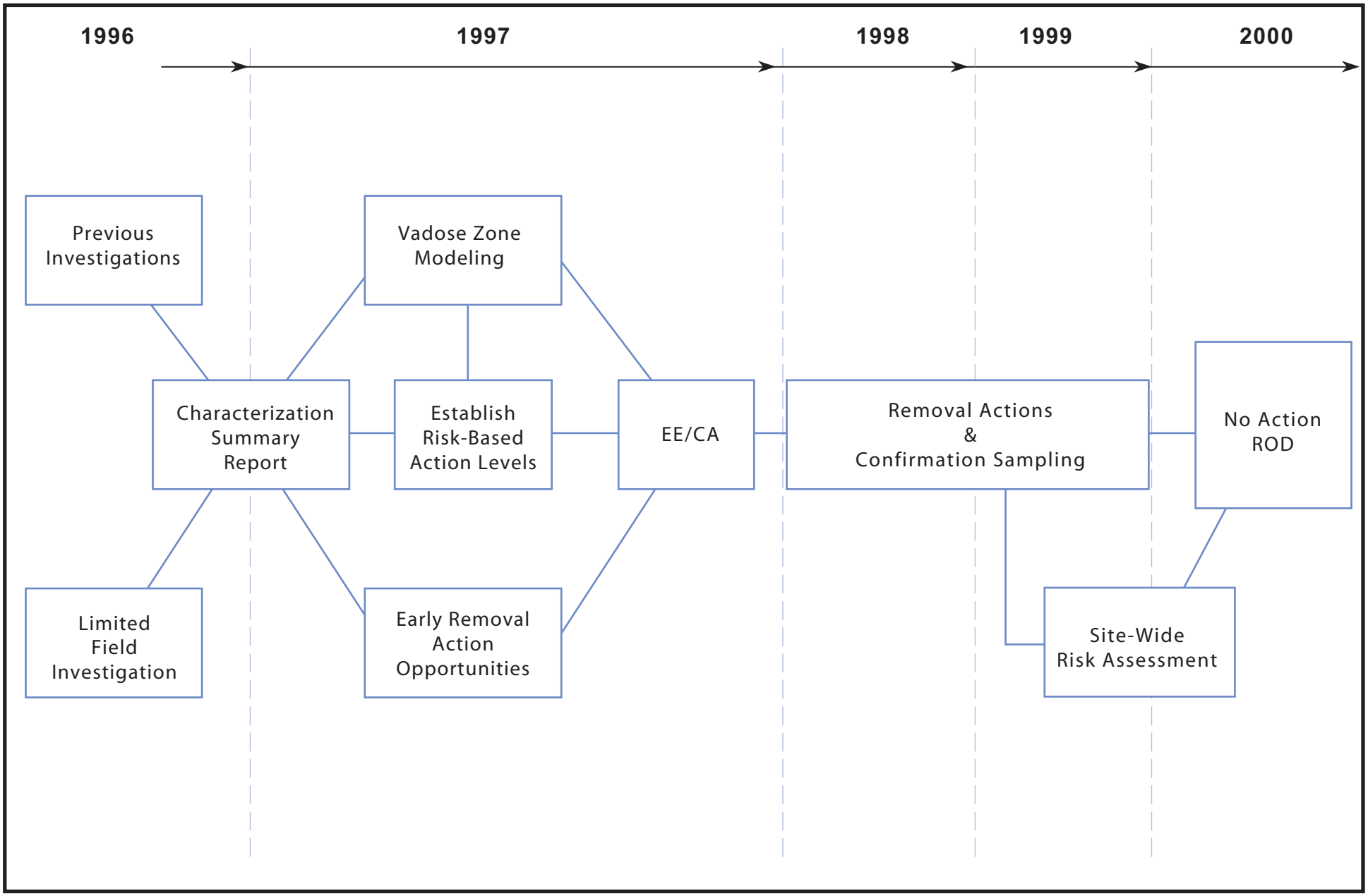

Figure 1-3. The Accelerated CERCLA Process as Planned for the Site

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2. SITE DESCRIPTION AND SETTING

This chapter presents a brief site description, history of operations, and physical setting of the LEHR Site, focusing on DOE activities and areas at the Site. More detailed information can be found in other reports, including the RI/FS-EA Work Plan (Dames & Moore, 1994a). The Site location, description and history of operations are described in Sections 2.1 and 2.2, respectively. The Site's physical setting, including meteorology, is described in Section 2.3. Environmental and cultural resources are discussed in Section 2.4. The division of responsibility for environmental investigation and remediation of the six OUs at the LEHR Site is discussed in Section 2.5.

2.1 Site Location and Description

The LEHR Site is located in Solano County, California, in the southeast quarter of Section 21, Township 8 North, Range 2 East, Mount Diablo Base and Meridian. It is approximately 1.5 miles south of the town of Davis (see Figure 2-1), and occupies the southeast portion of the UC Davis campus. The Site is bounded by University research facilities, private farmland, and the South Fork of Putah Creek. The southern boundary of the LEHR Site is the northern levee of the South Fork of Putah Creek.

The LEHR Site covers approximately 15 acres and contains laboratory buildings and former animal-handling facilities that were used by DOE. Figure 2-2 shows the spatial distribution of buildings at the LEHR Site. Of the 15 acres, approximately 40 percent is paved or covered by structures. Approximately 30 percent is unpaved and relatively free of vegetation. Five percent is covered by large, deep-rooted vegetation. Outdoor dog pens occupied approximately 20 percent, or 3 acres, of the LEHR Site. The land is owned by the Regents of the University of California and was leased to the United States Department of Energy (DOE) through 1989. DOE still owns the buildings on-site.

The LEHR Site also contains inactive landfills and other disposal areas (see Figure 1-2). UC Davis Landfills were located on-site until 1967, including Landfill Disposal Unit 1, used from the 1940s through the late 1950s or early 1960s, and Landfill Disposal Unit 2, used from 1956 through 1967. A third UC Davis landfill, Disposal Unit 3, is located approximately 600 ft east of the LEHR Site and was used from 1963 to 1967. The Site contains numerous other inactive disposal trenches and holes formerly used by UC Davis and DOE.

2.2 History of Operations

The Atomic Energy Commission (AEC, now DOE) began conducting radiological studies on laboratory animals, particularly beagles, in the early 1950s. Initial studies were carried out on the main campus and involved the irradiation of beagles. The LEHR Site began operating in its present location in 1958 when full-scale experimental use of radioactive materials began. Research at LEHR through the mid-1980s focused on the health effects from chronic exposure to radionuclides, primarily strontium-90 (Sr-90) and radium-226 (Ra-226). In the early 1970s, a cobalt-60 (Co-60) irradiator facility was constructed at the LEHR Site to study the effects of chronic exposure to gamma rays on bone marrow cells of beagles. In 1975, the DOE initiated a program at the LEHR Site to study the potential health effects of combustion products from fossil fuel power plants. In 1983, the Toxic Pollutant Health Research Laboratory (TPHRL) became operative at the LEHR Site. The Site is presently occupied by the UC Davis Institute of Toxicology and Environmental Health (ITEH).

From the 1940s through the mid-1960s, portions of the LEHR Site were used as the UC Davis campus landfill. Burial holes and trenches around the landfills were used for disposal of low-level radioactive and mixed waste from UC Davis and LEHR research activities. Figure 1-2 shows the locations of the three UC Davis landfills and other waste disposal areas.

2.3 Physical Setting

The LEHR Site is located in a rural area in the Sacramento Valley. The land within a one-mile radius of the Site is owned both privately and by UC Davis, and is used for animal research, agriculture, and recreation. Immediately adjacent to the LEHR Site to the east and west are UC Davis-owned research facilities. Privately-owned lands within one mile to the south and east of the Site include permanent residences and support some crops. Approximately 75 percent of the surrounding land in the general vicinity of the LEHR Site is used for agriculture. Major crops include fruits, nuts, and grains. Approximately 40 percent of the agricultural land in the LEHR vicinity is irrigated, and some of the nearby lands are used for cattle grazing (DOE, 1988).

2.3.1 Topography and Drainage

The LEHR Site is situated on gently sloping land, with an average elevation of approximately 50 ft above mean sea level. The land surface slopes to the east/northeast at approximately 0.001 ft/linear ft (5 ft per mile). Relief across the Site is approximately 2 ft.

Drainage in the western portions of the LEHR Site is to the south-southwest. Storm water from the paved area west of the dog pens and in the south and southwest area of the Site, including both the Radium and Strontium Treatment System area and the Southwest Trenches, is collected in a storm water drainage system. The storm water is routed to the LEHR Site storm water lift station and discharged to unlined ditches which flow into Putah Creek. Storm water in the eastern portion of the

LEHR Site, where the landfills and other UC Davis disposal units are located, generally percolates into the soil.

2.3.2 Geology

The LEHR Site and vicinity are in the Putah Plain of the Sacramento Valley (DWR, 1978). This surface consists of alluvial fan deposits associated with Putah Creek. These alluvial sediments consist primarily of silt and clay with localized interfingered coarse-grained sediments and are approximately 180 ft thick (DWR, 1978). Beneath the LEHR Site, the sediments are flat-lying and conformably overlie the Tehama Formation, the principal water-bearing geologic unit on the west side of the Sacramento Valley.

The surface soils at the LEHR Site have been mapped as Reiff fine sandy loam in the Survey of Solano County, California (USDA, 1977). These soils are relatively young and weakly developed. The "A" horizons are relatively thick and organic-rich, and; therefore, ideal for agriculture (USDA, 1977).

The deepest boring drilled for the LEHR Site Investigations, UCD4-33, was completed in Quaternary Alluvium at a depth of approximately 290 ft below ground surface (bgs). No other formal geologic formations have been identified at the Site (Dames & Moore, 1994a). The depths and types of major sedimentary units encountered in boreholes beneath the Site are described below from youngest to oldest. Some of the units contain gradational sequences or more than one lithology. The units appear to be relatively flat-lying (Dames & Moore, 1994a).

- <u>0 to 80 ft: interbedded silt, clay and sand with some sand and gravel channel deposits.</u> The surficial soils are underlain by a sequence of interbedded clay, silty clay, silt, and sand. This fine-grained interval fairly continuous across the Site and contains some coarse sand and gravel. The ground water table is found in this stratigraphic unit and varies in depth from approximately 30 to 65 ft bgs, depending on the season.
- <u>80 to 135 ft: cobbles and gravels.</u> Well-rounded cobbles and gravels are encountered at approximately 80 ft bgs and appear to be laterally continuous beneath most of the LEHR Site. Where present, this unit is approximately 35 to 52 ft thick.
- <u>135 to 250 ft: interbedded clay, silt and sand with some channel deposits.</u> The top of this clayey unit was encountered at depths ranging from 120 to 137 ft bgs (Dames & Moore, 1994). The only investigation borings deep enough to intercept the bottom of this unit, at approximately 250 ft bgs, are located east of the LEHR Site.
- <u>250 to 340 ft: cobbles and gravels.</u> This unit has only been intercepted by four investigation borings and several water supply wells located east of the LEHR Site.

2.3.3 Hydrogeology

Unconsolidated Pliocene and Pleistocene deposits are the major ground water sources for public and private water supplies in the Sacramento Valley (DWR, 1978). Both unconfined and confined fresh water aquifers are present in these sedimentary deposits in the uppermost 3,000 ft of the valley subsurface. Ground water generally flows from the valley sides towards the valley axis. In the vicinity of the LEHR Site, regional ground water generally flows east from the Coast Ranges towards the Sacramento River (Dames & Moore, 1990).

At various depths beneath the valley floor, fresh water gives way to saline water as a result of entrapment during the deposition of sediments in a marine environment. The depth to the base of fresh water in the Sacramento Valley varies from 400 ft to over 3,000 ft, and is 2,600 to 3,100 ft bgs at Davis (California Department of Oil & Gas, 1982).

The uppermost distinct aquifer beneath the LEHR Site has been divided into two hydrostratigraphic units (HSUs), based on the stratigraphy of the sediments at the Site, and the associated ground water flow and contaminant migration characteristics (Dames & Moore, 1994). HSU-1 consists predominantly of fine-grained sediments and extends from the water table down to approximately 80 ft bgs. HSU-2 consists of cobbles and gravel and extends from 80 to 135 ft bgs. Well drillers' logs indicate that a 90-foot-thick clay unit separates HSU-2 from a second aquifer (or third HSU) below (Dames & Moore, 1994a).

Ground water levels in 1996 varied from approximately 28 ft bgs in winter to 42 ft bgs in summer (WA, 1997c). Generally, there is a 20- to 30-ft seasonal fluctuation in the depth-to-ground water beneath the LEHR Site (Appendix A) caused predominantly by the lack of surface recharge and agricultural pumping in the summer. Vertical ground water gradients have been observed to vary from an upward gradient of 0.075 ft/ft at UCD1-13/UCD2-14 to a downward gradient of 0.01 ft/ft at UCD1-01/UCD2-16 (1995). Vertical gradients vary both temporally and spatially. The magnitude of the vertical gradient is greatest when ground water elevations are rising or falling sharply. Short-term activities such as local agricultural pumping can produce downward vertical gradients during periods of an otherwise rising water table.

Appendix A presents typical ground water contour maps constructed using water elevations from wells screened in HSU-1. These maps show that the HSU-1 lateral gradient across the LEHR Site varies significantly, from approximately 0.0004 to 0.04 ft/ft, and that the direction of ground water flow is predominantly northeast. Representative values of HSU-1 horizontal hydraulic conductivity from slug tests (Appendix A) are approximately 5×10^{-4} centimeters per second (cm/sec). Appendix A also presents typical ground water contour maps constructed using water elevations from wells screened in HSU-2. These maps show that the lateral gradient across the Site within HSU-2 typically ranges from 0.0006 ft/ft to 0.015 ft/ft. The direction of flow appears to be predominantly northeast, although it can occasionally be east-southeast. Horizontal hydraulic conductivities from slug tests (Appendix A) are approximately 1×10^{-2} cm/sec in HSU-2.

As discussed in Section 3.4.1, only ground water in HSU-1 and HSU-2 has been significantly impacted by site activities. Based on investigations to date, and as discussed further in Section 3, the only significant ground water impact appears to be related to UC Davis disposal areas.

2.3.4 Surface Water

The east-flowing South Fork of Putah Creek borders the southern portion of the LEHR Site and is separated from the Site by the north levee of the creek. In 1948, the U.S. Army Corps of Engineers modified the South Fork and dammed the North Fork, so that all water in Putah Creek now flows in the South Fork. Putah Creek is a "losing" stream in the LEHR vicinity. Therefore, Putah Creek water may impact shallow ground water beneath the Site, but not vice-versa.

Flow in the South Fork of Putah Creek is regulated by releases from Monticello Dam at Lake Berryessa and from the Putah Diversion Dam, located approximately 18 and 14 miles west of the LEHR Site, respectively. Based on data from 1980 through 1991, flows several miles upstream from the LEHR Site typically range from 0.1 cubic ft per second (cfs) to approximately 3 cfs, although flows as high as 15,500 cfs (in March 1983) have been reported (Dames & Moore, 1994a). In the reach bordering the LEHR Site, flow in the South Fork of Putah Creek is supplemented by discharge from the UC Davis Wastewater Treatment Plant (Figure 2-1). Based on data from the gauge near Old Davis Road, flow rates for the reach bordering the LEHR Site ranged from 0.17 to 148 cfs from 1989 to 1993. Flows have not changed substantially since 1993 (personal communication, 1996, Roland Sanford, Solano County Water Resources Agency).

As shown on federal flood maps, the 100-year flood is confined within the Putah Creek levees at the southern boundary of the LEHR Site. The LEHR Site lies in the Federal Emergency Management Administration (FEMA) Zone C, the area expected to experience minimal flooding.

2.3.5 Meteorology

The climate in the Davis region is temperate, with mild winters and long warm summers. In winter, the average temperature is 46.9 degrees Fahrenheit (ºF), and the average daily minimum temperature is 37.6ºF. In summer, the average temperature is 73.0ºF, and the average daily maximum temperature is 92.3ºF (NOAA, 1985; DOE, 1988). For the period 1908 through 1990, the mean annual precipitation at the Davis 2 WSW station, approximately 2 miles northwest of the LEHR Site, was 17.0 inches. For the period 1993 through 1996, annual rainfall averaged 18 inches. Most of this rainfall occurs between October and April (National Climatic Data Center, 1992). The average daily relative humidity is approximately 80 percent in the winter, and 40 percent in the summer and early fall.

The sun shines approximately 95 percent of the time in summer and approximately 45 percent in winter. A temperature inversion occurs frequently throughout the year in the LEHR Site area. Mean annual morning mixing heights at the LEHR Site area are approximately 1,300 ft; mean

annual afternoon mixing heights are approximately 4,600 ft (Holzworth, 1972). In winter and spring, winds blow both from the north and from the south at approximately 4.5 and 4 miles per hour, respectively. In the summer, predominant winds are from the south at approximately 4 miles per hour. In the fall, winds are mostly from the north at approximately 3.1 miles per hour (California Air Resources Board, 1984).

2.4 Environmental and Cultural Resources

The riparian areas of the Putah Plain serve as a critical wildlife habitat for a number of special status plants and animals, including Swainson's hawk, the giant garter snake, and valley oak. Although there are no streams, wetlands or vernal pools on the LEHR Site, Putah Creek is an adjacent high-quality riparian habitat that provides important nesting and foraging areas for raptors, deer, and other wildlife. Because Putah Creek is a losing stream in the reach bordering LEHR, ground water beneath the Site does not influence or discharge to the creek. Because winds generally blow from the south during the dry season, significant impact to the creek by windblown soil from LEHR is also unlikely. Storm water runoff from the west and south parts of the Site could potentially impact the creek, however.

Table 2-1 presents a list of special status species known to be associated with the resources of Putah Creek near the LEHR Site.

Table 2.1. Special Status Species Near Putah Creek

Taxa	Listing Status:		
	Federal	State	Other
Quercus Lobata			CNPS
Valley oak			
Desmocerus californicus dimorphus			
Valley elderberry longhorn beetle	T		
Thamnophis gigas			
Giant garter snake	T	T	
Pelecanus erythrorhynchos			
American white pelican			SSC
Casmerodus albus			
Great egret		TDH	
Buteo swainsoni			
Swainson’s hawk		T	
Circus cyaneus			
Northern harrier			SSC
Agelaius tricolor			
Tricolored blackbird	C-2		SSC
Plegadis chihi			
White-faced ibis	C-2		SSC
Numenius americanus			
Long-billed curlew	C-2		SSC

Table 2.1. Special Status Species Near Putah Creek (continued)

Taxa	Listing Status:		
	Federal	State	Other
Grus canadensis tabida Greater sandhill crane		T	

Status Codes:

CNPS = California Native Plant Society, List 4
T = Threatened
SSC = California Natural Diversity Database (CDFG) Species of Special Concern
TDH = Taxa associated with habitat that is declining in California at an alarming rate
C-2 = Category 2 Candidate for Federal listing

A California Environmental Quality Act (CEQA) Preliminary Study for Site Characterization of the UC Davis Landfill was prepared for the UC Davis in February 1990. The study concluded that: "Although minor impacts were disclosed in the Environmental Checklist process, all impacts were temporary, consistent with existing land use and less than significant."

Although the LEHR Site is in Solano County, most of the nearby population is found in Yolo County, where UC Davis and the town of Davis are located. UC Davis has a student population of approximately 22,000 and employs approximately 15,000 full-time faculty and staff. The current population of the town of Davis is approximately 53,000 and the current total population of Yolo County is approximately 150,000. There are only a few family residences within one mile of the LEHR Facility.

2.5 Environmental Restoration Responsibility

Based on historical use, DOE and UC Davis have developed a Memorandum of Agreement (MOA) to allocate responsibility for environmental restoration of the LEHR Superfund site (DOE, 1997). Under this agreement DOE is responsible for environmental restoration of the former “LEHR Facility”, which means the area within the fenceline consisting exclusively of: the DOE buildings; the Southwest Trenches (OU-1, see Table 1-1); the Dog Pens and associated gravels (OU-3); the strontium-90 and radium-226 treatment systems (OU-2); the seven domestic septic tanks (OU-4); and, the DOE disposal box (OU-1) (Figure 1-2). UC Davis is responsible for environmental restoration of areas including but not limited to: Landfill Disposal Units 1, 2 and 3; the 49 waste holes; the UC Davis disposal trenches; ground water; and Putah Creek.

Therefore, DOE is decontaminating and decommissioning (D&D) all DOE buildings, and will characterize and if necessary close, remove, or by other means remediate the other areas of the former “LEHR Facility” listed above. UC Davis will characterize and, if necessary, remediate the disposal areas listed above. UC Davis is also responsible for ground water remediation.

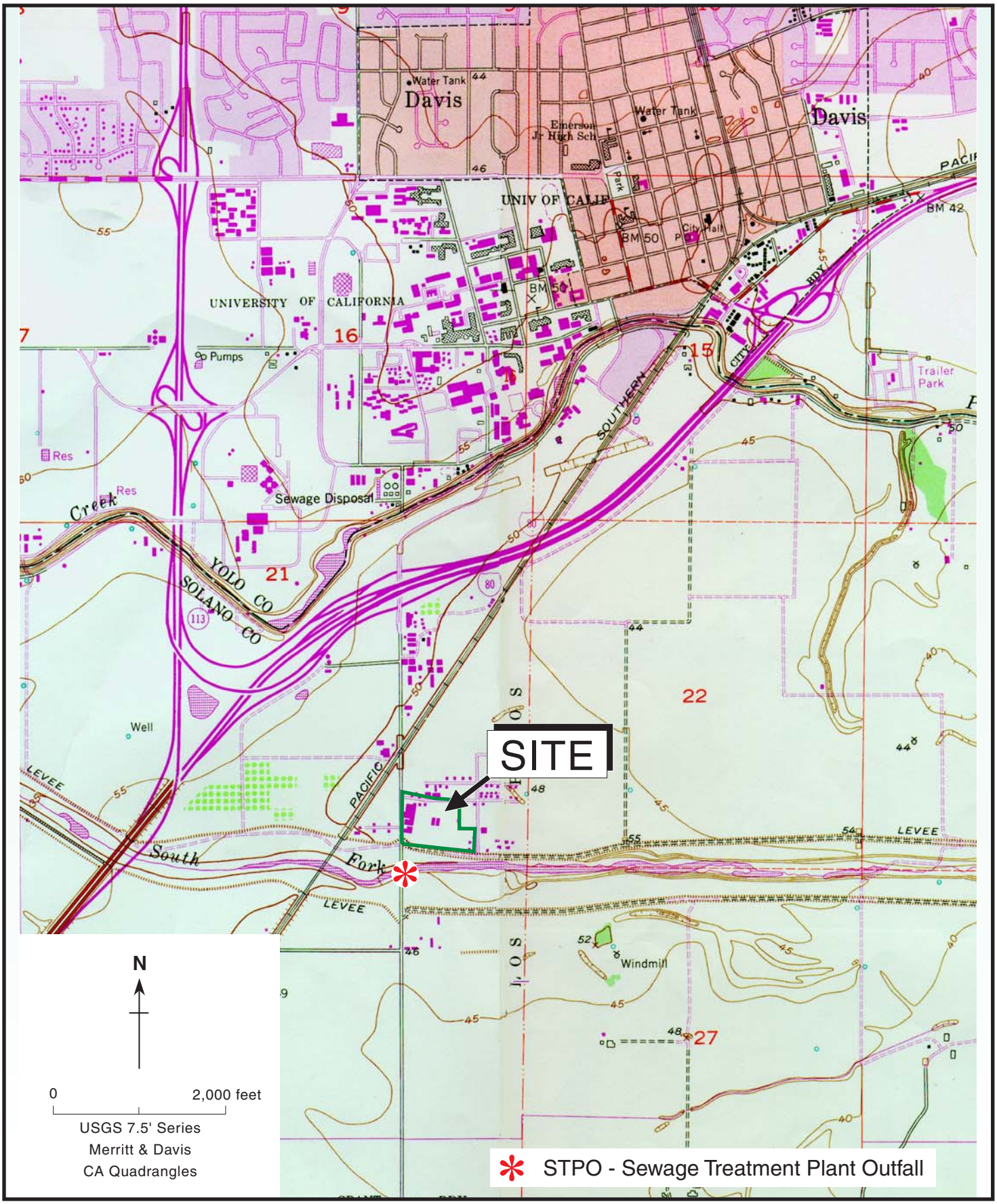

Figure 2-1. Site Vicinity Map

Weiss Associates

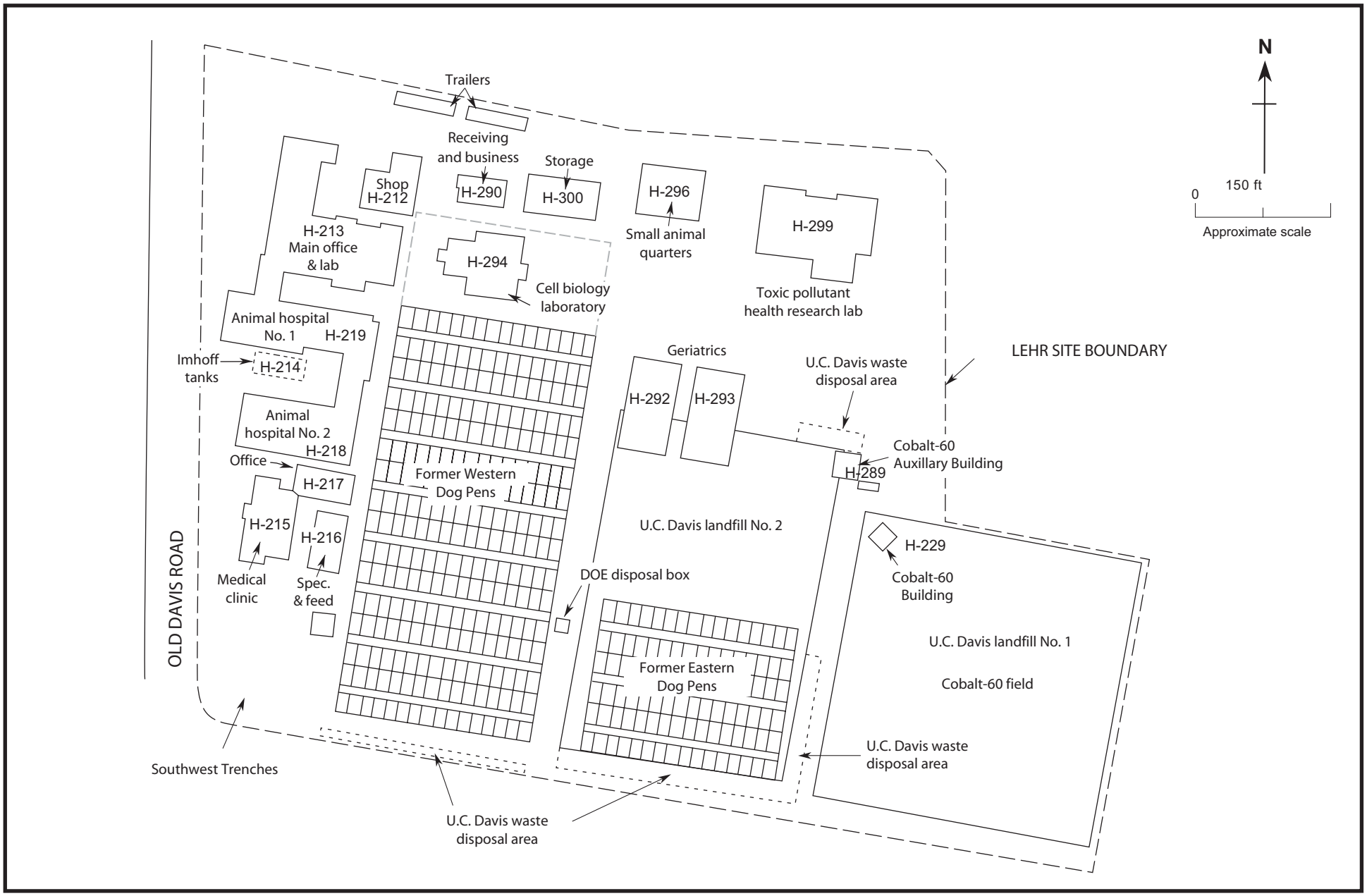

Figure 2-2. Site Structures and Features

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3. PREVIOUS INVESTIGATIONS

This section summarizes the previous environmental investigations conducted at the LEHR Site that formed the basis for the LFI Investigation. Section 3.1 describes investigations to determine local background levels for metals, radionuclides and other compounds in soil and ground water. Section 3.2 presents results of previous investigations in the DOE areas, and Section 3.3 summarizes investigations in the UC Davis areas. Section 3.4 summarizes other site investigations, including surface and ground water, storm water runoff, air, and ambient radiation monitoring.

Many of the data discussed in this section were collected prior to the issuance of the RI/FS-EA Work Plan in September 1994, and may not have been collected in full compliance with CERCLA standards. Data from before the Phase II Investigation were collected to screen for contamination; therefore, these results are considered to be only qualitative. Dog pen data from 1996 were collected primarily for health and safety rather than for characterization purposes. Therefore, the LFI, Data Gaps Investigation, and 1994 Soil Background data, which were collected in compliance with the RI/FS-EA Work Plan, are emphasized in this report over other data.

3.1 Background Investigations

3.1.1 Soil

During the Phase II Site Characterization, Dames & Moore collected 12 background soil samples from off-site monitoring wells UCD2-17 and UCD1-18 (Figure 3-1) at depths of 5, 10, 20, 30, and 40 ft bgs. Because these sample locations are limited and the samples may not have been collected in full compliance with CERCLA standards, Dames & Moore conducted a more extensive background investigation in November 1994.

The 1994 background investigation involved the collection of twenty-four background samples at depths of 0, 4, 19, and 39 ft bgs at 6 locations outside, but within one-half mile, of the LEHR Site (Figure 3-2). The samples were analyzed for radionuclides, metals, and inorganic compounds (e.g., salts). These data are presented in Appendix B. Table 3-1 presents the background range of values for radionuclides and metals obtained from the Phase II and 1994 Investigations near the LEHR Site, as well as regional background range of values (Shacklette and Boerngen, 1994). It should be noted that the regional background ranges apply to surficial soils (up to approximately 8 in bgs) only, and the Phase II background ranges are only from samples collected between 5 and 40 ft bgs, whereas soil samples collected and analyzed in the 1994 study are from both the surface and discrete depths below the surface. As shown on Table 3-1, the 1994 background ranges for

radionuclides are generally similar to the Phase II ranges, with the exception of the gross alpha and beta ranges which have maximums approximately 3 and 4 times higher, respectively, and the Co-60 and potassium-40 (K-40) ranges which have maximums approximately 6 and 3 times lower, respectively. 1994 background ranges for several metals, including antimony, beryllium, cadmium, molybdenum, silver, and thallium, were significantly lower than the Phase II surface soil ranges, while the ranges for arsenic and mercury were significantly higher. The maximum 1994 background levels are within the regional background ranges with the exception of arsenic, chromium, copper, nickel, and selenium, which slightly exceed the regional background range.

Table 3-1. Background Ranges for Chemical and Radiological Constituents in Soil

Parameter	Units	Regional Background		Phase II Background		1994 Background		1994 Background
		Min	Max	Min	Max	Min	Max	80% LCL on 95th quantile
Radionuclides								
Actinium-228	pCi/g	N/A	N/A	N/A	N/A	0.31	0.84	0.71
Bismuth-214	pCi/g	N/A	N/A	N/A	N/A	0.426	0.67	0.57
Carbon-14	pCi/g	N/A	N/A	N/A	N/A	-4.2	2.2	0.87
Cesium-137	pCi/g	N/A	N/A	0.15	0.20	-0.12	0.106	0.053
Cobalt-60	pCi/g	N/A	N/A	0.17	0.17	-0.034	0.0265	0.016
Gross Alpha	pCi/g	N/A	N/A	0.15	1.90	2.7	24.5	11.8
Gross Beta	pCi/g	N/A	N/A	0.40	4.70	10.1	19.6	17.4
Lead-212	pCi/g	N/A	N/A	N/A	N/A	0.298	0.83	0.74
Lead-214	pCi/g	N/A	N/A	N/A	N/A	0.514	0.99	0.75
Potassium-40	pCi/g	N/A	N/A	2.00	46.40	8.3	14.9	13.6
Radium-226	pCi/g	N/A	0.77	0.05	1.40	-1.37	1.74	0.77
Strontium-90	pCi/g	N/A	N/A	0.03	0.24	-0.86	0.57	0.36
Thallium-208	pCi/g	N/A	N/A	N/A	N/A	0.095	0.270	0.21
Thorium-228	pCi/g	N/A	N/A	N/A	N/A	0.484	0.82	0.71
Thorium-230	pCi/g	N/A	N/A	N/A	N/A	0.57	1.32	0.80
Thorium-232	pCi/g	N/A	0.54	0.25	1.10	0.394	0.92	0.64
Thorium-234	pCi/g	N/A	N/A	N/A	N/A	0.41	2.80	1.09
Tritium	pCi/L	N/A	N/A	N/A	N/A	-100	180	105
	pCi/g	N/A	N/A	0.10	0.50	-0.02[1]	0.0387[1]	0.023
Uranium-233/234	pCi/g	N/A	N/A	N/A	N/A	0.370	0.724	0.66
Uranium-235	pCi/g	N/A	N/A	N/A	N/A	-0.03	0.22	0.071
Uranium-238	pCi/g	N/A	N/A	N/A	N/A	0.327	0.69	0.63
Metals								
Antimony	mg/kg	<1	2.20	0.50	26.50	nd	0.37	NA

Table 3-1. Background Ranges for Chemical and Radiological Constituents in Soil (continued)

Parameter	Units	Regional Background		Phase II Background		1994 Background		1994 Background
		Min	Max	Min	Max	Min	Max	80% LCL on 95th quantile
Arsenic	mg/kg	6.50	10.00	0.50	3.00	4.00	11.90	9.46
Barium	mg/kg	500.00	700.00	71.50	181.00	107.00	308.00	237
Beryllium	mg/kg	<1	1.00	0.05	3.64	0.27	0.57	0.66
Cadmium	mg/kg	-1.00	N/A	0.50	18.10	nd	0.23	NA
Chromium	mg/kg	70.00	100.00	3.00	156.00	59.60	251.00	178
Chromium VI	mg/kg	N/A	N/A	N/A	N/A	0.023	0.25	0.099
Cobalt	mg/kg	10.00	70.00	0.50	20.80	12.60	32.90	29
Copper	mg/kg	30.00	50.00	14.10	55.00	20.10	59.50	50
Iron	mg/kg	N/A	N/A	N/A	N/A	20600.00	46300.00	42,000
Lead	mg/kg	15.00	300.00	2.00	27.00	3.40	11.90	10.1
Manganese	mg/kg	N/A	N/A	N/A	N/A	437.00	870.00	720
Mercury	mg/kg	N/A	N/A	0.02	0.19	0.10	1.60	0.49
Molybdenum	mg/kg	<3	3.00	1.00	11.70	nd	0.00	NA
Nickel	mg/kg	15.00	300.00	5.00	198.00	78.60	404.00	326
Selenium	mg/kg	<0.1	0.30	0.50	3.00	0.21	1.40	1.0
Silver	mg/kg	N/A	N/A	1.00	7.00	nd	0.26	NA
Thallium	mg/kg	N/A	N/A	1.50	32.00	nd	0.68	NA
Vanadium	mg/kg	100.00	500.00	6.30	58.50	37.10	78.70	73
Zinc	mg/kg	74.00	510.00	31.60	77.40	37.60	101.00	82
Other Parameters								
Alkalinity	mg/kg	N/A	N/A	N/A	N/A	370	1000	708
Ammonia	mg/kg	N/A	N/A	N/A	N/A	nd	17	22[2]
Chloride	mg/kg	N/A	N/A	N/A	N/A	0.58	46	14
Nitrate	mg/kg	N/A	N/A	N/A	N/A	0.41	45	10
pH	pH units	N/A	N/A	N/A	N/A	8.0	10	10.2
Specific Conductivity	µS/cm	N/A	N/A	N/A	N/A	30	620	338
Sulfate	mg/kg	N/A	N/A	N/A	N/A	2.6	53	36
Sulfide	mg/kg	N/A	N/A	N/A	N/A	nd	15	30[2]

Notes:
[1]Tritium values in pCi/g calculated from laboratory results in pCi/L, assuming 18% moisture content.
[2]95th quantile used instead of 80% LCL on 95th quantile. 80% LCL in 95th quantile was a negative number.
N/A = Not Available
Nd = not detected
LCL = lower confidence level

Background levels for the Site have been defined as the 80% lower confidence level on the 95th quantile of the background data collected in November 1994. We use these calculated background values in subsequent sections of this report as reference points for the evaluation of LFI and previously collected data from the LEHR Site. Because of some deficiencies in the 1994 background data, including high detection limits and lack of data for some analytes, additional background data are being collected and will be used to refine these background values.

3.1.2 Surface and Ground Water

Wells UCD1-18 and UCD2-17 are located upgradient (west) of the LEHR Site (see Figure 3-1) and are the background wells for the two impacted hydrostratigraphic units (HSU-1 and HSU-2) at the Site. Water quality in these wells has been used to help determine the impact of DOE and UC Davis activities on ground water at the LEHR Site. Wells UCD1-34 and UCD2-35, installed south of the LEHR Site in October 1995, also provide information approximately background water quality.

The surface water monitoring program at the LEHR Site began in November 1990, and is conducted at three locations along the South Fork of Putah Creek. Station Putah Creek Upstream (PCU) is located upstream of the LEHR Site and is; therefore, the background surface water sampling point (Figure 3-1). As mentioned in Section 2.3.1, storm water runoff is the only likely mechanism for environmental impact to Putah Creek by the LEHR Site.

3.2 Department of Engergy Operable Units

3.2.1 Southwest Trenches Area (OU-1)

Operable Unit 1 (OU-1) contains three source areas: 1) the disposal trenches, 2) the DOE Disposal Box; and, 3) the 49 waste holes. The disposal trenches are further subdivided into two general areas: a) the Southwest Trenches and b) the southern and eastern solid waste trenches. As shown in Table 1-1, most of the Southwest Trenches and the DOE Disposal Box were used for disposing wastes generated by the DOE-sponsored research conducted at LEHR. Previous investigations in the Southwest Trenches Area are discussed in this section. The DOE Disposal Box removal is discussed in Section 4.8. The southern and eastern solid waste trenches and the 49 waste holes were used by UC Davis and are discussed in Section 3.3.1.

3.2.1.1 Area Description

The Southwest Trenches Area is located on the southwest corner of the LEHR Facility (Figure 1-2) and is part of OU-1. A detailed map of the area showing previous sampling locations is included as Figure 3-3. The disposal trenches are reported to have received primarily LEHR-generated low-level radioactive waste, fecal material, and laboratory wastes (Dames & Moore, 1993). Additionally, it was reported that a resin column from the Imhoff system was buried in one of the trenches (IT Corporation, 1996).

The locations and dimensions of the trenches are not known with certainty; however, the disposal trenches were reportedly approximately 120 ft long, 2 ft wide, 8-to-10 ft deep, and oriented in a north-south direction. Trenches 15, 16, and 17 (Figure 3-3) were reportedly used between September 1963 and November 1965, and probably received dog fecal waste containing Ra-226 and Sr-90 Pacific Northwest National Laboratory (PNNL, 1995a). A ground-penetrating radar (GPR) survey (Norcal, 1994) conducted in 1994 suggests additional burial areas are present (Figure 3-3).

A chemical dispensing area where chemicals were reportedly stored in an open wooden structure was also present in the Southwest Trenches Area. Bulk chemicals which were used at the LEHR Facility and may have been stored and dispensed in this area include: acetone, kerosene, toluene, xylene, benzene, formaldehyde, ethyl alcohol, formalin, diesel fuel, and chlordane (Dames & Moore, 1993). A wash down pad has also been observed in the Southwest Trenches Area on historical maps of the facility; however, no information has been reported on the use of the pad (PNNL, 1995a).

3.2.1.2 Investigation Results

A chronology of investigation activities in the Southwest Trenches Area is summarized in Table 3-2. Previous investigation sample locations are shown on Figure 3-3.

Table 3-2. Investigation Chronology, Southwest Trenches Area

Date	Characterization Activity	Result
1984	Rockwell soil sampling	Sr-90, Ra-226, and carbon-14 (C-14) detected above background in soil samples (Rockwell, 1984).
10/87	Shallow monitor well UCD1-4 installation	
1987-1988	Exploratory trenches (EX-01 through EX-11)	Soil samples analyzed for radionuclides only, field readings up to 2,500 counts per minute (cpm) recorded in trench EX-11 (Wahler, 1989).
3/90	Three soil borings (SB-19 through SB-21), deep monitor well UCD2-15 installation	Beryllium exceeded background concentrations. Ra-226 detected at maximum concentration of 0.9 pCi/g (Dames & Moore, 1993).
10/90	Shallow monitor well UCD1-23 installation, Slug test on UCD1-23	Transmissivity value calculated (Dames & Moore, 1993).

Table 3-2. Investigation Chronology, Southwest Trenches Area (continued)

Date	Characterization Activity	Result
5/92	Resampling/analysis of trench samples from EX-01 through EX-10	Chlordane detected up to 2,000 mg/kg in T-06 composite (Dames & Moore, 1993).
11/94	Ground-penetrating radar survey	Trenches tentatively located, additional anomalies located in eastern half of area (Norcal, 1994).
1/95	Soil gas survey	Chloroform, Freon-12, toluene, and xylene detected at low concentrations (PNNL, 1995a).
5/95	Two soil borings to evaluate two geophysical/soil gas anomalies	Total chromium detected above background (PNNL, 1995a).
6/95	Three surface soil samples analyzed (SSL00001 - SSL00003)	Cesium-137 (Cs-137) exceeded background (PNNL, 1995a).
7-8/96	LFI	See Section 5.

3.2.1.2.1 Soil Sampling Results

Table 3-3 summarizes the maximum reported concentrations (or activities) of analytes detected in soil at levels exceeding background in the Southwest Trenches Area in Pre-LFI Investigations.

Analytical results for soil samples collected in the Southwest Trenches Area during pre-LFI soil boring and monitoring well drilling activities indicated relatively low radionuclide activity. However, the reported activities of tritium were still among the highest measured in soil samples collected from the LEHR Site. Tritium was reported up to 171 picocuries per gram (pCi/g) (Dames & Moore, 1994a). Background activity for tritium in soil at the LEHR Site is estimated at 0.023 pCi/g. Ra-226 was reported at a maximum activity of 3.94 pCi/g, which exceeds the 0.77 pCi/g background level. Sr-90, gross alpha, gross beta, Cs-137, bismuth-214 (Bi-214), and K-40 were also reported above background.

Relatively low to non-detectable concentrations of metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) were reported. Nitrate was reported significantly above background levels in approximately 25% of the samples (Dames & Moore, 1994a). Metals exceeding background included beryllium, cobalt, hexavalent chromium, copper, and nickel.

Chlordane at 2,000 mg/kg was detected in one composite sample from T-06 (Figure 3-3). No detectable concentrations of polychlorinated biphenyls (PCBs) or petroleum hydrocarbons were measured. Methylene chloride was reported in one sample at a concentration of 0.0376 milligrams per kilogram (mg/kg). Other organics reported include formaldehyde, hexanol, and nonanol (PNNL, 1995a).

In January 1995, seven soil gas samples were collected from the Southwest Trench Area and analyzed for VOCs. Chloroform was detected in five of the seven samples, at low concentrations ranging from 0.0003 to 0.006 µg/L. Toluene was detected in two samples at 0.0017 and 0.0041 µg/L; xylenes were detected in one sample at 0.0021 µg/L; Freon-12 was detected in three samples at 0.0024 to 0.0027 µg/L; and, Freon-11 was detected in one sample at 0.0024 µg/L. No other VOCs were detected in these soil gas samples.

Table 3-3. Analytes Detected in Soil above Background in Previous Investigations - Southwest Trenches Area

Analyte	Maximum Concentration/ Activity	Location	Date	Background
Radionuclides (pCi/g):				
Radium-226	3.94	N/A	N/A	0.77
Cesium-137	0.12	SSL00001	Jun-95	0.053
Gross Alpha	16.40	SSL00003	Jun-95	11.8
Gross Beta	18.30	SSL00002	Jun-95	17.4
Bismuth-214	1.38	SB-19	Mar-90	0.57
Strontium-90	0.7	SB-19	Mar-90	0.36
Potassium-40	16.56	UCD1-15	Mar-90	13.6
Tritium	171	N/A	N/A	0.023
Metals (mg/kg):				
Beryllium	4.80	SB-20	Mar-90	0.66
Cobalt	35.00	SB-21	Mar-90	29
Chromium VI	1.2	SB-19	Mar-90	0.099
Copper	63.00	UCD1-15	Mar-90	50
Nickel	370.00	SB-21	Mar-90	326
VOCs (mg/kg):				
Methylene Chloride	0.0376	UCD1-15	Mar-90	N/A
Pesticides (mg/kg):				
Chlordane	2,000	T-06	1988	N/A
Other (mg/kg):				
Formaldehyde	530.00	SSL00001	Jun-95	N/A
Nitrate	220.0	SB-19	Mar-90	10
Hexanol	660.00	SSL00003	Jun-95	N/A
Nonanol	340.00	SSL00002	Jun-95	N/A

Notes:

Reference = Dames & Moore, 1994a, and PNNL, 1995a
N/A = Not Available (Location) or Not Applicable (Background Level)

3.2.1.2.2 Ground Water Sampling Results

Monitoring wells UCD1-4, UCD1-23, and UCD2-15 in the Southwest Trenches Area (Figure 3-1 and Table 3-16) have been sampled on a regular basis since their installation. Trace concentrations of VOCs were measured in these wells during 1996 (WA, 1997c). These include chloroform at 0.64 µg/L and 0.92 µg/L in wells UCD1-23 and UCD2-15, respectively, and trace concentrations of methylene chloride and/or acetone (possible laboratory contaminants) in wells UCD1-4 and UCD1-23. No SVOCs, pesticides or PCBs were detected in any of the ground water samples from the Southwest Trenches Area. A number of heavy metals were detected in the ground water; however, none of these metals were detected above their respective maximum contaminant level (MCL) or secondary drinking water standard. The only radionuclides detected were Bi-214, lead-214 (Pb-214), Sr-90, Ra-226, tritium and gross beta activity. The maximum detected activity of gross beta at 8.2 pCi/L, Sr-90 at 0.7 pCi/L, Ra-226 at 2.4 pCi/L, and tritium at 290 pCi/L are well below their respective MCLs of 50, 8, 5 and 20,000 pCi/L. No MCLs have been established for Bi-214 or Pb-214; however, the observed maximum activities likely represent background levels for this area (PNNL, 1996a). These 1996 ground water data indicate that ground water in the Southwest Trenches Area has been relatively unaffected by waste disposal in this area.

3.2.2 Radium and Strontium Treatment Systems (OU-2)

Radiological wastes generated from animal experiments using bone-seeking radionuclides were treated using two primary systems: the radium-226 treatment system and the strontium-90 treatment system. These two systems are located between Animal Hospital Numbers 1 and 2 (AH-1 and AH-2) along the west boundary of the LEHR Site (Figure 1-2).

Prior to the LFI, several other investigations were conducted in the radium and strontium areas. Table 3-4 summarizes these investigations; sampling locations are shown on Figure 3-4. The investigation results for the Ra-226 and the Sr-90 systems are discussed in Sections 3.2.2.1 and 3.2.2.2, respectively.

Table 3-4. Investigation Chronology - Radium and Strontium Treatment System Areas

Date	Activity	Sample Numbers	Results
1987	Soil investigation for radionuclides	SB-01 through SB-10 & SB-12 through SB-14	Cs-137, gross beta, and Sr-90 detected above background (Wahler, 1988).
1989	Imhoff tank A sludge sampling		Ra-226, Sr-90, Tritium, and SVOCs detected above background (Dames & Moore, 1994a).

Table 3-4. Investigation Chronology - Radium and Strontium Treatment System Areas (continued)

Date	Activity	Sample Numbers	Results
3/90	Soil investigation for VOCs, SVOCs, pesticides/PCBs, metals, and radionuclides	SB-22 to SB-28	Nitrate, Be, Cr^{+6}, Co, Zn, Bi-214, Cs-137, K-40, Sr-90, Pb-212, Pb-214, Th-232, and methylene chloride were detected above background (Dames & Moore, 1993).
10/90	Soil investigation for VOCs, SVOCs, pesticides/ PCBs, metals, and radionuclides	UCD-22	Sb, Cr^{+6}, Cd, Mo, T1, and Th-232 were above background (Dames & Moore, 1993).
3/92	Sludge sampling from Imhoff Tank A. Soil sampling beneath Ra and Sr system tanks for radionuclides	Imhoff Tanks A through I, Radium Tanks A through D	Total xylenes and SVOCs detected above background in the sludge sample. Ra-226, Th-228, Th-232, and Sr-90 were above background in soil (Chemical Waste Management, 1992).
7-8/96	LFI		See Section 5.

3.2.2.1 Radium Treatment System

3.2.2.1.1 System Description

The radium-226 treatment system, part of OU-2, reportedly received low-level radioactive waste, including fecal material and washdown water from AH-2 (Dames & Moore, 1994). A cumulative total of 6.129 milliCuries (mCi) of radium-226 was injected into beagles housed in AH-2 (DOE, 1988). Of that 6.129 mCi, approximately 3.827 mCi were subsequently discharged to the radium-226 processing system (Dames & Moore, 1993). The radium-226 leach system consisted of two septic tanks with each tank having two compartments separated by a weir, a distribution box, three dry wells, and one leach trench and associated distribution pipelines (Figure 3-4) (Chemical Waste Management, 1992).

The septic tanks are located underground between the former Imhoff Building and AH-2. The combined capacity of the septic tanks is 14,400 gallons. The septic tanks allowed for the settling of solids, and fluids were piped out of the tanks and fed through a distribution box to one of the three vertical dry wells (Figure 3-4). The dry wells are approximately 30 inches in diameter and 40 ft deep (Dames & Moore, 1993). The radium leach trench extending south from the dry wells (Figure 3-4) is approximately 91 ft long, 3 ft wide, and 14 ft deep. Another trench extending north from the dry wells is shown on several engineering drawings of the area, but has not been located in the field. The cobble-lined leach trench was added in 1965, after frequent exceedences of the infiltration capacity of the original dry well system.

After these early failures, another overflow incident occurred with the radium-226 system in 1985. A sanitary sewer line that was piped into the radium-226 leach system effluent line became blocked causing sewage to back up into the eastern radium-226 septic tank. This material was then pumped directly to the dry wells (Dames & Moore, 1993). Following this incident, the system was taken out of use. In 1984, it was observed that radium-226 Septic Tank C was empty and is speculated to have leaked (Rockwell, 1984).

Currently, all four of the tanks associated with the radium-226 treatment system are empty. No formal closure has been initiated for this system.

3.2.2.1.2 Investigation Results

Samples of radium system sludge, concrete and surrounding soil were collected and analyzed prior to the LFI. The maximum radiological activities and chemical concentrations detected in soil from this area are summarized in Table 3-5. These soil data, in addition to results for sludge and concrete samples, are discussed below.

Table 3-5. Analytes Detected in Soil above Background in Previous Investigations - Radium-226 Treatment System Area

Analyte	Maximum Concentration/ Activity	Location of Maximum	Depth (ft)	Date	Background
Radionuclides (pCi/g):					
Bismuth-214	3.03	SB-28	15.0	Mar-90	0.57
Cesium-137	6.2	SB-13	N/A	Oct-87	0.053
Gross Beta	62.00	SB-09	N/A	Oct-87	17.4
Lead-212	0.93	SB-25	10.0	Mar-90	0.74
Lead-214	1.14	SB-28	15.0	Mar-90	0.75
Potassium-40	17.24	SB-28	10.0	Mar-90	13.6
Radium-226	1.62	Beneath Ra Tank B	15.0	Mar-92	0.77
Strontium-90	1.6	SB-13	N/A	Oct-87	0.36
Thorium-228	2.1	Beneath Ra Tank B	N/A	Mar-92	0.71
Thorium-232	1.66	Beneath Ra Tank B	N/A	Mar-92	0.64
Tritium	0.4	SB-28	20	Mar-90	0.023
Metals (mg/kg):					
Beryllium	2.40	SB-26	10.0	Mar-90	0.66
Chromium VI	5.00	SB-26	25.0	Mar-90	0.099
Cobalt	38.4	SB-28	6.5	Mar-90	29
Lead	19.3	UCD1-22	5.0	Oct-90	10.1
Zinc	165	SB-25	5	Mar-90	82
VOCs (mg/kg):					
Methylene Chloride	0.044	SB-28	10	Mar-90	N/A
Others (mg/kg):					
Nitrate	736.00	SB-28	15.0	Mar-90	10

Notes:

N/A = Not available (Location/depth) or not applicable (Background Level).

As part of the 1987 Phase I Investigation, soil borings SB-06 through SB-10, and SB-12 through SB-14 were drilled near the Ra-226 treatment system (Figure 3-4). Several radionuclides, tritium, Sr-90, Ra-226, K-40, thorium-232 (Th-232), cesium-137 (Cs-137) and gross beta, were detected above background. A gross beta activity of 62 pCi/g, which is significantly above background, was detected in a soil sample from SB-9, near one of the Ra-226 distribution lines (Table 3-5).

In 1989, UC Davis collected samples from the contents of the Ra-226 septic tanks. The analytical results from the treatment tank sludge were up to 206 pCi/g of Ra-226 and up to 14 pCi/g Sr-90 (Dames & Moore, 1994a). No liquid waste was found in the Ra-226 tank system during this sampling event.

As part of the 1990 Phase II Investigation (Dames & Moore, 1993), four soil borings (SB-25 through SB-28) and one monitoring well (UCD1-22) were drilled (Figure 3-4) and 33 soil samples were collected near the radium-226 treatment system. The only VOC detected in the soil samples was methylene chloride at 0.011 to 0.044 mg/kg. No SVOCs, pesticides or PCBs were detected in any of the soil samples. Radionuclides were detected above background in each of the borings, SB-25, SB-26, SB-27 and SB-28. Radionuclides above background in one or more of these borings were Ra-226 ranging from 0.8 up to 1.35 pCi/g, Bi-214 ranging from 0.66 to 3.03 pCi/g, Cs-137 at 0.24 and 0.26 pCi/g, Sr-90 at 0.61 pCi/g, Pb-212 up to 0.93 pCi/g, Pb-214 up to 1.14 pCi/g, K-40 ranged from 13.73 to 17.24 pCi/g, and Th-232 up to 1 pCi/g. Two metals, hexavalent chromium up to 5 mg/kg, and cobalt up to 38.4 mg/kg, were detected above background in each of the four soil borings and the monitoring well boring. Beryllium was detected at concentrations up to 2.4 mg/kg in boring SB-26. Lead was the only metal detected above background in soil from the UCD1-22 boring. Zinc was detected slightly above background at 165 mg/kg in SB-25 at 5 ft bgs. Nitrates were detected above background in all four soil borings and the monitoring well boring at concentrations ranging from 12 to 736 mg/kg. The 736 mg/kg nitrate concentration from a duplicate sample collected at 15 ft bgs in SB-28 is the highest concentration detected to date in soil samples from this area.

In 1992, the radium-226 septic tanks contents were homogenized, pumped, solidified, and shipped to the Hanford facility in the state of Washington for disposal as a low-level waste. After the septic tanks were emptied, concrete cores were obtained from the bottom of each radium tank and analyzed for radionuclides (Chemical Waste Management, 1992). Ra-226 was reported in the cores from all four tanks in activities from 0.3 to 0.6 pCi/g. Tritium was also reported in the cores from all four tanks in activities ranging from 0.6 to 1.3 pCi/g. Th-232 was reported in cores from tanks A through C in activities ranging from 0.2 to 0.5 pCi/g. Th-228 was reported in cores from tanks A and B at a maximum activity of 0.8 pCi/g (Chemical Waste Management, 1992).

In March 1992, soil samples were collected through the coreholes made in the bottom of each radium tank and analyzed for radionuclides, and the results were compared to background activities and to activities detected in the concrete cores and earlier sludge samples. Sr-90 was detected slightly above background at 0.77 pCi/g but only in the duplicate sample of soil beneath Tank C. Ra-226 at 1.6 pCi/g, Th-228 at 2.1 pCi/g and Th-232 at 1.66 pCi/g, detected in soil below Tank B, were the only other detections above background. Activities in these soil samples are similar to those

detected in the concrete cores, but are at least an order of magnitude lower than those detected in the sludge. Based on these results, no significant waste leakage from these tanks had occurred.

3.2.2.2 Strontium Treatment System

3.2.2.2.1 System Description

From 1960 to 1987, effluent from Sr-90 experiments was processed through an Imhoff sewage treatment system. In addition, from 1982 to 1984, a total of 39.59 µCi of Plutonium-241 (Pu-241) and 0.136 µCi of Americium-241 (Am-241) was processed through the Imhoff treatment system (DOE, 1988). The Imhoff system treated the wastes using primary sedimentation, aeration, chemical clarification, and filtration prior to passing the remaining waste water through a cation exchange resin. According to Goldman, *et al.* (1963), this system provided an attenuation factor up to $5x10^{-4}$ prior to discharge to the leach system. Based on actual system data (Dames & Moore, 1993), the average attenuation factor was between 2.7×10^{-3} and 4.0×10^{-3}.

The Sr-90 treatment system consists of filters and cation exchange columns, a series of nine "Imhoff" tanks (Tanks A through I), and a leach field. The tanks are lined with concrete, coated with plastic sealant and are located in the ground beneath the area once occupied by the Imhoff Building. The total capacity of these Imhoff tanks is 46,000 gallons. In 1962, Building H-322 was built over the "original" leach field; therefore, a second leach field, commonly referred to as the "existing" leach field, was constructed to replace the original field (Figure 3-4).

The Imhoff system was used to treat approximately 200 to 500 gallons of waste per day prior to discharging it to the leach field. During the twenty-seven years the Imhoff system operated, approximately 710 batches of effluent from Sr-90 experiments totaling approximately 3.2 million gallons were treated (DOE, 1988). The total throughput of Sr-90 through the Imhoff system is estimated between 645 and 943 mCi. After treatment through the Imhoff system, an estimated 2.55 mCi of Sr-90 was released to the Imhoff leach field and subsurface soil. The half-life of Sr-90 is 29 years.

The average concentration of strontium-90 reportedly released to the leach field was in compliance with the $3x10^{-7}$ micro curies per milliliter (µCi/ml) standard established by the Nuclear Regulatory Commission (NRC) (Dames & Moore, 1993). Records indicate that this concentration was exceeded occasionally in individual batch discharges due to a faulty valve that allowed raw waste to mix with treated batches. In 1987, a deionized water spill introduced additional water to the system and allowed cross-contamination of partially treated wastes.

During operation, the tanks periodically filled up with sludge which was removed by a subcontractor or pumped to a tanker trailer, and disposed off-site. The Imhoff system has been inactive since 1987. In 1989, UC Davis collected samples of the liquid and sludge remaining in the Imhoff tanks to characterize the materials for disposal. The materials were reported to have varying radioactivities and SVOC concentrations (Dames & Moore, 1994a).

In 1991 and 1992, liquids and sludge remaining in the Imhoff tanks were removed, solidified, and disposed at the Hanford facility as low-level radioactive waste. During the sludge removal operations, the plastic sealant in all tanks was observed to be cracked and blistering, leaving concrete exposed (Chemical Waste Management, 1992). The integrity of the Imhoff tanks has never been tested. Currently, approximately 250 gallons of sludge remains in Imhoff Settling Tank (Tank A). This sludge is scheduled for characterization in 1997.

3.2.2.2.2 Investigation Results

Samples of Imhoff system sludge, concrete and surrounding soil were collected and analyzed prior to the LFI. Table 3-6 summarizes the maximum chemical and radiological levels detected in soil from the Sr-90 leach system area during pre-LFI Investigations. These soil data, in addition to the sludge and concrete sample results, are discussed below.

Table 3-6. Analytes Detected in Soil above Background in Previous Investigations - Strontium-90 Treatment System Area

Analyte	Maximum Concentration/ Activity	Location of Maximum	Depth (ft)	Date	Background
Radionuclides (pCi/g):					
Ra-226	1.14	Beneath Tank B	N/A	Mar-92	0.77
Cesium-137	6.20	SB-03-B-32	N/A	Oct-87	0.053
Gross Beta	60	SB-03-B-4	N/A	Oct-87	17.4
Strontium-90	2.11	Beneath Tank B	N/A	Mar-92	0.36
Thorium-232	1	SB-24	10	Mar-90	0.64
Thorium-228	0.9	Beneath Tank B	N/A	Mar-92	0.71
Tritium	1.16	Beneath Tank B	N/A	Mar-92	0.023
Metals (mg/kg):					
Chromium VI	7.00	SB-24	1.0	Mar-90	0.099
Cobalt	38.4	SB-23	0.5	Mar-90	29
Mercury	0.55	SB-23	2.0	Mar-90	0.49
Zinc	120	SB-22	5.0	Mar-90	82
VOCs (mg/kg):					
Methylene Chloride	0.023	SB-22	15	Mar-90	N/A
Other (mg/kg):					
Nitrate	92.00	SB-24	20.0	Mar-90	10

Notes:

N/A = Not available (Depth) or not applicable (Background Level).

Phase I Investigation soil borings SB-1 through SB-5 were drilled in the vicinity of the Sr-90 leach field (Figure 3-4). As shown on Table 3-6, Cs-137 and gross beta activities were detected

above background levels in SB-3, near one of the Sr-90 leach lines. Additional radionuclides detected above background levels include tritium, Sr-90, Th-232 and Th-228.

Sludge samples collected from the Imhoff system in 1989 and 1992 contained a variety of SVOCs, and the Imhoff Settling Tank A sludge sample collected in 1992 also contained xylene, the only volatile compound detected. In addition to the SVOCs, the 1989 sludge sample also contained tritium at 1.86 pCi/g, Ra-226 at 2.62 pCi/g and Sr-90 at 184.5 pCi/g (Dames & Moore, 1994a).

One concrete core obtained from the bottom of each of the Imhoff tanks B through I, in March 1992, was analyzed for radionuclides (Chemical Waste Management, 1992). Tritium was reported in the cores from tanks B, C, D, E, G, H, and I, in activities ranging from 0.6 to 3.3 pCi/g. Only the sample from tank H had a higher tritium activity than the 1989 Settling Tank A sludge. Ra-226 was reported in activities ranging from 0.1 to 0.2 pCi/g in the cores from tanks C, D, E, G, H, and I. These Ra-226 results are all well below the Ra-226 activity in the 1989 Settling Tank A sludge and soil background. Sr-90 was reported only in the concrete core from tank C at an activity of 2.9 pCi/g, which is well below the activity recorded in the 1989 Settling Tank A sludge sample. Th-228 was reported in cores from tanks C, D, and E in activities ranging from 0.2 to 0.6 pCi/g. Th-232 was reported in cores from tanks C, D, E, G, and I in activities ranging from 0.13 to 0.17 pCi/g. Neither Th-228 nor Th-232 were detected in the sludge sample.

Soil samples were collected through the coreholes in the bottom of each Imhoff tank. These soil samples were analyzed for radionuclides and the results were compared to the 1989 sludge and concrete samples, and to background activities. Ra-226 was reported in all eight tested soils at activities between 0.43 and 1.14 pCi/g, which are higher than the activity from the concrete samples, but lower than the activity in the sludge sample, and three of the eight activities are above background. Sr-90 was reported in all eight tested soils at activities ranging from 0.11 to 2.11 pCi/g. These Sr-90 activities are similar to those in the concrete cores, and five of the eight activities are above background. Th-232 was reported in all soil samples with activities ranging from 0.4 to 1.02 pCi/g. These activities are generally slightly higher than the activities recorded for the concrete core samples, and five of them are above background. Th-228 was detected in samples from tanks B, D, F, and G with activities ranging from 0.6 to 0.9 pCi/g. These results are very similar to the concrete core samples, and three of the four activities are slightly above background. Neither Th-228 nor Th-232 were detected in the sludge sample. Tritium was reported in soil samples collected beneath tanks B and G at 1.16 and 0.92 pCi/g, respectively. These activities are below those in the concrete core samples and slightly below the activity recorded in the 1989 sludge sample.

During the Phase II Investigation in 1990, 3 borings (SB-22 through SB-24) were drilled and 21 soil samples were collected in the Sr-90 treatment system area (Figure 3-4). Samples were analyzed for radionuclides, SVOCs, VOCs, metals, hexavalent chromium, and nitrate. Detections above background included: Cs-137 at 0.1 pCi/g in SB-22; Th-232 at 0.7 pCi/g in SB-23; and, at 1 pCi/g in SB-24; cobalt up to 38.4 mg/kg in soil borings SB-22, SB-23, and SB-24; hexavalent chromium up to 7 mg/kg in soil borings SB-22, SB-23, and SB-24; mercury at 0.55 mg/kg in SB-23; zinc at 120 mg/kg in SB-22; nitrate up to 92 mg/kg in soil borings SB-22 through SB-24; and, methylene chloride up to 0.023 mg/kg in soil borings SB-22 and SB-24.

3.2.2.3 Ground Water Sampling Results

There are two HSU-1 monitoring wells, UCD1-6 and UCD1-22, in the Ra-226 treatment system area. These wells are located less than 50 ft and downgradient of two of the three dry wells (Figure 3-4). Well UCD1-6 is frequently dry (see Table 3-16 for well construction details), but well UCD1-22 has been sampled on a regular basis since its installation. Although this well is screened slightly deeper (from 57 to 72 ft bgs) than the bottom of the dry wells at 40 ft, the 1996 annual data for this well (WA, 1997c) suggest that ground water in this area has not been significantly affected by waste disposal in this area. No VOCs, SVOCs, metals, pesticides or PCBs were detected. Am-241 and Ra-226 were the only radionuclides detected. Ra-226 was detected at 0.21 pCi/L, well below the 5 pCi/L MCL. An MCL for Am-241 has not been established; however, the detection of Am-241 at 0.036 pCi/L likely represents background.

There are two HSU-1 wells, UCD1-5 and UCD1-21, downgradient of the Sr-90 treatment system area. However, these wells are at least 150 ft downgradient, and well UCD1-5 is not sampled due to low ground water levels. Because well UCD1-21 is in the Dog Pens Area, ground water data for this well are discussed in Section 3.2.3.3.

3.2.3 Dog Pens Area (OU-3)

3.2.3.1 Area Description

OU-3 consists of the Dog Pens and the North Chemical Dispensing Area (Figure 3-5). The western set of dog pens originally contained 320 pens. In 1975, 64 pens were removed to allow for construction of the Cellular Biology Lab (Building H-294; Figure 2-2). The eastern set contained 96 pens and overlies UC Davis Landfill No. 2 (see Section 3.3.2).

The Dog Pens were used to house dogs involved in the radium-226 and strontium-90 research activities at the LEHR Site. The Western Dog pens reportedly housed the dogs that received the highest dosages of Sr-90 and Ra-226 (Dames & Moore, 1993). Excreta from dogs housed in outdoor pens contained low levels of radiological constituents (Dames & Moore, 1993). Solids were removed from the pens on a daily basis. Urine evaporated and/or infiltrated the gravel fill in the pens (Dames & Moore, 1993). An estimated 2 mCi of strontium-90 and 0.5 mCi of radium-226 were potentially excreted in dog urine over the life of the project (DOE, 1988).

Chlordane was used to control fleas on dogs kept in outdoor pens from 1960 until the early 1970s. Chlordane was sprayed on dogs or they were dipped in chlordane, or in a chlordane-kerosene mixture, and returned to the dog pen areas. Annual usage of chlordane is estimated to have been between 25 and 50 gallons (Dames & Moore, 1993). Spent chlordane from the dip tanks was recorded to have been disposed in trenches and pits and in the outdoor cages where the dogs were dipped.

The North Chemical Dispensing Area contained various bulk chemicals including; but not limited to, acetone, kerosene, toluene, xylene, benzene, formaldehyde, ethyl alcohol, formalin, diesel

oil, and chlordane. The chemicals in the North Chemical Dispensing Area were stored on pavement in an open-sided wooden structure.

3.2.3.2 Investigation Results

Prior to the LFI, there were several investigations conducted in the dog pens area, as summarized in Table 3-7. Figures 3-5 through 3-9 show the 1990 through 1996 sampling locations, Phase II results, December 1994 results, and 1996 results, respectively, and Table 3-8 summarizes the maximum detections in the area. All of the December 1994 and 1996 results are tabulated in Appendix C.

Table 3-7. Investigation Chronology - Dog Pens Area

Date	Activity	Sample Numbers	Results
1987	Surface and near-surface samples from dog pens; Two soil borings installed	D-2 to J-22; SB-11 and SB-15	Sample for radiological constituents in soil (Wahler, 1988).
2/90 - 3/90	Soil investigation	PS-C-20 to PS-M-29; SB-16 to SB-18	VOCs, SVOCs, radionuclides, metals and inorganic compounds detected above background (Dames & Moore, 1993).
10/90	Soil and water investigation; 4 wells drilled	UCD-20, -21, -23 & -24	VOCs, SVOCs, radionuclides, and metals detected above background in soil (Dames & Moore, 1993)
12/94	Soil investigation	SBL-1 through SBL-19	SVOCs, metals, radionuclides, and pesticides detected above background.
6-7/96	Pedestal Radiation Survey and Soil Sampling	S-321 through S-329; S-363 through S-377	No clear correlation between radioactivity in pedestals and that in soil. 5.66 pCi/g Sr-90 activity in one sample is the highest detected in area. Chlordane detected up to 15 ppm.

3.2.3.2.1 Pre-1996 Investigations

The 1990 Phase II Investigations included surface and near surface soil sampling in 25 dog pens, three soil borings in the North Chemical Dispensing Area, and four well installations (Figure 3-6). During the Phase II Investigations, the radionuclides detected above background in this area were Ra-226, Bi-214, Cs-137, gross beta, K-40, Pb-214, tritium, and Th-232. The metals detected above background were beryllium, cobalt, copper, hexavalent chromium, lead, mercury, and zinc. Chlordane and nitrate were also detected above background. The VOCs and SVOCs detected

above background were methylene chloride and diethyl phthalate, which are common laboratory contaminants.

Chlordane was detected in 17 of the 43 0-to-2 ft bgs samples, at a maximum concentration of 0.36 mg/kg in boring UCD-21 (Figure 3-6). Nitrate was also detected above background in many samples, at a maximum concentration of 168 mg/kg at 1.5 ft bgs in dog pen E-6. The only radionuclide detected at greater than two times background was Bi-214 at 0.8 ft bgs in SB-17 (Figure 3-6).

In December 1994, nineteen borings were drilled and 44 soil samples were collected and analyzed for SVOCs, VOCs, radionuclides, metals, and pesticides in the Dog Pens and North Chemical Dispensing Area (Figure 3-7). Based on aerial photographs review for the North Chemical Dispensing Area, two of these soil borings (SBL-017 and SBL-018) were drilled in the area that contained the majority of the chemical storage containers (Dames & Moore, 1994a). The results of the December 1994 analyses have not been previously reported. They are discussed below and a summary table is presented in Appendix C.

The radionuclides and metals results were compared to background levels. Eleven radionuclides, actinium-228 (Ac-228), Bi-214, C-14, Co-60, Pb-212, Ra-226, Sr-90, thallium-208 (Tl-208), Th-234, uranium-235 (U-235), and tritium, were detected above background. Activities exceeding two times background include C-14 activities between 2.2 and 16.4 pCi/g in eleven borings (Figure 3-7); tritium activities from 220 to 260 pCi/L in six samples at depths up to 20.75 ft bgs; Co-60 activities of 0.05 and 0.041 pCi/g in borings SBL-002 at 5.75 ft bgs and SBL-012 at 0.5 ft bgs, respectively (Figure 3-7); Ra-226 activities of 5.11 and 1.82 pCi/g in SBL-005 at 5.75 ft bgs and SBL-006 at 20 ft bgs, respectively; and a Sr-90 activity of 0.9 pCi/g in boring SBL-011 at 6 ft bgs.

The metals detected above background are total chromium, hexavalent chromium, iron, lead, manganese, mercury, vanadium, and zinc. Metals detections above two times background levels include hexavalent chromium between 0.2 and 0.29 mg/kg in eight samples (Figure 3-7), and mercury at 1.0 mg/kg at 2.5 ft bgs in boring SBL-014. Nitrate was also detected above background at concentrations up to 85 mg/kg in 13 samples.

The pesticides detected were alpha and gamma chlordane, 4,4-dichlorodiphenyl-dichloroethylene (DDE), heptachlor and alpha, delta and gamma benzene hexachloride (BHC). Alpha and gamma chlordane were detected in the surface soil samples from four borings (Figure 3-7). Alpha chlordane ranged from 0.0025 to 0.23 mg/kg and gamma chlordane ranged from 0.0024 to 0.26 mg/kg. Total chlordane up to 0.48 mg/kg was detected during this 1994 investigation. Concentrations of 4,4-DDE were only detected at 0.0012 and 0.0013 mg/kg in soil borings SBL-005 and SBL-006, respectively. Alpha, delta and gamma-BHC were detected in the surface sample from SBL-015 at 0.011, 0.0014 and 0.0018 mg/kg, respectively. Heptachlor was detected in the surface sample from boring SBL-019 at 0.0066 mg/kg.

Two SVOCs were detected: bis(2-ethylhexyl)phthalate between 0.037 and 0.065 mg/kg, and di-n-butylphthalate between 0.13 and 0.16 mg/kg in each soil sample from borings SBL-017 and

SBL-018 in the North Chemical Dispensing Area. Acetone was the only VOC detected at concentrations up to 0.032 mg/kg in both samples collected from boring SBL-017. These compounds may be laboratory contaminants.

Based on the results for the three Phase II soil borings and the two December 1994 soil borings no additional investigations are proposed in the North Chemical Dispensing Area. Proposed additional dog pens investigations are discussed in Section 6.

Table 3-8. Analytes Detected in Soil above Background in Previous Investigations - Dog Pens and North Chemical Dispensing Area

Analyte	Maximum Concentration/ Activity	Location	Depth (ft)	Date	Background
Radionuclides (pCi/g)					
Gross Beta	28.00	SB-11	N/A	Oct-87	17.4
Actinium-228	0.83	SBL-8	20.75	Dec-94	0.71
Bismuth-214	2.21	SB-17	0.8	Mar-90	0.75
Carbon-14	16.40	SBL-8	10.8	Dec-94	0.87
Cesium-137	0.20	PS-K27	10.0	Oct-90	0.053
Cobalt-60	0.05	SBL-2	5.75	Dec-94	0.016
Lead-212	0.75	SBL-16	5.0	Dec-94	0.74
Lead-214	1.04	SBL-16	1.8	Mar-90	0.75
Potassium-40	20.2	UCD-20	0	Oct-90	13.6
Radium-226	5.11	SBL-5	5.8	Dec-94	0.77
Strontium-90	5.66	S-371	N/A	July 96	0.36
Thallim-208	0.272	SBL-13	0	Dec-94	0.21
Thorium-232	1.4	UCD-23	20	Oct-90	0.64
Thorium-234	1.24	SBL-8	10.75	Dec-94	1.09
Tritium (pCi/L)	260	SBL-8	5.75	Dec-94	105
Uranium-235	0.26	SBL-18	5.0	Dec-94	0.071
Metals mg/kg					
Beryllium	5.1	SB-17	1.5	Feb-90	0.66
Cobalt	31.5	UCD-24	0	Oct-90	29
Copper	69.5	UCD-24	40	Oct-90	50
Chromium	262	SBL-13	3.0	Dec-94	178
Chromium VI	3.98	UCD-20	35.0	Oct-90	0.099
Iron	46,6000	SBL-4	6.0	Dec-94	42,000
Lead	73.1	UCD-24	40	Oct-90	10.1
Manganese	1,010	SBL-8	5.8	Dec-94	720
Mercury	1.0	SBL-14	2.5	Dec-94	0.49
Vanadium	77.5	SBL-4	6.0	Dec-94	73
Zinc	397	UCD-21	0	Oct-90	82
VOCs mg/kg					
Acetone	0.032	SBL-17	5	Dec-94	N/A
Methylene Chloride	0.120	UCD-23	35	Dec-94	N/A
SVOCs mg/kg					
Bis (2-Ethylhexyl) phthalate	0.065	SBL-17	5	Dec-94	N/A
Di-n-Butylphthalate	0.160	SBL-17	5.0	Dec-94	N/A
Diethyl Phthalate	1.2	UCD-24	10.0/60.0	Oct-90	N/A
Pesticides mg/kg					
4,4-DDE	0.0013	SBL-16	0	Dec-94	N/A
Chlordane	15	S-363	0	Jul-96	N/A
Heptachlor	0.0066	SBL-19	0.0	Dec-94	N/A

Table 3-8. Analytes Detected in Soil above Background in Previous Investigations - Dog Pens and North Chemical Dispensing Area (continued)

Analyte	Maximum Concentration/ Activity	Location	Depth (ft)	Date	Background
Other					
TPH as Diesel	27.00	SBL-13	0	Dec-94	N/A
Nitrate	168.00	PS-E06	1.5	Feb-90	10
Sulfate	97	SBL-18	5	Dec-94	36

Notes:
N/A = Not available (Depth) or not applicable (Background Level)

3.2.3.2.2 1996 Investigation

From June through August 1996, the 256 remaining Western and 96 Eastern dog pens, dog pen pedestals and some soil were removed. The waste generated from the demolition of the dog pens, primarily the concrete pedestals, has been packaged and shipped to the Hanford facility. The remaining waste is fence material that will be recycled, if possible.

During the dog pen removal, alpha and beta/gamma scans were conducted on the pedestals in the 352 dog pens. Figure 3-8 shows the locations where alpha-scanning results exceeded 300 disintegrations per minute per 100 square centimeters (dpm/100cm^2) and beta/gamma-scanning results exceeded 3,000 dpm/100cm^2. These levels are the maximum allowable total residual surface contamination levels specified in the surface radioactivity guidelines from DOE Order 5400.5. For the alpha scans, 325 samples were recorded as background, five samples were above background but below 300 dpm/100cm^2, and 22 samples were above 300 dpm/100cm^2. For the beta/gamma scans, 221 samples were recorded as background, 82 samples were above background, but below 3,000 dpm/100cm^2, and 49 samples were above 3,000 dpm/100cm^2.

The significant radioactivity readings from some of the pedestals raised the concern that the underlying soils might also be significantly radioactive. Therefore, twelve soil samples were collected at random locations in areas were alpha and beta/gamma scans indicated background concentrations and twelve samples were collected in areas were alpha and beta/gamma scans were above 300 dpm/100cm^2 and 3,000 dpm/100cm^2, respectively (Figure 3-9). All the samples were collected from the surface and consisted of brown clayey sand with some gravel. All the samples were analyzed by LAS Laboratories (LAS) for radionuclides and S-363 through S-377 were also analyzed for chlordane. These data are summarized in Appendix C. Figure 3-9 shows sampling locations and measured concentrations for the radionuclides and chlordane detected above background levels.

Ra-226, Sr-90, Cs-137, Bi-214 and Pb-214 were detected above background in one or more of the twelve samples collected from areas of high alpha and beta/gamma scans. Ra-226 above background was detected up to 1.9 pCi/g in nine of the twelve samples, and Sr-90 above background was detected up to 3.25 pCi/g in seven. Cs-137, Pb-214 and Bi-214 were detected slightly above background in a few of these samples.

Several of the twelve samples collected in soil beneath dog pen pedestals which had readings below background during the radiation scanning survey showed Sr-90, Cs-137, Ra-226, and U-235 above background. Sr-90 was detected above background at up to 5.66 pCi/g in eight samples, and Cs-137, Ra-226, and U-235 were detected slightly above background in two samples each (Figure 3-9).

Based on the data from these 24 samples collected from the dog pen area, it appears that the radioactivities in the soil do not correlate well with the radioactivities in the associated pedestals, and that the radioactivities in the soil are significantly less than those indicated by the surface radiation survey of the pedestals.

Fifteen of the twenty-four samples were also analyzed for chlordane. Chlordane was detected in all fifteen samples, S-363 through S-377. In two samples, S-363 (15 mg/kg) and S-365 (1.9 mg/kg), chlordane was detected above 1 mg/kg (Figure 3-9).

3.2.3.3 Ground Water Results

There are six HSU-1 monitoring wells, UCD1-3, UCD1-5, UCD1-20, UCD1- 21, UCD1-23, and UCD1-24, and HSU-2 monitoring well UCD2-7 within or immediately downgradient of the Western Dog Pen and North Chemical Dispensing Area, and two HSU-1 monitoring wells, UCD1-8 and UCD1-13, and HSU-2 monitoring well UCD2-14 immediately downgradient of the Eastern Dog Pens (Figure 3-1 and Table 3-16). With the exception of wells UCD1-3, UCD1-5 and UCD1-8, which are frequently dry, these wells have been sampled on a regular basis since their installation.

The 1996 annual data for the wells near the Western Dog Pens and North Chemical Dispensing Areas indicate that ground water has been relatively unaffected by activities in this area. No significant radioactivities were detected in ground water from these wells. No SVOCs, pesticides, or PCBs were detected, and the only VOC detected was chloroform at trace concentrations (0.64 and 0.83 μg/L) in well UCD1-24. Total chromium was detected up to 58 μg/L, slightly above the 50 μg/L MCL, in well UCD1-21. All other metals detected were below MCLs. Nitrate was detected slightly above the 10 mg/L MCL in most wells, but appears to be slightly above background only in wells UCD1-21, and UCD1-24, (WA, 1997c).

Wells UCD1-13 and UCD2-14 are located immediately downgradient of both the Eastern Dog Pens and Landfill Unit No. 2. In 1995, tritium was detected significantly above background, but below the 20,000 pico curies per liter (pCi/L) MCL in both wells (up to 17,300 pCi/L in UCD1-13 and 9,550 pCi/L in UCD2-14). The only VOC detected was chloroform up to 1.8 μg/L in well UCD1-13 and up to 2.0 μg/L in well UCD2-14. The tritium and chloroform detected in these wells are probably related to landfill disposal rather than the dog pens. Dieldrin and endrin were detected at trace concentrations (up to 0.027 μg/L) in well UCD 1-3. No other VOCs or SVOCs were detected. The only metal detected above MCLs was total chromium at 99.3 μg/L in well UCD1-13.

3.2.4 Domestic Septic Systems (OU-4)

Liquid wastes and sewage were discharged to six on-site septic tanks prior to 1971, when the LEHR Facility was connected to the UC Davis sewage treatment plant. A seventh tank was installed adjacent to the Co-60 field to receive wastes from that building; this tank reportedly was not used, but was not abandoned until 1988 (Dames & Moore, 1994a). The septic tanks reportedly received all liquid wastes from the facility except for Sr-90 and Ra-226 wastes. However, during backup of the Ra-226 system, septic tank No. 2 reportedly received effluent from AH-2. Prior to connection to the UC Davis wastewater system, tanks no. 1 through 6 were reportedly backfilled with sand and the influent/effluent lines were reportedly capped (IT Corporation, 1996). No formal closure reports have been located, nor are closure reports for domestic systems required by Solano County.

The locations of the tanks are shown on Figure 3-10, and their conditions are summarized in Table 3-9. A preliminary investigation was conducted in 1990 to locate the septic tanks. Tanks No. 1, No. 2, and No. 3 were positively located using a steel probe, shovels, or backhoe. The locations shown for the remainder of the tanks are based on installation records and LEHR personnel interviews. Prior to the LFI, no sampling of soil or sediment in, or around, any of the tanks, except Tank No. 2, had been conducted. Sampling around tanks No. 4, No. 5, and No. 6 is hindered by the presence of utilities, building slabs or other obstructions.

Septic system No. 2 is located within the leach field for the Ra-226 treatment system. Backhoe exploration and sampling were conducted around this tank in June 1995, as it was thought to represent the worst case (most likely contaminated) septic system, since it served the facilities that produced the most Ra-226 and Sr-90 waste. The top of the tank was found at 3 ft below surface and the tank measured 15.5 ft long by 5 ft wide by 7 ft deep (approximately 4,000 gallon capacity). The tank contained approximately 4 ft of sand with the top 3 ft remaining empty. Field screening of the sand backfill indicated beta-gamma activity as high as 120-160 counts per minute (cpm). However, laboratory analysis of sand samples collected from inside the tank did not identify any contaminants of concern in concentrations exceeding the US EPA Preliminary Remediation Goals (PRGs) for residential soils, which are conservative values below, which no significant risk would be expected for hypothetical residents at the Site (PNNL, 1995a).

Although no ground water monitoring wells are located immediately downgradient of the domestic septic systems, wells UCD1-5 and UCD1-21 are located approximately 50 to 200 ft generally downgradient from septic systems No. 2, No. 5, and No. 6, and UCD1-24 is located approximately 300 ft generally downgradient from septic systems No. 3 and No. 4. Due to low water levels, UCD1-5 is not sampled. The water quality in the other two wells (see Section 3.2.3.3) does not suggest significant impact from the septic systems.

Table 3-9. LEHR Septic Tank Data

Tank Number	Location	Condition
1	Northwest corner of Main Office	Partially destroyed (see Section 5.4 for more information)
2	West of Imhoff tanks	Good (see Section 5.3 for more information)
3	Between Clinical Pathology Building and Feed and Mix and Specimen Storage Building	Good/Filled with gravel
4	Approximately 15 ft north of Tank No. 3	Overlain by several utilities
5	Under Main Office Building	Unknown
6	Under sidewalk near Animal Hospital No. 1	Unknown
7	Adjacent to Co-60 Field	Unknown prior to LFI (see Section 5.4 for more information

Notes:
Reference = Dames & Moore, 1993

3.3 UC Davis Operable Units

The UC Davis operable units include the Solid Waste Trenches, 49 Waste Holes, and the UC Davis Landfill Unit Nos. 1, 2, and 3 (Figure 1-2). A brief physical description of each of the UC Davis OUs is presented below, followed by a table, which summarizes the more significant environmental investigations and findings within each of the UC Davis OUs to date. These tables are based on readily available public information and may not be complete. More detailed descriptions of ongoing investigations in these areas will be presented in future reports by UC Davis.

3.3.1 Solid Waste Trenches and 49 Waste Holes (OU-1)

The solid waste trenches located along the south and east sides of the dog pen area and 49 waste holes located south of the dog pen area are included in OU-1. These areas are discussed in the following sections.

3.3.1.1 Solid Waste Trenches

The UC Davis Solid Waste Trenches are comprised of the Southern and Eastern Solid Waste Trenches and received experimental waste from campus laboratories between 1957 and 1960. UC Davis personnel reported that laboratory wastes, including chemicals and radioactive wastes were disposed in these trenches (PNNL, 1995a). Some biological wastes and containers of pesticides have been found at a few locations in these trenches (PNNL, 1995a). Based on available information, significant investigations of the Southern and Eastern trenches are summarized in Tables 3-10 and 3-11.

Table 3-10. Investigation Chronology - UC Davis Southern Solid Waste Trenches Area

Date	Characterization Activity	Results
1/95	12 soil gas sampling locations at geophysical anomalies identified in November 1994. Samples collected at 2.5 ft and 6.0 ft depth.	Only one sample contained detectable VOCs (Freon-12, toluene, and xylenes).[a]
1996	Landfill trenching	Uncovered metal, vials, bones, plastic bags with radiological warning labels, and evidence of burning.[b]

Notes:

Reference: [a] = PNNL, 1995a
[b] = RPM meeting notes, 9/24/96

Table 3-11. Investigation Chronology - UC Davis Eastern Solid Waste Trenches Area

Date	Activity	Results
1984	Soil sampling and exploratory trenching	N/A (Rockwell, 1984).[a]
1987-1988	Soil sampling of 2 monitoring well borings (UCD-8 and UCD-9)	N/A (Wahler, 1988).[a]
10/89 - 11/89	Soil sampling of three monitoring well borings (UCD-12, -13, and -14)	(Wahler, 1988).[a]
5/92	Resampled earlier trenches for hazardous constituents	(Dames & Moore, 1993).[a]
11/94	Surface geophysics (GPR, magnetic, and electro-magnetic)	Anomalies detected (Norcal, 1994).[a]
1/95 - 3/95	Soil gas sampling (22 points)	Chloroform widespread but at very low levels. BTEX detected at two locations (PNNL, 1995a).
5/95	Two soil borings to 41.5 ft and 26.5 ft drilled to investigate geophysical anomalies, and/or where soil gas readings were high	As, Mn, Ni, Cr, crontonaldehyde, and dieldrin found in concentrations exceeding PRGs. (PNNL, 1995a).
1996	Landfill trenching	Uncovered laboratory waste in specific trenches - glassware, plastic bags, powders, liquids, gravel, bones, dog waste, etc.[b]

Notes:

N/A = Not available
a = PNNL, 1995a
b = RPM meeting notes, 9/24/96

3.3.1.2 49 Waste Holes

The 49 Waste Holes are located immediately south of the Eastern Dog Pens (Figure 1-2). These waste holes received radioactive wastes from various laboratories on the UC Davis campus. Documents indicate that 1.7 Ci of radionuclides were buried in the area. In addition, UC Davis personnel reported that some other chemicals and laboratory wastes were disposed in these pits, and investigations have confirmed that some of the wastes were biological in origin (PNNL, 1995a). Table 3-12 summarizes significant investigations in this area, based on available data.

Table 3-12. Investigation Chronology - 49 Waste Holes

Date	Activity	Results
1984	Soil sampling and exploratory trenching	Highest tritium in SW corner of eastern dog pens (near west end of waste holes). Cs-137, Sr-90 and C-14 also detected (Rockwell, 1984).[a]
1987-1988	1 soil boring (10 ft deep)	Cs-137, Ra-226, and gross beta detected (Wahler, 1988).[a]
2/90	Soil sampling in two shallow borings (1.5 ft depth)	Chlordane detected at surface. Cs-137, Ra-226, and tritium also detected (Dames & Moore, 1993).[a]
11/94	Surface geophysics (GPR, magnetics, and electro-magnetics)	Many strong and subtle anomalies associated with documented waste hole locations.[a]
1/95 - 3/95	Soil gas sampling (19 points)	Chloroform, BTEX, and Freon -12 observed at low concentrations.[a]
5/95	One soil boring to 41.5 ft	Encountered waste debris. As, Mn, Ni, bis(2-ethylhexyl) phthalate, Co-60, and tritium exceeded PRGs.[a]
1996	Landfill trenching	Uncovered glassware, syringes, plastic bags, and plastic containers.[b]

Notes:

References: [a] = PNNL, 1995a
[b] = RPM meeting notes, 9/24/96

3.3.2 UC Davis Landfill Disposal Units (OU-5)

OU-5 includes UC Davis Landfill Disposal Units Nos. 1, 2, and 3. UC Davis used these landfill units to dispose of solid waste from campus activities. The primary purpose of the landfills was disposal of sanitary waste, however, characterization activities have indicated that the landfills also received some chemical waste and limited amounts of radioactive waste.

Landfill Unit No. 1 is the central landfill and borders the eastern edge of the eastern solid waste trenches (OU-1; Figure 1-2). Landfill Unit No. 1 operated from the 1940s until the 1950s and

received general wastes from the UC Davis Campus (possibly including chemical wastes) and sewage sludge (PNNL, 1995a).

Landfill Unit No. 2 is located near the center of the LEHR Facility, and is the westernmost landfill in OU-5. Landfill Unit No. 2 operated from 1956 to 1967. The types of wastes disposed in this landfill were not documented, but apparently consisted of general refuse, animal parts, incinerator ash, and some liquid chemicals (PNNL, 1995a).

Landfill Unit No. 3 is the easternmost landfill in OU-5. Landfill Unit No. 3 operated from 1963 to 1967 and consisted of two large, pit-like excavations, probably containing similar wastes to Landfills No. 1 and No. 2 (PNNL, 1995a).

Tables 3-13, 3-14, and 3-15 summarize the environmental investigations conducted at Landfill Unit Nos. 1, 2 and 3, respectively. The existing data have identified some constituents which exceed background levels and/or PRGs. In fact, the contaminant levels are among the highest found at or near the LEHR Facility (PNNL, 1995a).

Table 3-13. Investigation Chronology - UC Davis Landfill Unit No. 1

Date	Activity	Results
1990	Soil sampling during installation of wells UCD1-10, -11, -12, -13, and UCD2-14	Detected bis-2(ethylhexyl)phthalate, methylene chloride, tritium, Pb-212, Pb -214, Ra-226, C-14, and nitrate.[a]
11/94	Surface geophysics (GPR, magnetics, and electro-magnetics)	Identified geophysical anomalies that appear to correspond to areas and/or trenches of buried debris.[a]
1/95 - 2/95	Soil gas sampling (17 points)	Detected 1,1-DCE, chloroform, ethyl benzene, Freon 11, Freon 12, PCE, xylene, and total volatile hydrocarbons.[a]
1995	Aerial photograph review	Closed by 1956, prior to construction of any LEHR-related facilities on-site. The boundaries of LF No. 1 were slightly redefined based on aerial photography review. Soil sampling program adjusted to cover redefined areas.[b]
6/95	Three soil borings (one to 26.5 ft, one to 7 ft, and a third to 41.5 ft)	As, Be, Mn, and Ni in soil exceeded PRGs but did not exceed the background levels. Mn in waste exceeded both the PRG and background.[a]
1996	Landfill trenching	Uncovered degraded refuse, glassware, and metal.[c]

Notes:

References [a] = PNNL, 1995a
[b] = RPM meeting notes, 3/95
[c] = RPM meeting notes, 9/24/96

Table 3-14. Investigation Chronology - UC Davis Landfill Unit No. 2

Date	Characterization Method	Results
1990	Soil sampling during installation of wells UCD1-10, -11, -12, -13, and UCD2-14.	Detected bis-2(ethylhexly)phthalate, methylene chloride, tritium, Bi-214, Pb-212, Pb-214, Ra-226, C-14, Th-232, and nitrate.[a]
11/94	Surface geophysics (GPR, magnetics, and electro-magnetics)	Identified geophysical anomalies that appear to correspond to areas and/or trenches of buried debris.[a]
1/95-2/95	Soil gas sampling (38 points) (overlaps with OU-1 waste trenches characterization).	Detected 1,1,1-TCA, 1,1-DCE, 1,1-DCA, 1,2,4-trimethylbenzene, carbon tetrachloride, chloroform, ethyl-benzene, Freon-11, Freon-12, toluene, TCE, xylene, total volatile hydrocarbons.[a]
1995	Aerial photograph review	The boundaries of LF No. 2 were slightly redefined based on aerial photography review. Soil sampling program adjusted to cover redefined areas.[b]
5/95	Three soil borings (two to 26.5 ft, and a third to 42.5 ft)	Mn, Cr, Ni and Pb in soil, and As, Mn, Pb and Cs-137 in waste exceeded background.[a]

Notes:
References: [a] = PNNL, 1995a
[b] = RPM meeting notes, 3/95

Table 3-15. Investigation Chronology - UC Davis Landfill Unit No. 3

Date	Method	Results
1990	Soil sampling during installation of wells UCD1-10, -11, -12, -13, and UCD2-14.	Detected bis-2(ethylhexly)phthalate, methylene chloride, tritium, Bi-214, Pb-212, Pb-214, Ra-226, C-14, Th-232, and nitrate.[a]
11/94	Surface geophysics (GPR, magnetics and electro-magnetics)	Identified geophysical anomalies that appear to correspond to areas and/or trenches of buried debris.[a]
2/95 - 3/95	Soil gas sampling (17 points).	Detected methane,1,2,4-trimethylbenzene, benzene, chloroform, ethyl benzene, styrene, PCE, toluene, TCE, xylene, total volatile hydrocarbons.[a]
1995	Aerial photograph review	In photographs from 1937 to 1948, apparent drying beds for the waste water treatment plant extended to the future location of LF No. 3. The period of landfill activities generally agrees with the dates presented in the RI/FS-EA Work Plan. The boundaries of LF No. 3 were slightly redefined and soil sampling program adjusted.[b]
3/95-6/95	Three soil borings (two to 26.5 ft, and a third to 42.5 ft); backhoe trenching at 8 sample locations	As, Mn, Cr, Ni, Pb, Hg, Cs-137, Ra-226 exceeded PRGs.[a]
1996	Landfill trenching	Encountered refuse (metal, glass, wire, rubber, bricks), laboratory waste (glassware, vials, tubing) and gravel.[c]

Notes:
References: [a] = PNNL, 1995a
[b] = RPM meeting notes, 9/24/96
[c] = UC Davis, 1997

3.4 Other Investigations

Previous ground water, surface water, storm water, air, biota and radiation monitoring investigations at the Site are summarized below.

3.4.1 Ground and Surface Water (OU-6)

The shallow ground and surface water at and adjacent to the LEHR Site make up OU-6. As a portion of the Phase II Characterization conducted by Dames & Moore (1993), quarterly ground water monitoring activities began at LEHR in November 1990. The existing surface water monitoring program at the LEHR Site also began in November 1990 and is conducted at three locations along the South Fork of Putah Creek. From November 1990 through November 1996, ground water monitoring activities were conducted for DOE under the management of PNNL. Starting in the first quarter 1997, UC Davis began performing the ground and surface water monitoring programs. The 1996 Annual Water Monitoring Report (WA, 1997c) presents detailed discussions of the recent ground and surface water results.

3.4.1.1 Ground Water

Currently, there are 21 HSU-1 wells and 11 HSU-2 wells located on or near the Site that monitor ground water (Figure 3-1 and Table 3-16). In addition, well UCD1/2-27 is equipped with a Westbay monitoring system in which seven different intervals can be sampled. Three of the seven screened zones in UCD1/2-27 are completed in HSU-1 and four are completed in HSU-2.

Five of the HSU-1 monitoring wells (UCD1-3, 1-5, 1-6, 1-8, and 1-9) are not sampled as part of the quarterly ground water monitoring program because they are generally dry. In the event, the water table reaches the screened interval in these wells, they are included in the on-site HSU-1 water level measurements for that period.

In addition to the HSU-1 and HSU-2 monitoring wells, UC Davis installed HSU-2 extraction well EW-2-1 in the summer of 1996, and installed HSU-2 injection well IW2-1 and three HSU-4 monitoring wells (UCD4-41, UCD4-42, and UCD4-43) during the summer of 1997. Well construction details for these wells are currently not available.

Ground water impacted by VOCs, nitrate, hexavalent chromium, total dissolved solids (TDS), and tritium, among other constituents, extends downgradient from various LEHR Site waste disposal areas (Figures 3-11, 3-12, and 3-13; PNNL, 1996a). Of these contaminants, chloroform and tritium are the predominant compounds routinely detected in LEHR Site ground water. Both chloroform and tritium appear to originate in the Landfill No. 2 area and have migrated to the east and north.

Table 3-16. Well Construction Details

Well Name	Total Depth (ft)	Screened Interval (ft bgs)	HSU	Investigation	Date Completed
UCD1-1	56.5	46.5 - 56.5	First	Wahler Associates 1989	10/09/87
UCD1-3	49.0	39.0 - 49.0	First	Wahler Associates 1989	10/23/87
UCD1-4	57.2	45 - 55	First	Wahler Associates 1989	10/14/87
UCD1-5	48.0	38.0 - 48.0	First	Wahler Associates 1989	10/22/87
UCD1-6	50.0	40 - 50	First	Wahler Associates 1989	10/21/87
UCD2-7	90	80 - 90	Second	Wahler Associates 1989	11/05/87
UCD1-8	53.5	43.5 - 53.5	First	Wahler Associates 1988	11/03/87
UCD1-9	50.0	40.0 - 50.0	First	Wahler Associates 1988	11/04/87
UCD1-10	70.0	54 - 69	First	Dames & Moore SWAT, 1990	10/11/89
UCD1-11	66.5	50 - 65	First	Dames & Moore SWAT, 1990	10/17/89
UCD1-12	65.0	49.5 - 64.5	First	Dames & Moore SWAT, 1990	10/19/89
UCD1-13	65.0	50 - 65	First	Dames & Moore SWAT, 1990	10/26/89
UCD2-14	85	75 - 85	Second	Dames & Moore SWAT, 1990	11/15/89
UCD2-15	120.5	91 - 116	Second	Dames & Moore, Phase II	03/28/90
UCD2-16	122	92 - 117	Second	Dames & Moore, Phase II	04/04/90
UCD2-17	143	88 - 113	Second	Dames & Moore, Phase II	04/10/90
UCD1-18	70	54 - 69	First	Dames & Moore, Phase II	10/04/90
UCD1-19	74.5	71.5 - 56.5	First	Dames & Moore, Phase II	10/01/90
UCD1-20	73	57 - 72	First	Dames & Moore, Phase II	10/09/90
UCD1-21	73	57 - 72	First	Dames & Moore, Phase II	10/11/90
UCD1-22	73	57 - 72	First	Dames & Moore, Phase II	10/25/90
UCD1-23	73	56.5 - 71.5	First	Dames & Moore, Phase II	10/17/90
UCD1-24	73	57 - 72	First	Dames & Moore, Phase II	10/22/90
UCD1-25	75	60 - 75	First	PNNL/IT, 95/96 GW Char.**	10/06/95
UCD2-26	102	87 - 102	Second	PNNL/IT, 95/96 GW Char.**	10/95
UCD2-27	128	7 screened intervals*	First/Second	PNNL/IT, 95/96 GW Char.**	10/95
UCD1-28	70	53-68	First	Dames & Moore, RI/FS Work	09/05/96
UCD2-29	97	80-95	Second	Dames & Moore, RI/FS Work	09/04/96
UCD2-30	110	95-110	Second	Dames & Moore, RI/FS Work	09/10/96
UCD2-31	110	94-109	Second	Dames & Moore, RI/FS Work	09/11/96
UCD2-32	105	83-103	Second	Dames & Moore, RI/FS Work	04/03/96
UCD1-34	76	61 - 76	First	PNNL/IT, 95/96 GW Char.**	10/95
UCD2-35	122	107 - 122	Second	PNNL/IT, 95/96 GW Char.**	10/95
EW2-1	125.65	79.4-119.4	Second	Dames & Moore, RI/FS Work	09/20/96

Notes:

SWAT = Solid Waste Assessment
HSU = Hydrostratigraphic Unit
* = Screened intervals are from 53-55, 63-65, 73-75, 86-88, 96-98, 106-108, and 116-118.
** = PNNL, 1996c

3.4.1.2 Surface Water

Surface water sampling is conducted at three locations along the South Fork of Putah Creek (Figure 3-1). Surface water samples are collected quarterly in conjunction with ground water monitoring from these sampling points. Station Putah Creek Upstream (PCU) is located upstream of the LEHR Site; station Putah Creek Downstream (PCD) is located downstream of the LEHR Site and UC Davis property; and station Sewage Treatment Plant Outfall (STPO) is located at the outfall of the UC Davis wastewater treatment plant, which discharges into the South Fork of Putah Creek between PCU and PCD (Figure 3-1).

VOCs reported in surface water samples collected in 1996 include acetone, bromodichloromethane, bromoform, chloroform, dibromochloromethane, and methylene chloride. One or more of the trihalomethanes, bromoform, chloroform, bromodichloromethane, and dibromochloromethane and methylene chloride were detected all four quarters of 1996, mainly in STPO samples. Chlorination of water at the UC Davis wastewater treatment plant is the apparent source of these constituents.

Several metals and radionuclides were also detected in the surface water, but none were detected above MCLs.

3.4.2 Storm Water

The current LEHR storm water monitoring plan (PNNL, 1996a) was established in the fall of 1994. Field measurements and samples of storm water runoff are collected by DOE at two locations where storm water collects and is removed from the Site. One collection point (SWL-1, now called LS-1) is a lift station located on the west side of the Site, which pumps runoff under Old Davis Road for discharge into Putah Creek. The second collection point is a storm drain (SWL-2, now called SD-1) located on the west side of the western dog pen area (Figure 3-14). Additional storm water monitoring is performed by UC Davis.

Based on available storm line drawings (Figure 3-14), samples from LS-1 monitor storm water that runs off much of the southwestern part of the LEHR Site and is pumped directly into an outfall in Putah Creek. SD-1 collects storm water from the central portion of the Site, primarily from the paved areas east of the buildings. Precipitation falling on the remaining portions of the Site ponds and eventually infiltrates on-site.

The monitoring plan specifies sampling for two separate rainfall events: (1) the first significant storm event of the rainy season in order to sample runoff that may carry material that accumulated on the ground surface during the summer months; and, (2) a large storm event late in the rainy season. Because rigorous storm water runoff monitoring had not been conducted prior to the fall of 1994, samples were analyzed for the following during the two sampling events in 1995 and 1996: selected radionuclides, metals, hexavalent chromium, nitrate, alkalinity, other cations and anions, VOCs, SVOCs, formaldehyde, pesticides, PCBs, total oil and grease, suspended and

dissolved solids, total organic carbon, chemical oxygen demand, and turbidity. This list of analytes has recently been revised slightly (Dames & Moore, 1997).

No detectable concentrations of radionuclides were found in the storm water samples collected during 1996. The only VOC detected was acetone, which is believed to be laboratory contamination. The pesticides, alpha- and gamma-chlordane were found in LS-1 samples (Figure 3-14) at concentrations just above detection limits, but below the 1 ppb MCL. No PCBs or other SVOCs were detected in any of the samples.

3.4.3 Air

Air sampling is not required under the Site Environmental Monitoring and Surveillance Plan (Environmental Management Operations, 1992) since LEHR does not have any active effluent discharges from DOE-operated facilities. However, a baseline study air monitoring program was implemented in August 1995, primarily to meet CERCLA requirements and to support an accurate and complete risk assessment for the Site.

A one-year baseline air sampling program was implemented in August 1995. The program includes three site perimeter sampling stations, one background station, and one meteorological station (see Figure 3-15). The goals of the program were to:

- Document background air concentrations for contaminants of concern;
- Support a quantitative risk assessment;
- Detect, characterize, and report unplanned releases;
- Verify effluent treatment and control programs;
- Identify potential environmental problems and evaluate the need for remedial actions;
- Allow assessment of airborne impacts during remedial actions;
- Establish local meteorological conditions; and,
- Verify compliance with applicable federal, state, and local regulations and DOE orders.

Airborne contaminants were sampled by a network of 4 continuously operating samplers: 3 on or near the Site perimeter (AM-2, AM-3, and AM-5) (Figure 3-15) and at 1 distant location (Figure 3-16). The on-site meteorological station provides measurements of wind speed, wind direction, temperature, and barometric pressure. Hourly-average measurements were recorded with an automated data acquisition system. Other meteorological data were collected from the UC Davis Climatological Data Center, located approximately 1 mile northwest of the Site.

Radionuclide monitoring included continuous air monitoring for tritium and for particle-associated radionuclides. Airborne particles were sampled by continuously drawing air through a

high-efficiency glass-fiber filter. Filters were collected every 2 weeks and analyzed for total beta and total alpha radioactivity. Quarterly composites of these biweekly samples were analyzed for the gamma-emitting radionuclides, Co-60, Cs-137, and Ra-226, and other specific radionuclides, including isotopes of uranium, thorium, and strontium. Radon was sampled using passive alpha-track air sampling cartridges that were exchanged quarterly. Atmospheric water vapor was collected for tritium analysis by continuously passing air through cartridges containing silica gel, which were exchanged every four weeks.

Samples for chlordane, metals, VOC, and airborne dust analyses were collected at the same 4 sampling locations as those used for radiological air sampling. Twenty-four hour samples were collected in August 1995, September 1995, October 1995, January 1996, April 1996, and July 1996. The results for the baseline air monitoring program indicate that site air levels of the measured radionuclides, metals, VOCs, and chlordane are similar to those at the distant locations, and that all levels are well below DOE and/or EPA standards (PNNL, 1996d). Although the one-year baseline program was completed in August 1996, monitoring of selected radionuclides is ongoing.

3.4.4 Biota

To date, the only biota investigation conducted at the LEHR Site was sampling and analysis for radioactivity of leaves from a Fruitless Mulberry tree located in the northern third of the DOE Disposal Box (Figure 1-2), 3.5 ft from its northern boundary. The results of these analyses indicate no measurable impact to these leaves.

3.4.5 Ambient Radiation Monitoring

Perimeter fence lines, radioactive waste storage areas, and various work areas around the LEHR Site are monitored by thermoluminescent dosimeters (TLDs) to comply with DOE Orders 5400.1 and 5400.5. TLD locations were reduced from the 35 that were monitored for the first three quarters of 1995 to 25 for the fourth quarter on, as approved by the Site Radiological Control Committee before implementation. The number of TLDs was reduced to 25 after completion of the D&D of the Animal Hospitals and Specimen Storage buildings. Figure 3-17 shows the locations of the 24 TLDs currently at the LEHR Site. The 25th TLD is a control monitoring station located in the Environmental Safety and Health Building on the UC Davis campus.

In 1996, one of the four TLD locations that monitored the DOE-occupied Geriatrics I radioactive storage area building had readings slightly above background levels. The TLD on the east side of the building (Figure 3-17) had readings slightly above background levels. These elevated readings are attributable to radioactive laboratory sources and standards, which are stored close to the TLD location. The highest reading for this storage location was a total of 12 mR/yr, after correcting for Site background and Radiation Detection Company (RDC) control readings.

Calculations were performed to determine the maximum potential exposure an individual might have received in the vicinity of this storage location. Geriatrics I is situated in an area of the Site where employees spend very little time and where visitors are rarely present. Assuming an occasional occupancy factor of 30 minutes per day, 12 mR/yr yields a calculated dose of 0.19 mrem at the TLD location. Thirty minutes a day is probably much higher than the actual average occupancy for this locations, which is not adjacent to sidewalks or passageways.

Since people are unlikely to actually stand at the TLD location, the calculated dose can be adjusted by assuming a one meter distance from the TLD. At one meter distance the dose is reduced to less than 1.0×10^{-5} mrem/yr. This calculated dose is well below the maximum 100 mrem/yr allowed by DOE (DOE 5400.5, Chapter II.1.b).

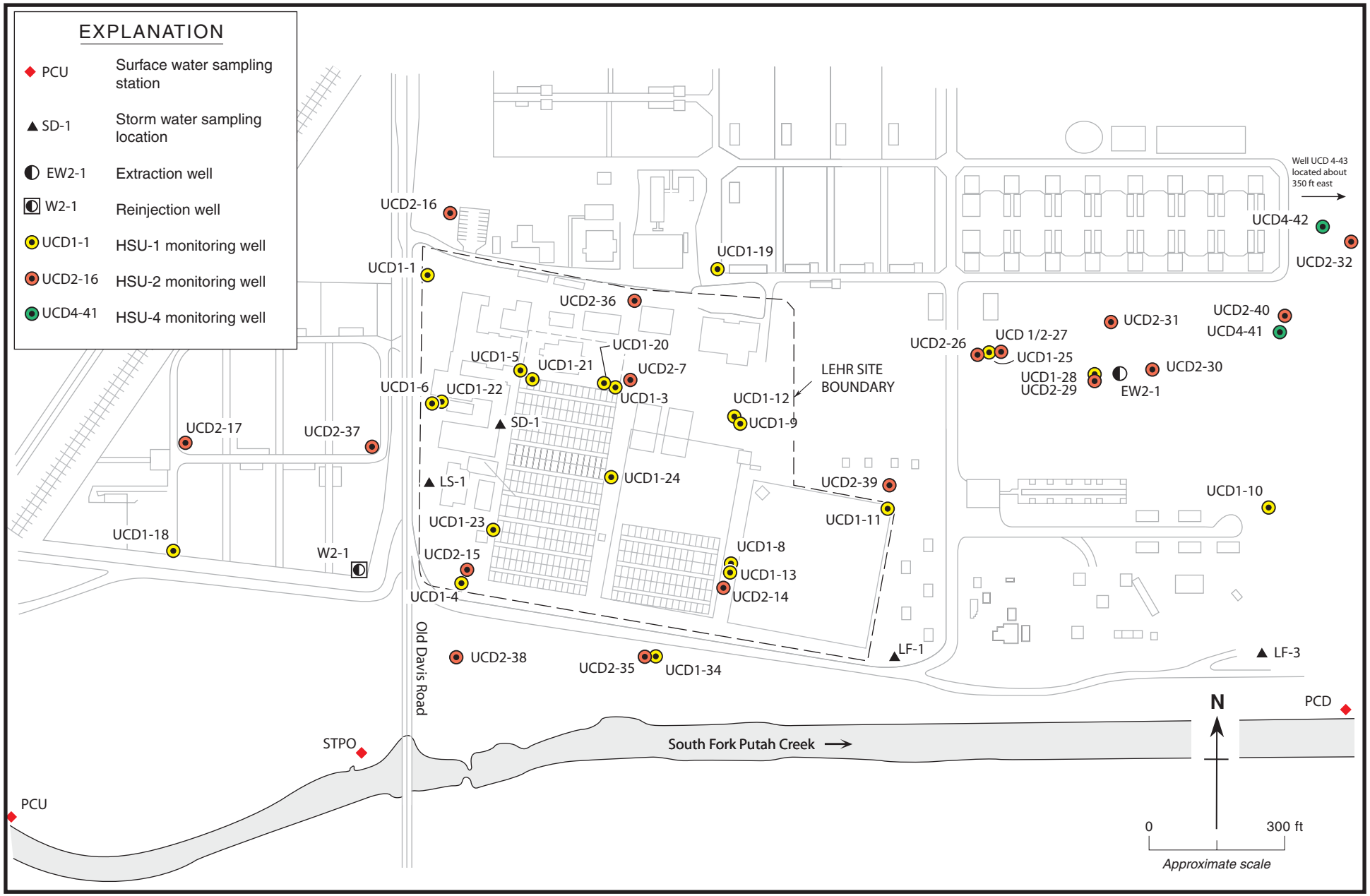

Figure 3-1. Monitoring Well, Storm Water and Surface Water Monitoring Locations

Weiss Associates

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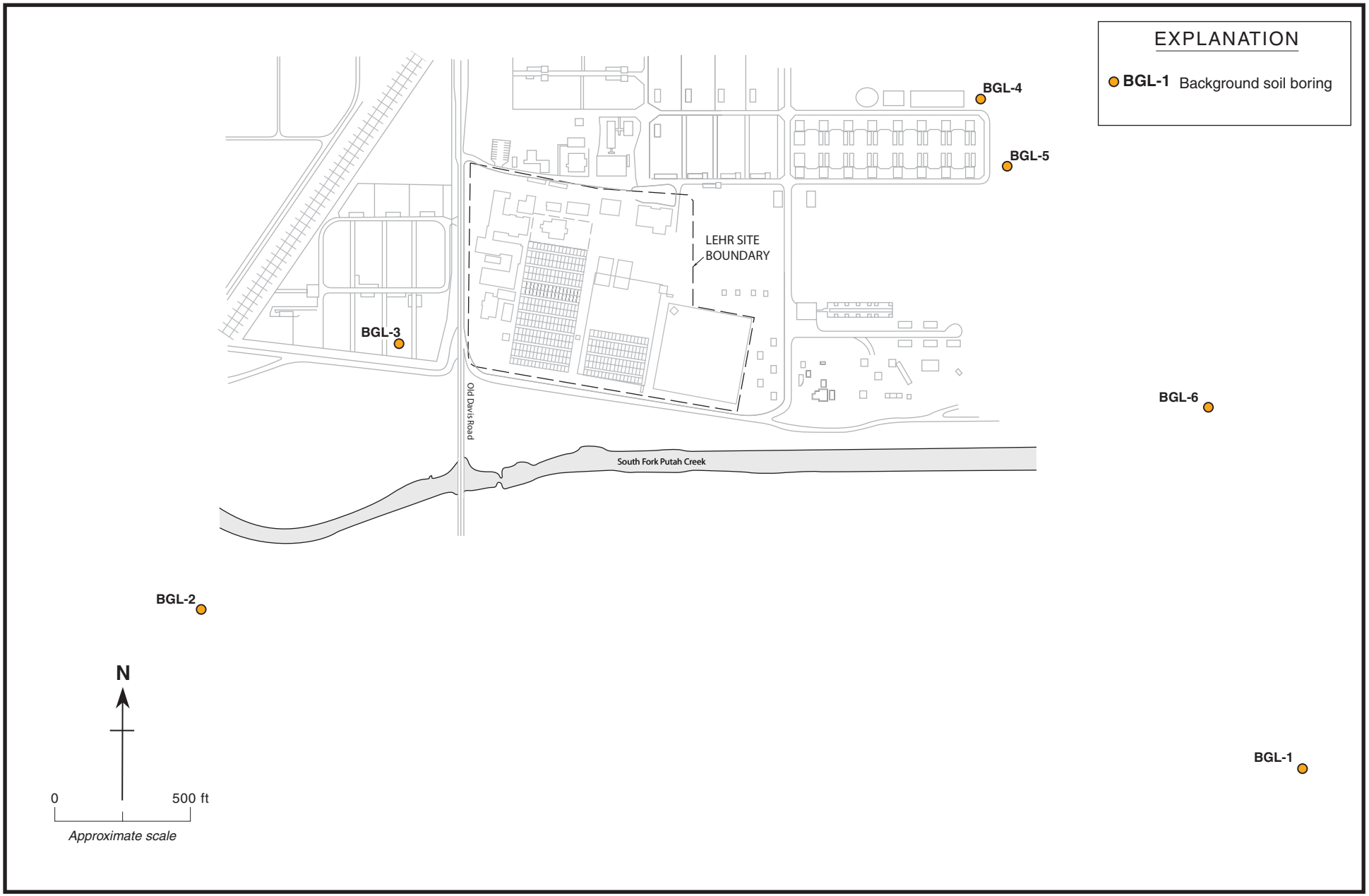

Figure 3-2. 1994 Background Soil Borings

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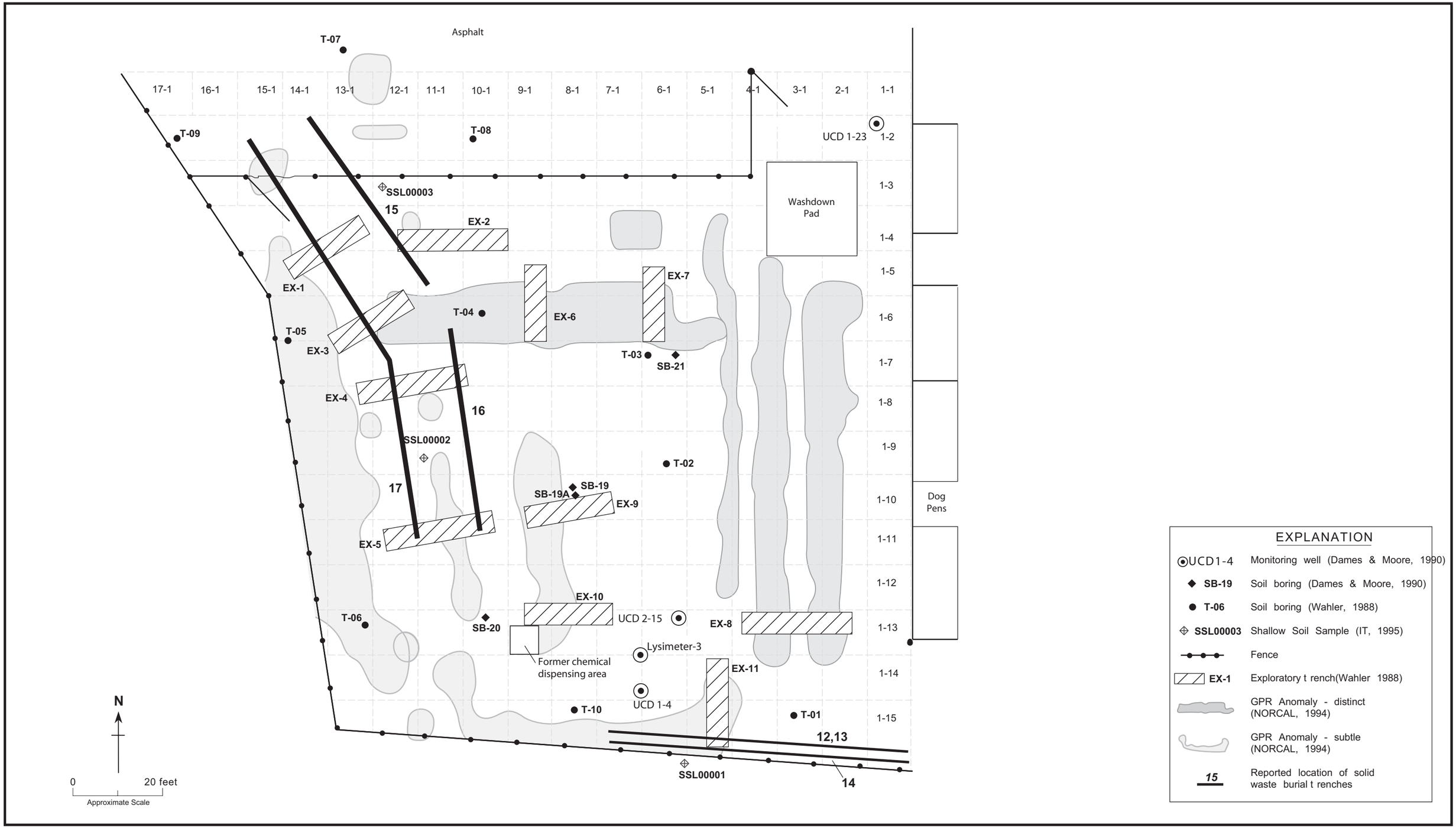

Figure 3-3. Southwest Trench Area Sampling Locations, Pre-1996 Investigations

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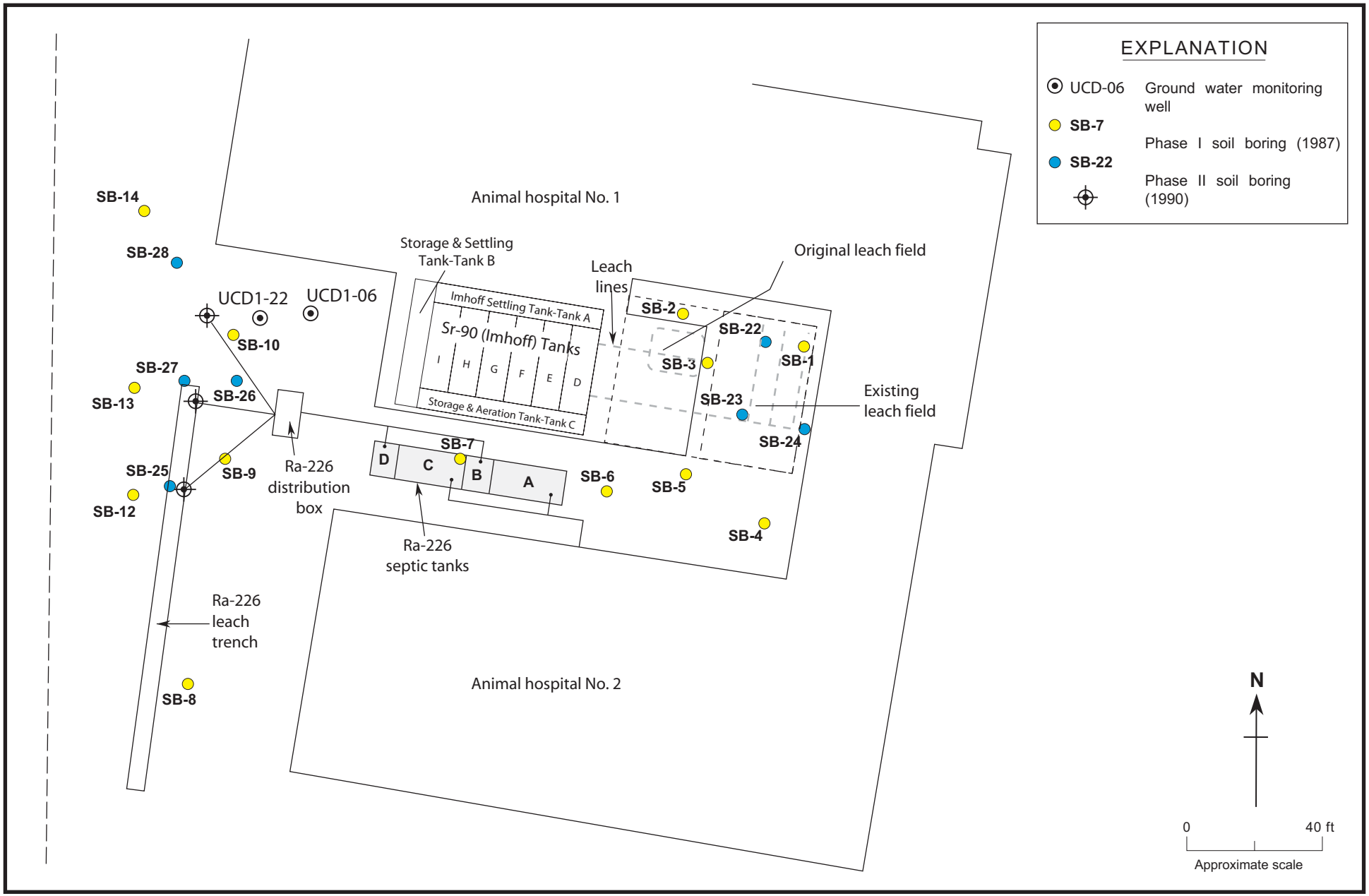

Figure 3-4. Radium-226 and Strontium-90 Treatment System Sampling Locations - Pre-1996 Investigations

Weiss Associates

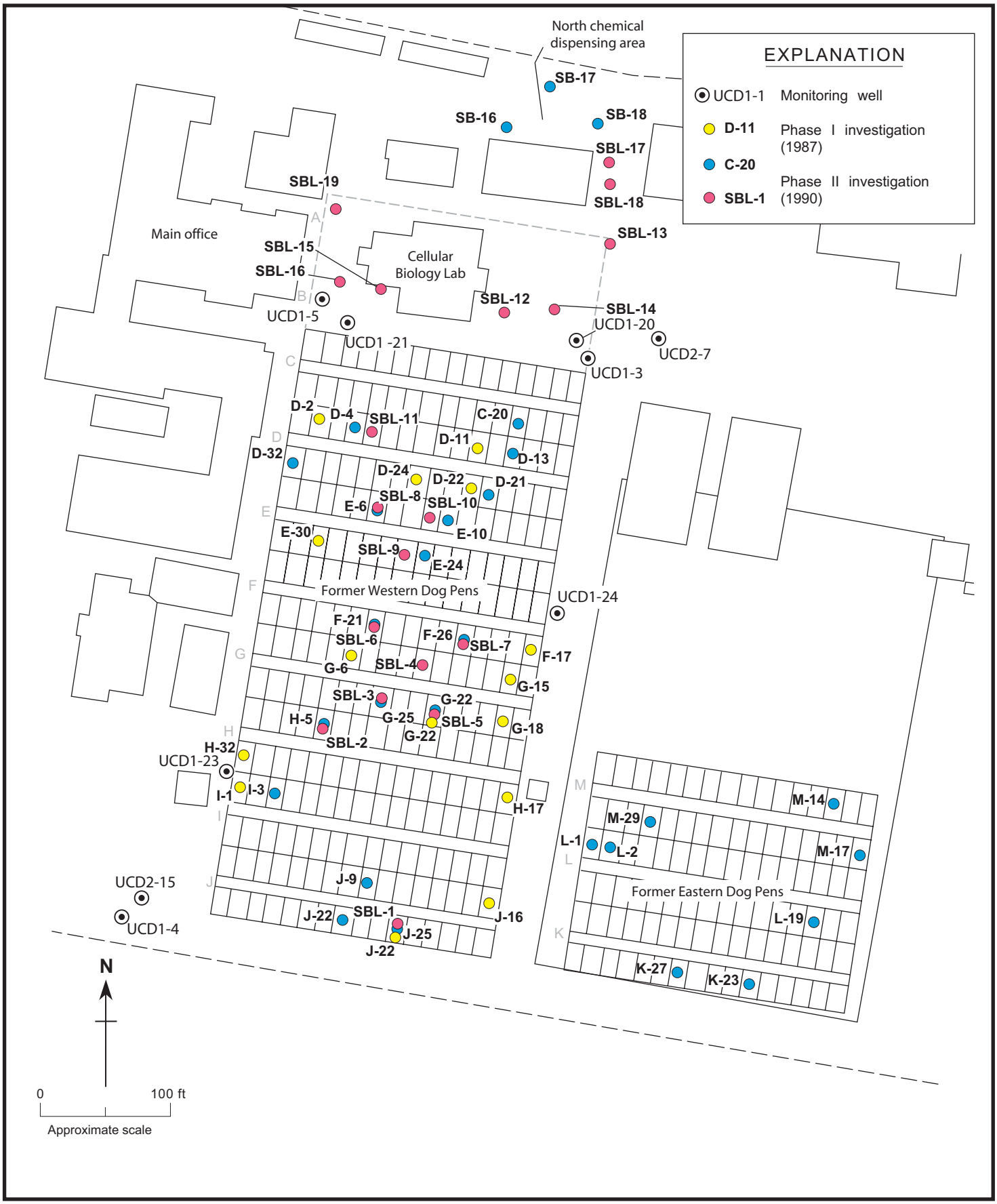

Figure 3-5. Dog Pens and North Chemical Dispensing Area Sampling Locations - Pre-1996 Investigations

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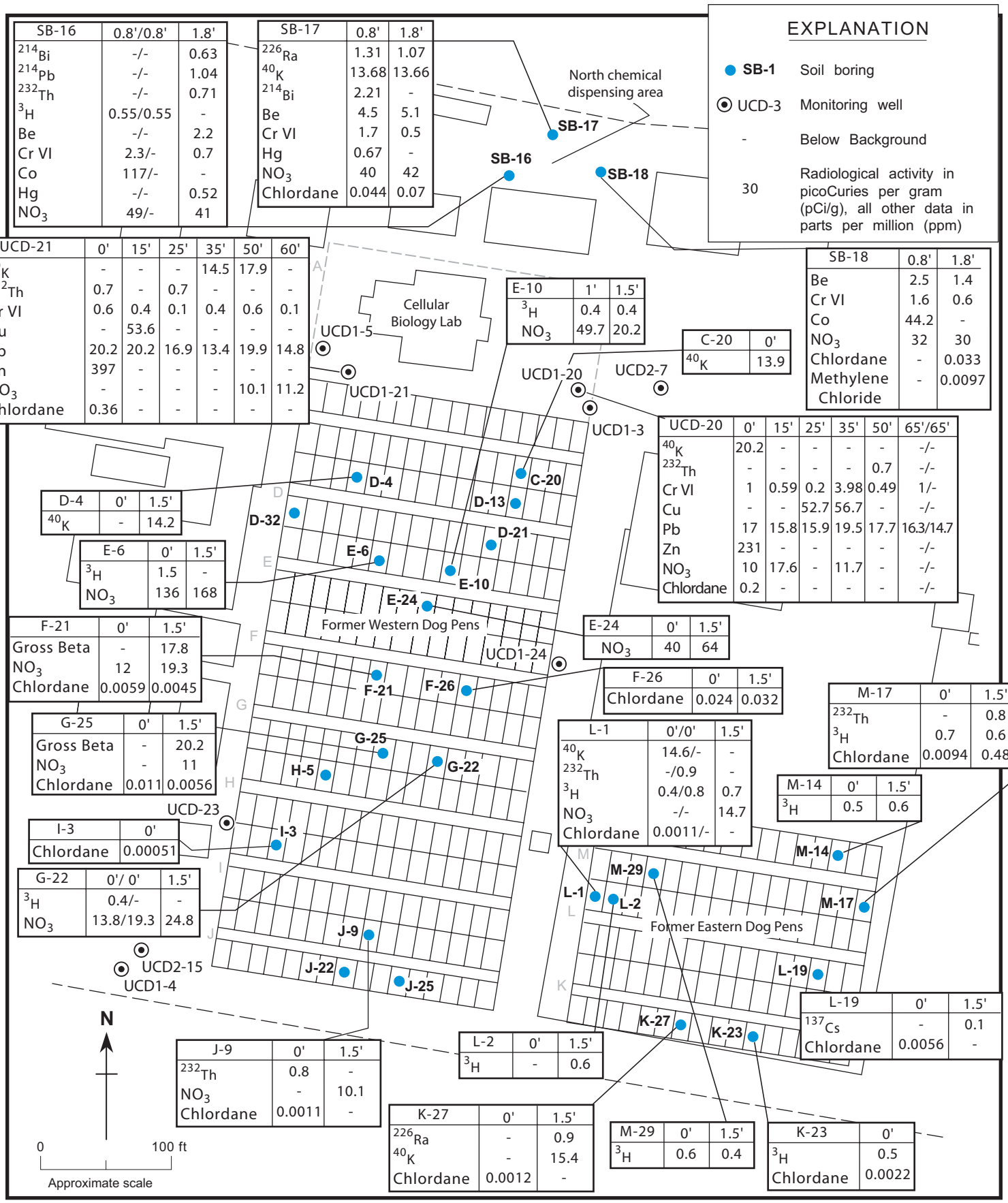

SB-16	0.8'/0.8'	1.8'
^{214}Bi	-/-	0.63
^{214}Pb	-/-	1.04
^{232}Th	-/-	0.71
^{3}H	0.55/0.55	-
Be	-/-	2.2
Cr VI	2.3/-	0.7
Co	117/-	-
Hg	-/-	0.52
NO_3	49/-	41

SB-17	0.8'	1.8'
^{226}Ra	1.31	1.07
^{40}K	13.68	13.66
^{214}Bi	2.21	-
Be	4.5	5.1
Cr VI	1.7	0.5
Hg	0.67	-
NO_3	40	42
Chlordane	0.044	0.07

UCD-21	0'	15'	25'	35'	50'	60'
^{40}K	-	-	-	14.5	17.9	-
^{232}Th	0.7	-	0.7	-	-	-
Cr VI	0.6	0.4	0.1	0.4	0.6	0.1
Cu	-	53.6	-	-	-	-
Pb	20.2	20.2	16.9	13.4	19.9	14.8
Zn	397	-	-	-	-	-
NO_3	-	-	-	-	10.1	11.2
Chlordane	0.36	-	-	-	-	-

E-10	1'	1.5'
^{3}H	0.4	0.4
NO_3	49.7	20.2

C-20	0'
^{40}K	13.9

SB-18	0.8'	1.8'
Be	2.5	1.4
Cr VI	1.6	0.6
Co	44.2	-
NO_3	32	30
Chlordane	-	0.033
Methylene Chloride	-	0.0097

UCD-20	0'	15'	25'	35'	50'	65'/65'
^{40}K	20.2	-	-	-	-	-/-
^{232}Th	-	-	-	-	0.7	-/-
Cr VI	1	0.59	0.2	3.98	0.49	1/-
Cu	-	-	52.7	56.7	-	-/-
Pb	17	15.8	15.9	19.5	17.7	16.3/14.7
Zn	231	-	-	-	-	-/-
NO_3	10	17.6	-	11.7	-	-/-
Chlordane	0.2	-	-	-	-	-/-

D-4	0'	1.5'
^{40}K	-	14.2

E-6	0'	1.5'
^{3}H	1.5	-
NO_3	136	168

F-21	0'	1.5'
Gross Beta	-	17.8
NO_3	12	19.3
Chlordane	0.0059	0.0045

E-24	0'	1.5'
NO_3	40	64

F-26	0'	1.5'
Chlordane	0.024	0.032

G-25	0'	1.5'
Gross Beta	-	20.2
NO_3	-	11
Chlordane	0.011	0.0056

L-1	0'/0'	1.5'
^{40}K	14.6/-	-
^{232}Th	-/0.9	-
^{3}H	0.4/0.8	0.7
NO_3	-/-	14.7
Chlordane	0.0011/-	-

M-17	0'	1.5'
^{232}Th	-	0.8
^{3}H	0.7	0.6
Chlordane	0.0094	0.48

M-14	0'	1.5'
^{3}H	0.5	0.6

I-3	0'
Chlordane	0.00051

G-22	0'/ 0'	1.5'
^{3}H	0.4/-	-
NO_3	13.8/19.3	24.8

L-19	0'	1.5'
^{137}Cs	-	0.1
Chlordane	0.0056	-

J-9	0'	1.5'
^{232}Th	0.8	-
NO_3	-	10.1
Chlordane	0.0011	-

L-2	0'	1.5'
^{3}H	-	0.6

K-27	0'	1.5'
^{226}Ra	-	0.9
^{40}K	-	15.4
Chlordane	0.0012	-

M-29	0'	1.5'
^{3}H	0.6	0.4

K-23	0'
^{3}H	0.5
Chlordane	0.0022

Figure 3-6. Analytic Results above Background from Phase II Investigation in the Dog Pens and North Chemical Dispensing Area

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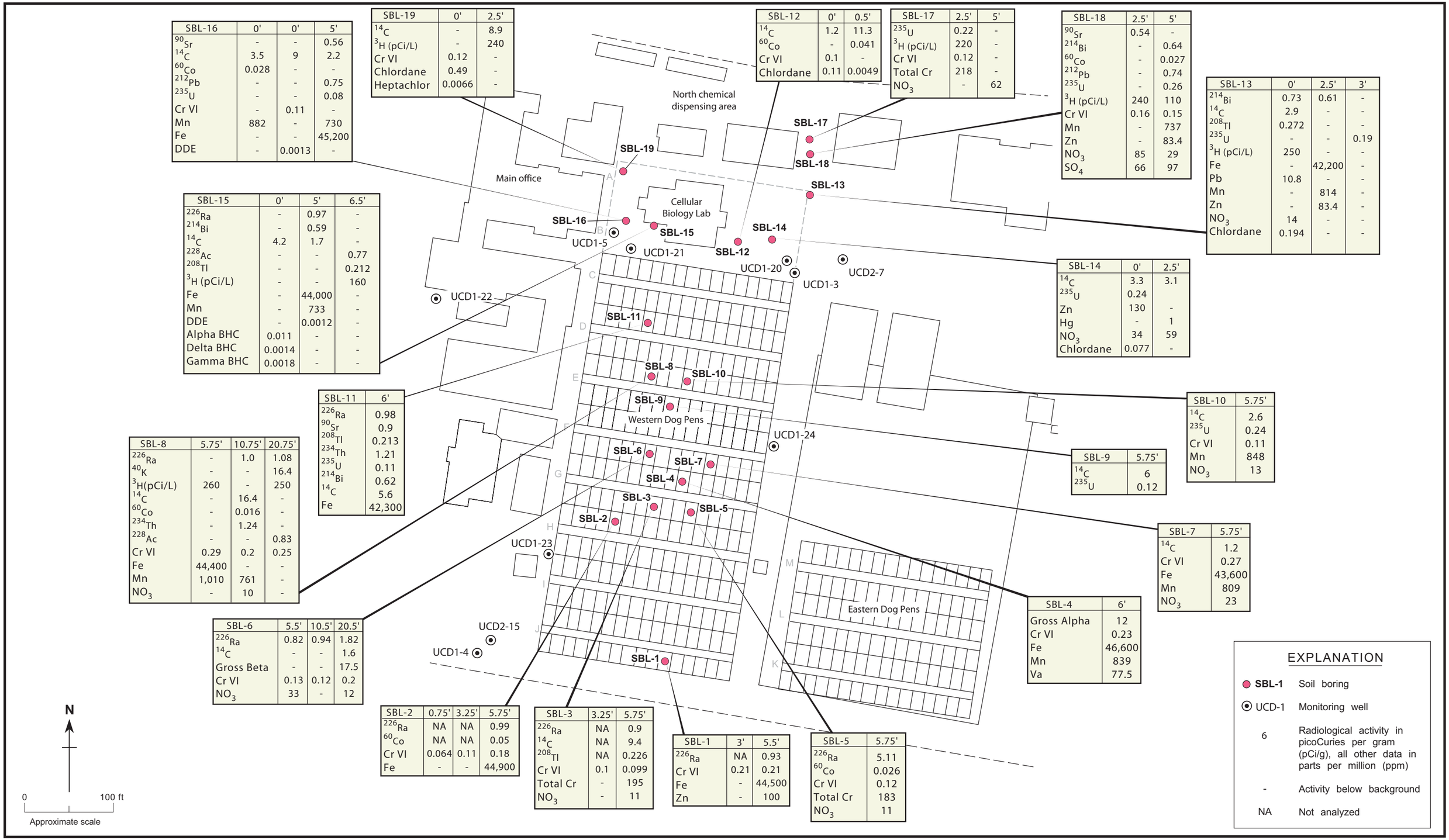

SBL-16	0'	0'	5'
^{90}Sr	-	-	0.56
^{14}C	3.5	9	2.2
^{60}Co	0.028	-	-
^{212}Pb	-	-	0.75
^{235}U	-	-	0.08
Cr VI	-	0.11	-
Mn	882	-	730
Fe	-	-	45,200
DDE	-	0.0013	-

SBL-19	0'	2.5'
^{14}C	-	8.9
^{3}H (pCi/L)	-	240
Cr VI	0.12	-
Chlordane	0.49	-
Heptachlor	0.0066	-

SBL-12	0'	0.5'
^{14}C	1.2	11.3
^{60}Co	-	0.041
Cr VI	0.1	-
Chlordane	0.11	0.0049

SBL-17	2.5'	5'
^{235}U	0.22	-
^{3}H (pCi/L)	220	-
Cr VI	0.12	-
Total Cr	218	-
NO_3	-	62

SBL-18	2.5'	5'
^{90}Sr	0.54	-
^{214}Bi	-	0.64
^{60}Co	-	0.027
^{212}Pb	-	0.74
^{235}U	-	0.26
^{3}H (pCi/L)	240	110
Cr VI	0.16	0.15
Mn	-	737
Zn	-	83.4
NO_3	85	29
SO_4	66	97

SBL-13	0'	2.5'	3'
^{214}Bi	0.73	0.61	-
^{14}C	2.9	-	-
^{208}Tl	0.272	-	-
^{235}U	-	-	0.19
^{3}H (pCi/L)	250	-	-
Fe	-	42,200	-
Pb	10.8	-	-
Mn	-	814	-
Zn	-	83.4	-
NO_3	14	-	-
Chlordane	0.194	-	-

SBL-15	0'	5'	6.5'
^{226}Ra	-	0.97	-
^{214}Bi	-	0.59	-
^{14}C	4.2	1.7	-
^{228}Ac	-	-	0.77
^{208}Tl	-	-	0.212
^{3}H (pCi/L)	-	-	160
Fe	-	44,000	-
Mn	-	733	-
DDE	-	0.0012	-
Alpha BHC	0.011	-	-
Delta BHC	0.0014	-	-
Gamma BHC	0.0018	-	-

SBL-14	0'	2.5'
^{14}C	3.3	3.1
^{235}U	0.24	
Zn	130	-
Hg	-	1
NO_3	34	59
Chlordane	0.077	-

SBL-11	6'
^{226}Ra	0.98
^{90}Sr	0.9
^{208}Tl	0.213
^{234}Th	1.21
^{235}U	0.11
^{214}Bi	0.62
^{14}C	5.6
Fe	42,300

SBL-10	5.75'
^{14}C	2.6
^{235}U	0.24
Cr VI	0.11
Mn	848
NO_3	13

SBL-9	5.75'
^{14}C	6
^{235}U	0.12

SBL-8	5.75'	10.75'	20.75'
^{226}Ra	-	1.0	1.08
^{40}K	-	-	16.4
^{3}H(pCi/L)	260	-	250
^{14}C	-	16.4	-
^{60}Co	-	0.016	-
^{234}Th	-	1.24	-
^{228}Ac	-	-	0.83
Cr VI	0.29	0.2	0.25
Fe	44,400	-	-
Mn	1,010	761	-
NO_3	-	10	-

SBL-7	5.75'
^{14}C	1.2
Cr VI	0.27
Fe	43,600
Mn	809
NO_3	23

SBL-4	6'
Gross Alpha	12
Cr VI	0.23
Fe	46,600
Mn	839
Va	77.5

SBL-6	5.5'	10.5'	20.5'
^{226}Ra	0.82	0.94	1.82
^{14}C	-	-	1.6
Gross Beta	-	-	17.5
Cr VI	0.13	0.12	0.2
NO_3	33	-	12

SBL-2	0.75'	3.25'	5.75'
^{226}Ra	NA	NA	0.99
^{60}Co	NA	NA	0.05
Cr VI	0.064	0.11	0.18
Fe	-	-	44,900

SBL-3	3.25'	5.75'
^{226}Ra	NA	0.9
^{14}C	NA	9.4
^{208}Tl	NA	0.226
Cr VI	0.1	0.099
Total Cr	-	195
NO_3	-	11

SBL-1	3'	5.5'
^{226}Ra	NA	0.93
Cr VI	0.21	0.21
Fe	-	44,500
Zn	-	100

SBL-5	5.75'
^{226}Ra	5.11
^{60}Co	0.026
Cr VI	0.12
Total Cr	183
NO_3	11

EXPLANATION

SBL-1	Soil boring
UCD-1	Monitoring well
6	Radiological activity in picoCuries per gram (pCi/g), all other data in parts per million (ppm)
-	Activity below background
NA	Not analyzed

Figure 3-7. Analytic Results above Background from December 1994 Investigation in the Western Dog Pen and North Chemical Dispensing Area

Weiss Associates

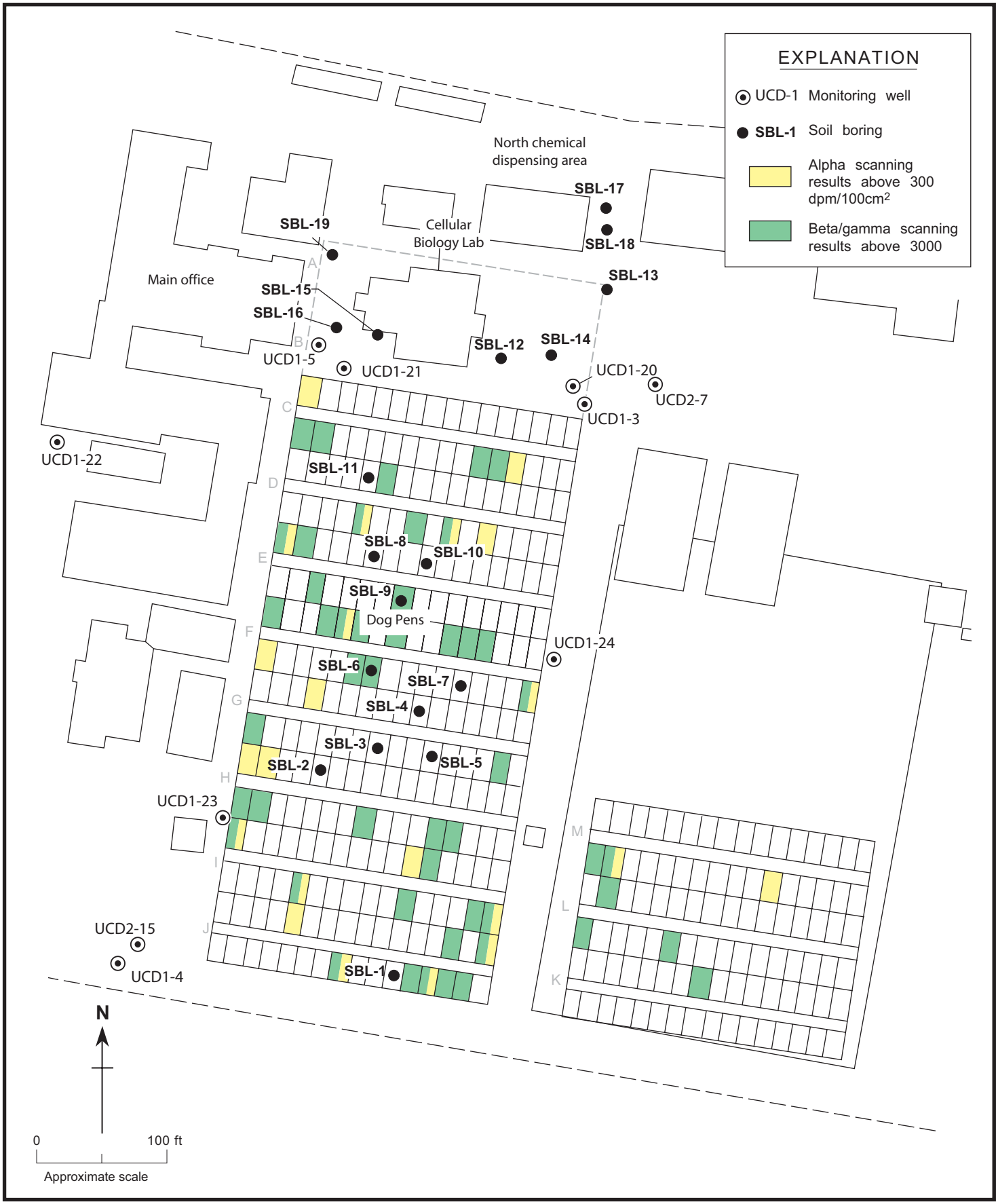

Figure 3-8. Alpha and Beta/Gamma Field Scanning Results above Background from Spring 1996 in the Dog Pens Area

Weiss Associates

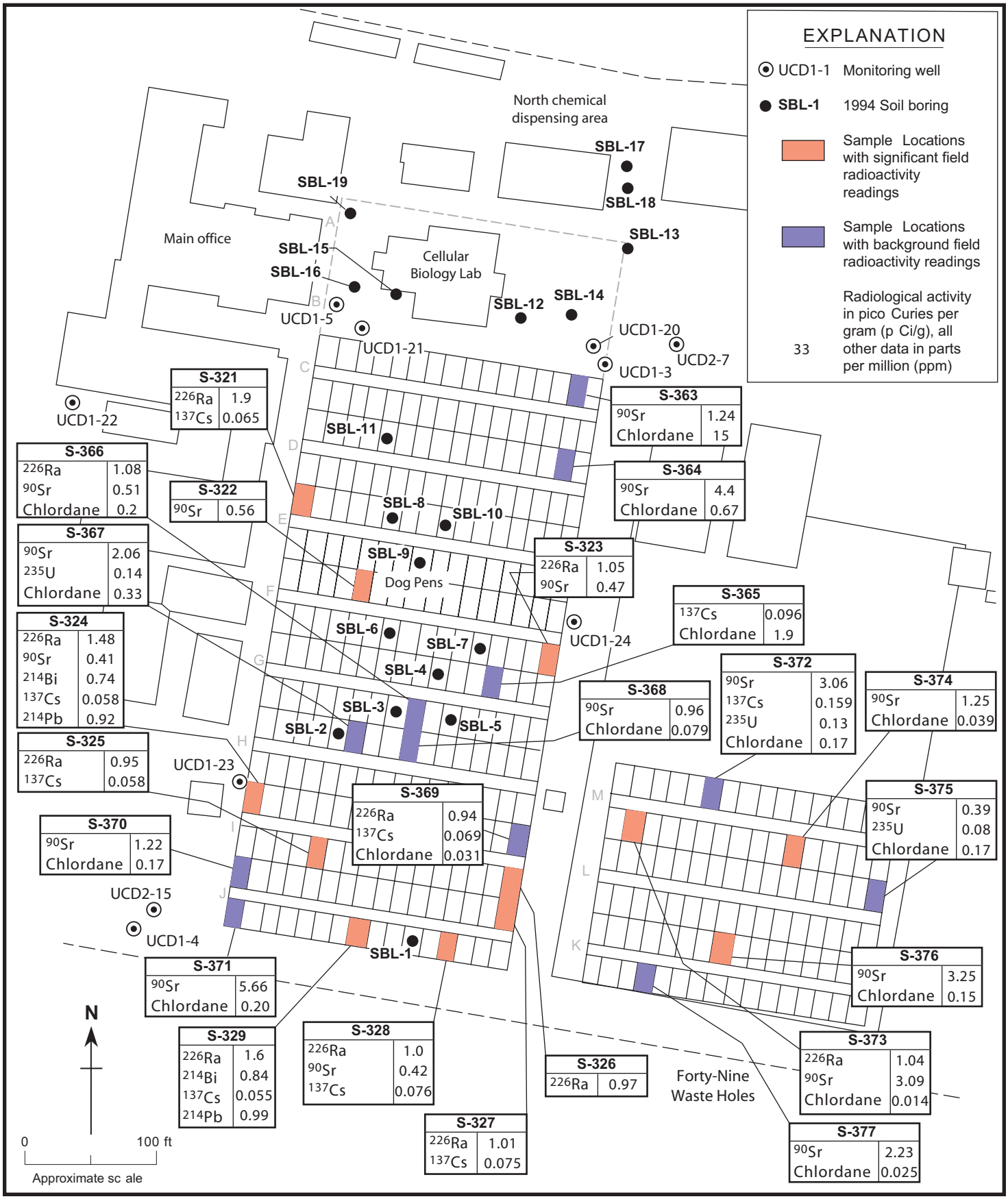

Figure 3-9. Surface Sample Locations and Results above Background from Summer 1996 Investigation in the Dog Pens Area

Weiss Assoc iates

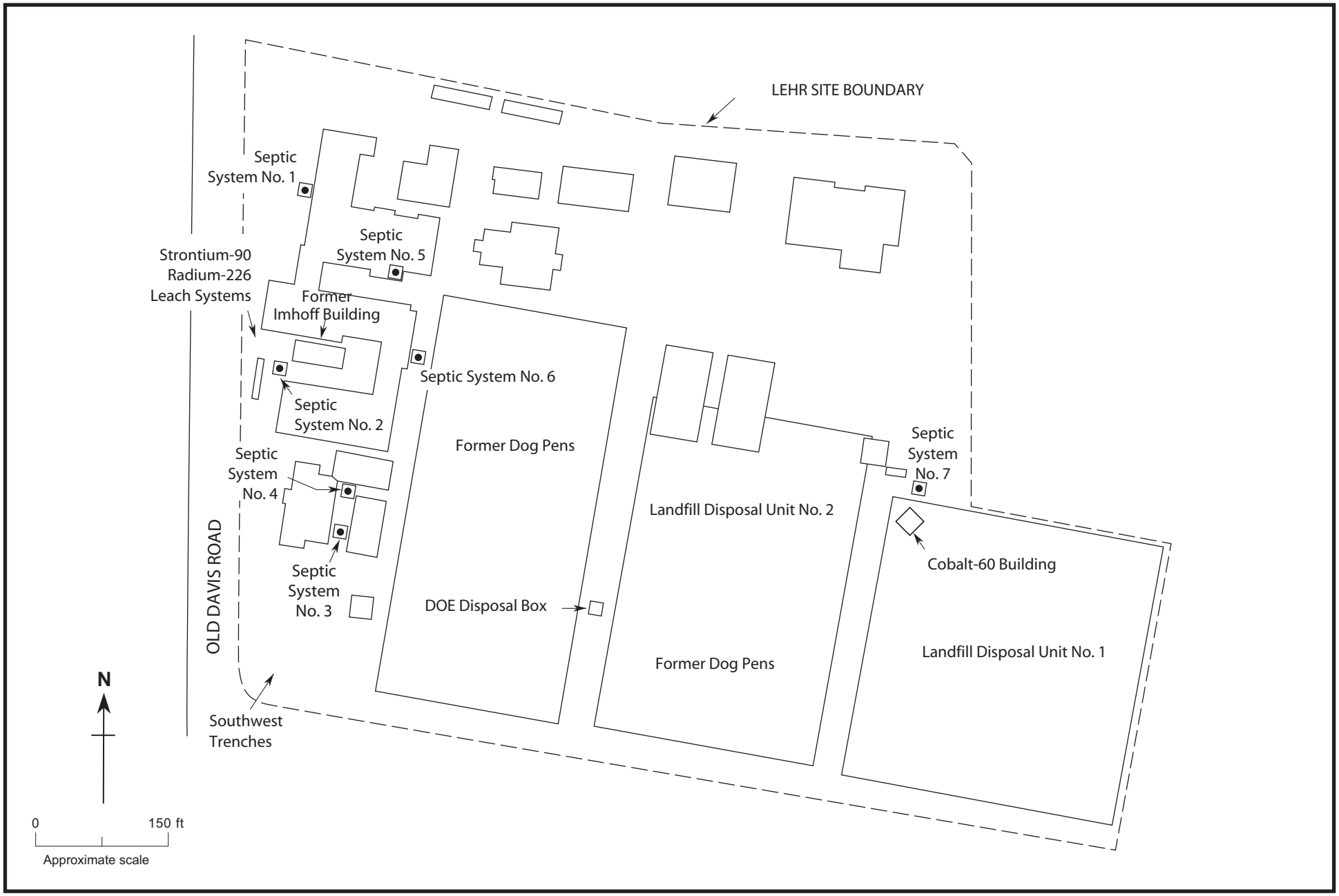

Figure 3-10. LEHR Domestic Septic Tank Locations

Weiss Associates

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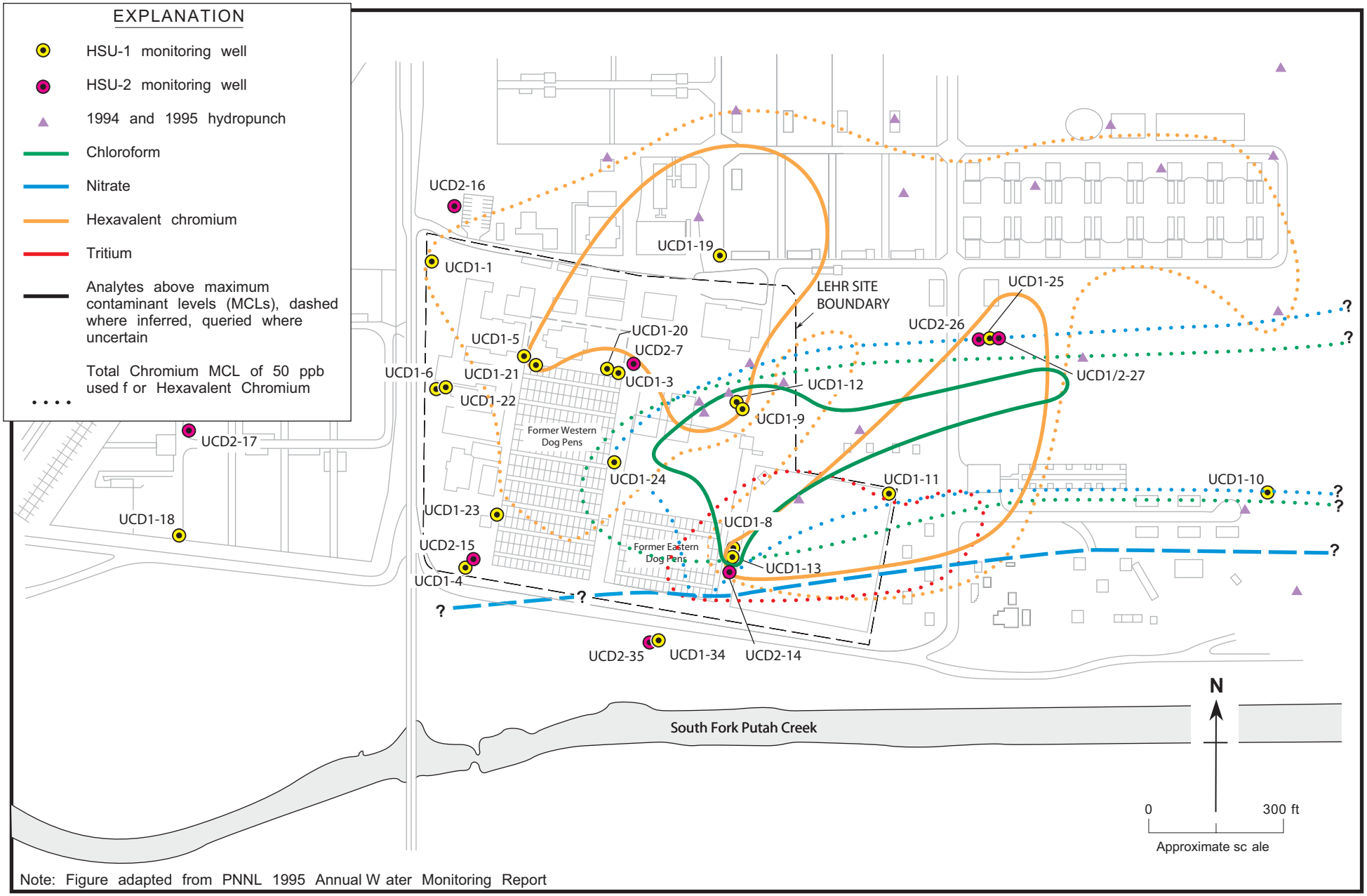
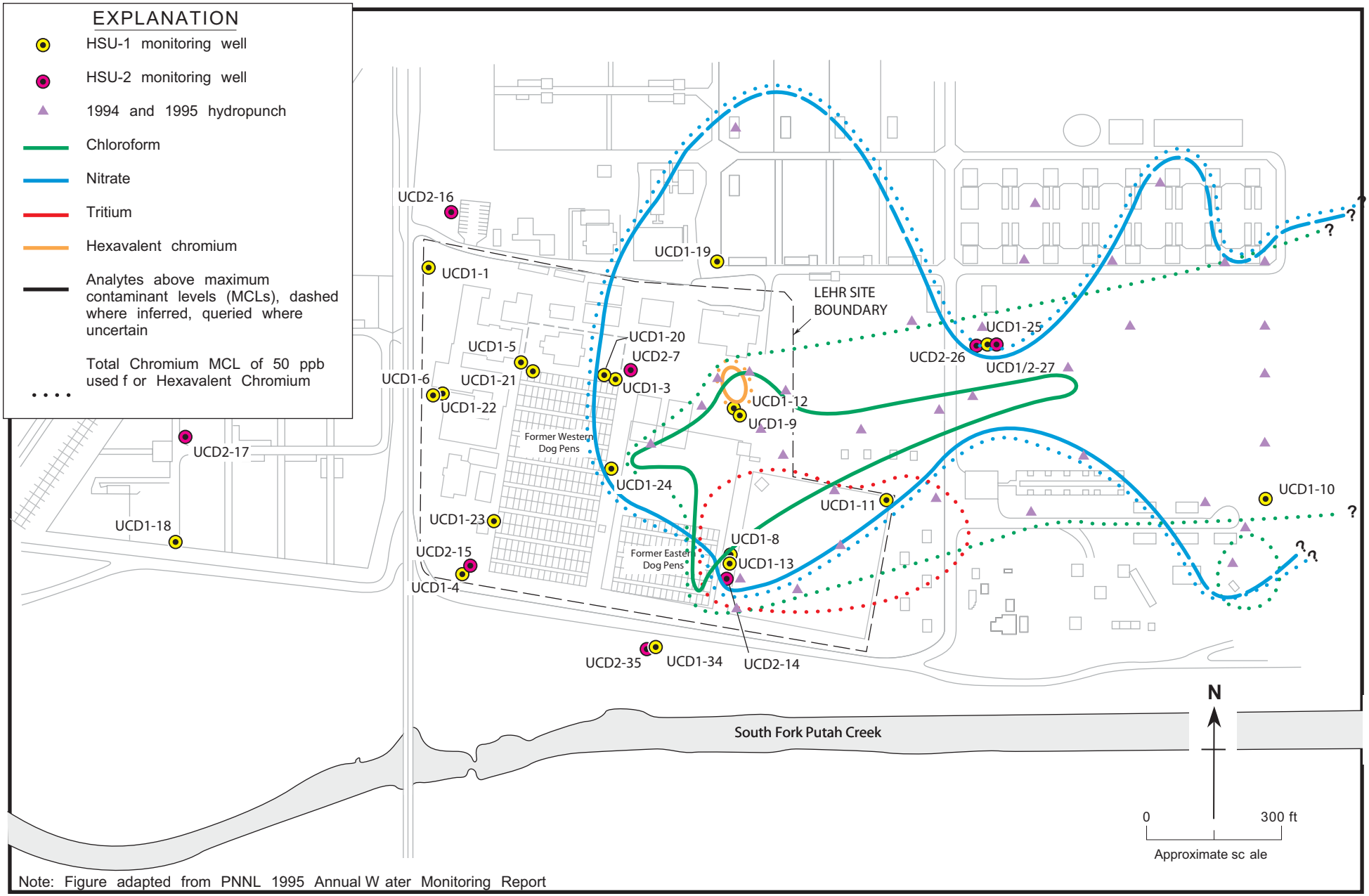


Note: Figure adapted from PNNL 1995 Annual W ater Monitoring Report

Figure 3-11. HSU-1, Analytes above MCLs and Background Levels

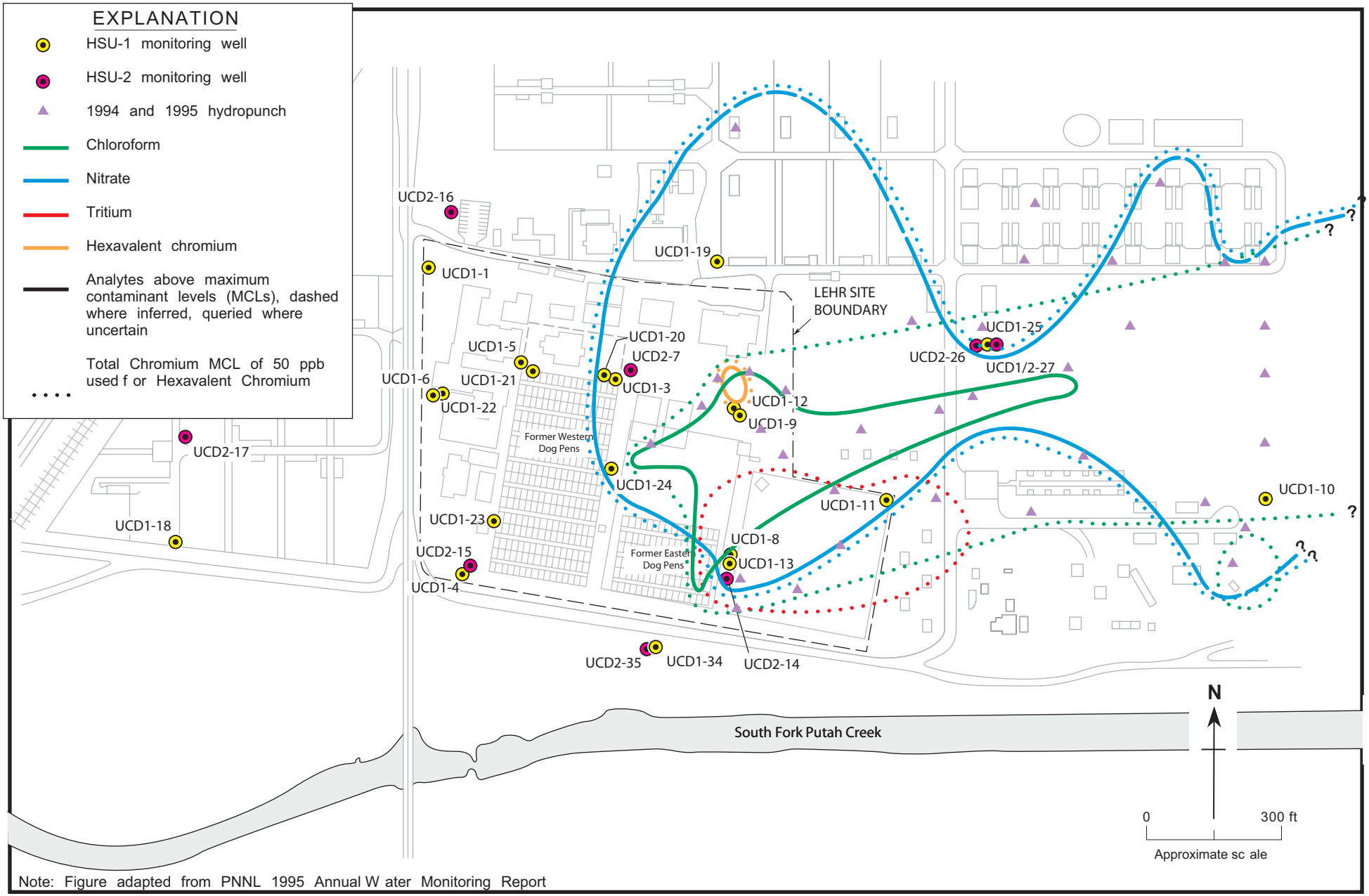
Weiss Associates



Note: Figure adapted from PNNL 1995 Annual W ater Monitoring Report

Figure 3-12. HSU-2 Upper, Analytes above MCLs and Background Levels

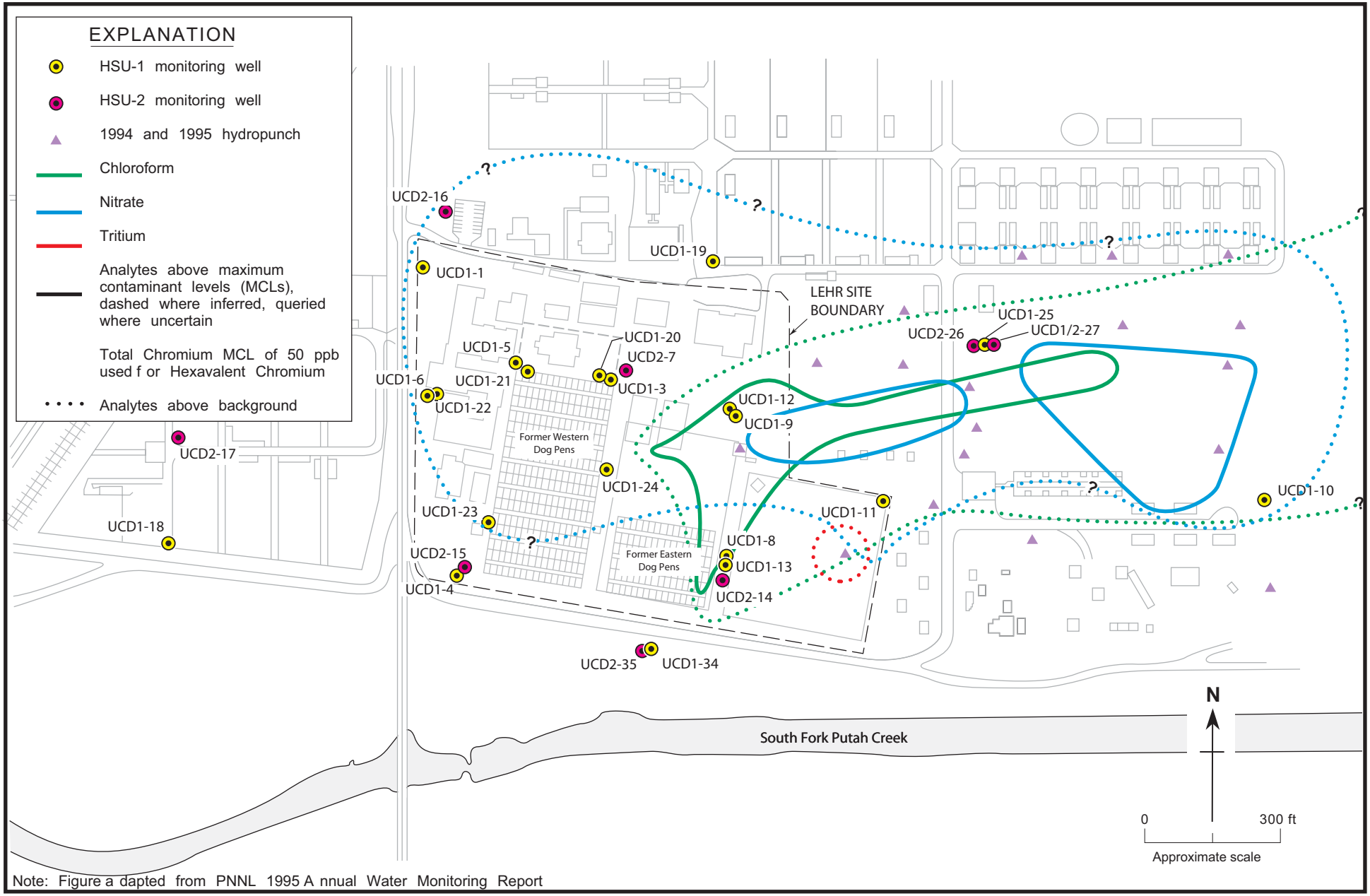
Weiss Associates



Note: Figure adapted from PNNL 1995 Annual W ater Monitoring Report

Figure 3-12. HSU-2 Upper, Analytes above MCLs and Background Levels

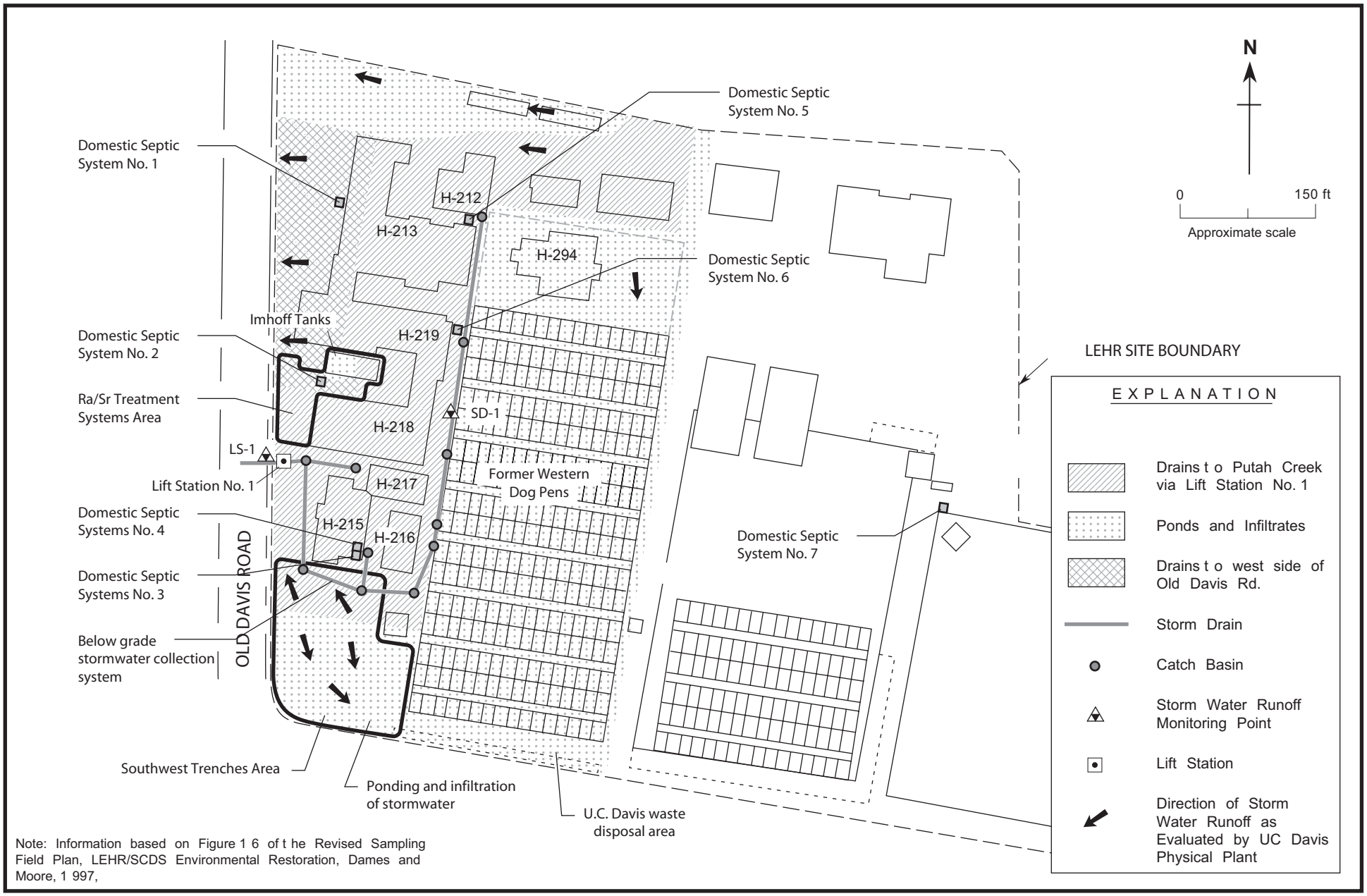
Weiss Associates



Note: Figure a dapted from PNNL 1995 A nnual Water Monitoring Report

Figure 3-13. HSU-2 Middle, Analytes above MCLs and Background Levels

Weiss Associates



Note: Information based on Figure 1 6 of t he Revised Sampling Field Plan, LEHR/SCDS Environmental Restoration, Dames and Moore, 1 997,

Figure 3-14. Storm Water Runoff Monitoring Points

Weiss Associates

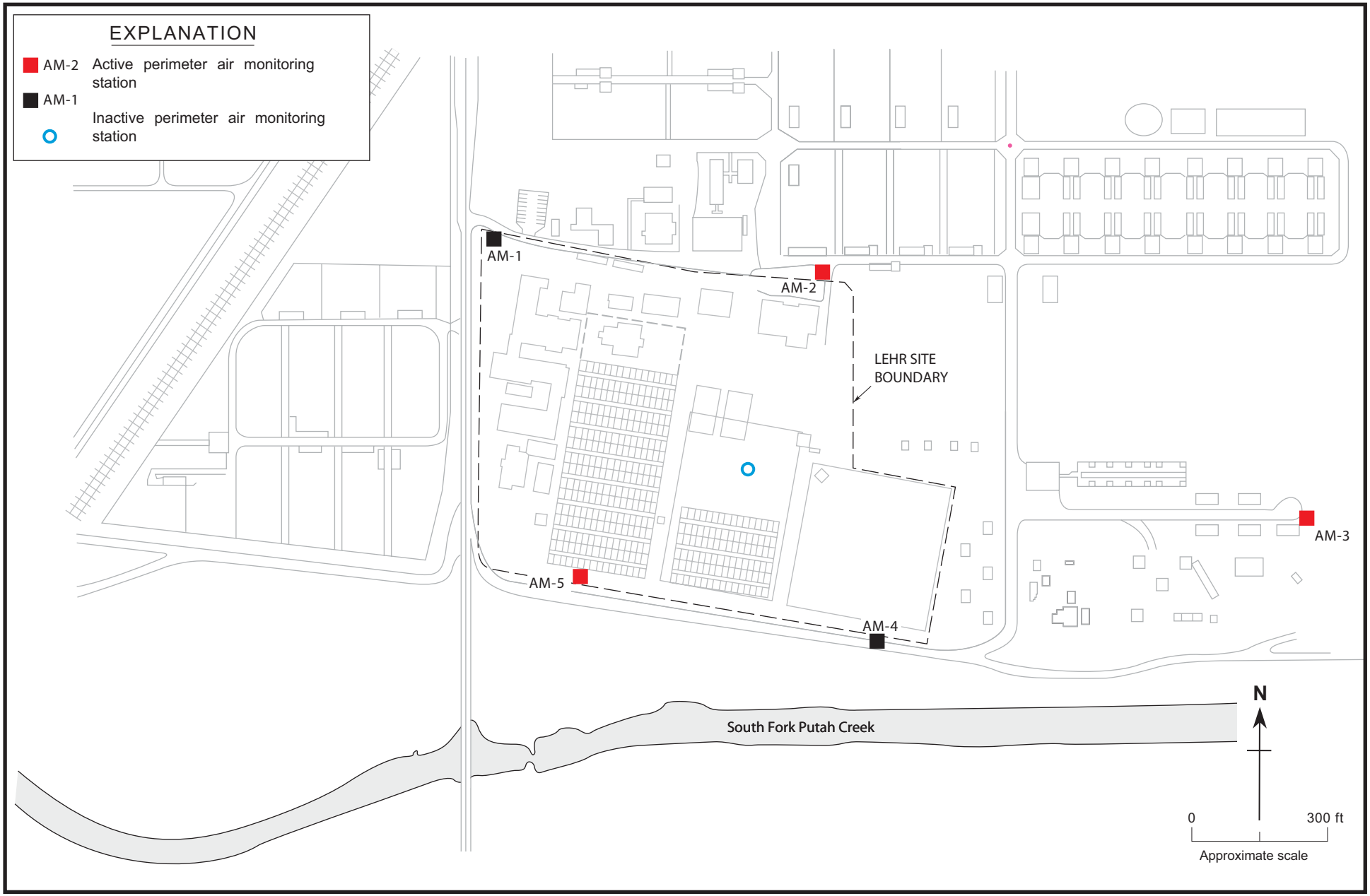


Figure 3-15. Onsite Air Sampling Stations

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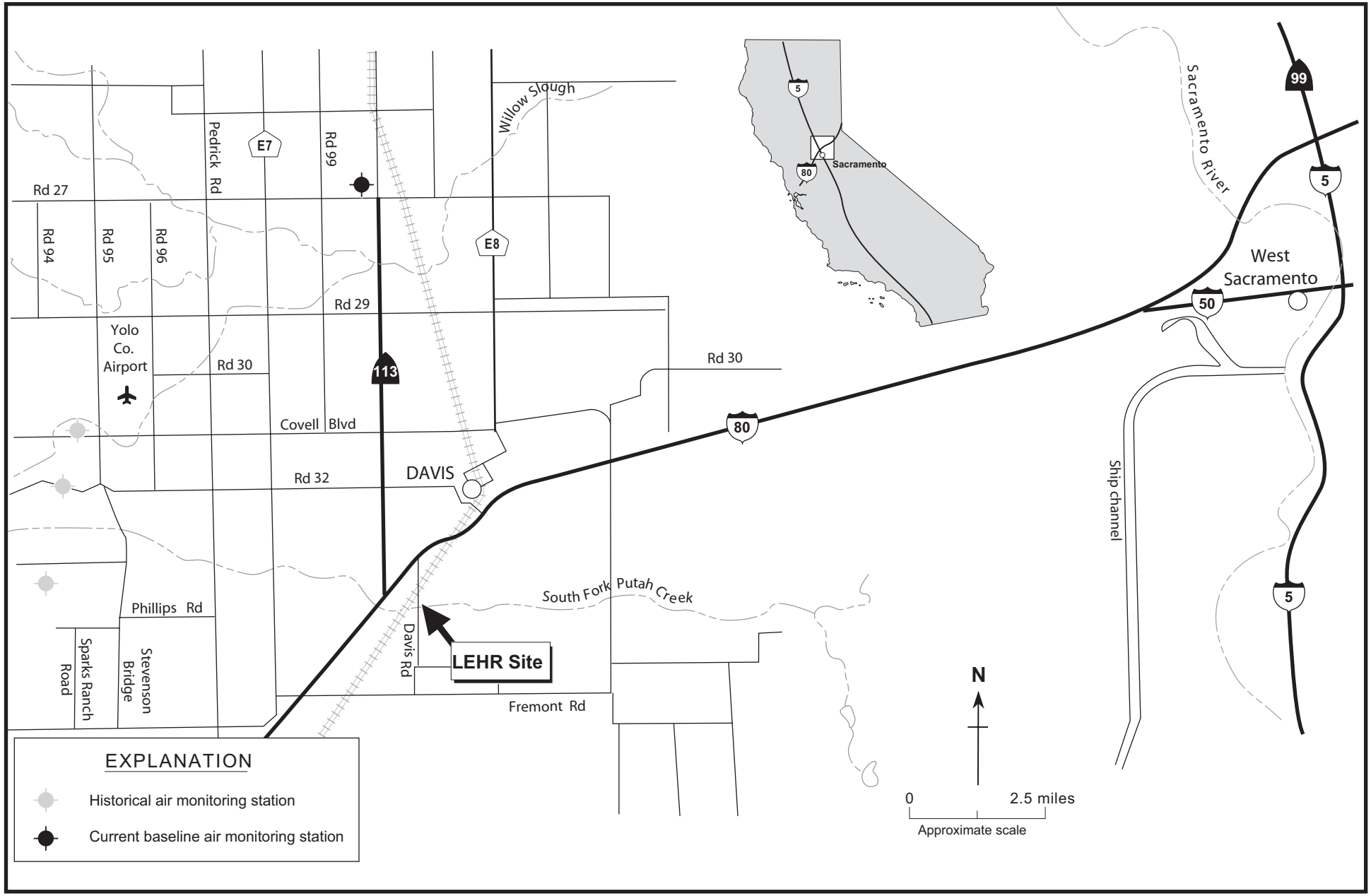

Figure 3-16. Off-Site Air Monitoring Stations

Weiss Associates

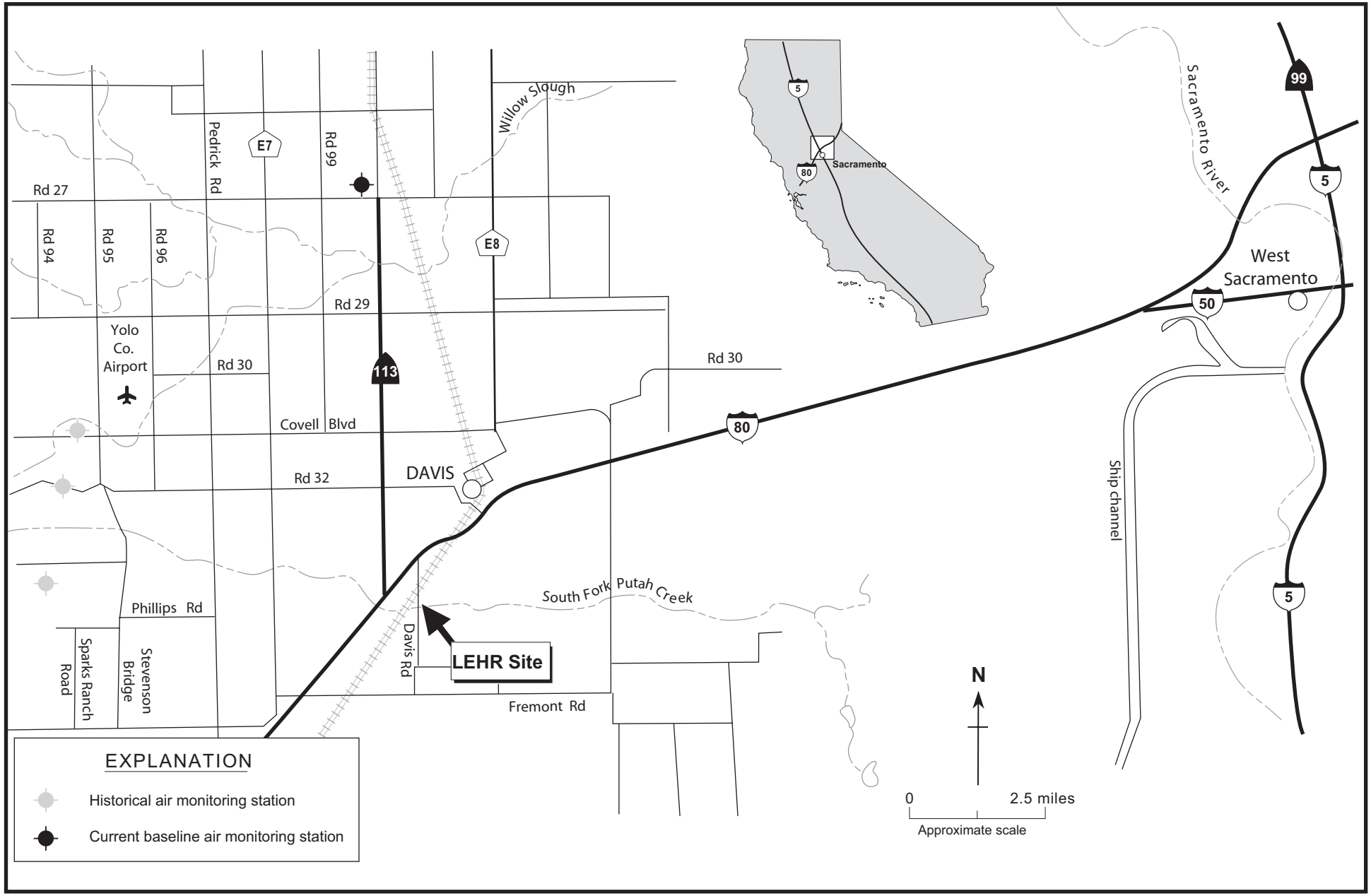

Figure 3-16. Off-Site Air Monitoring Stations

Weiss Associates

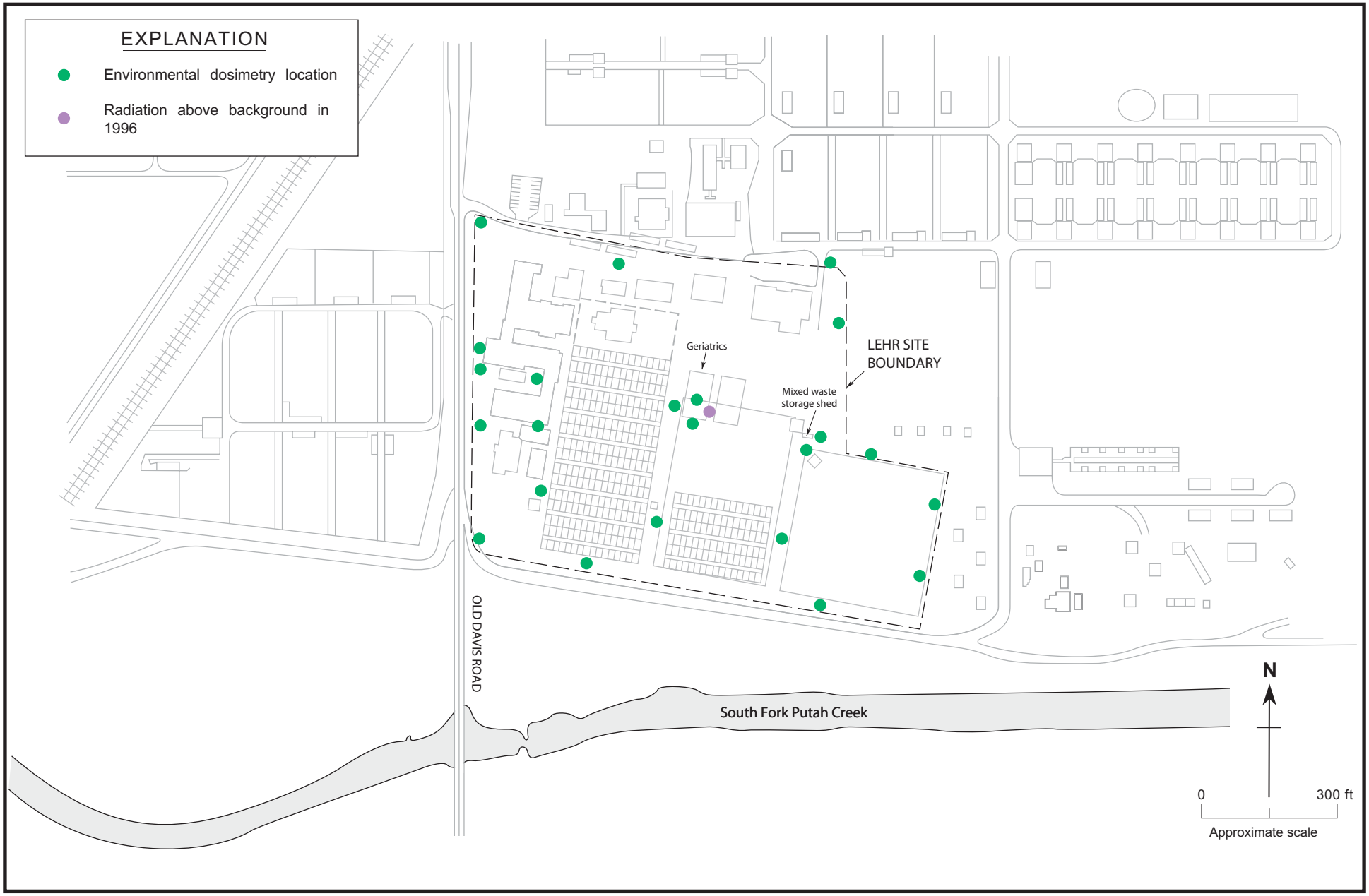

Figure 3-17. TLD Locations

Weiss Associates

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4. SUMMARY OF PREVIOUS AND ONGOING REMEDIAL ACTIONS

Over the past six years, numerous expedited cleanup and source removal actions have been successfully completed at the LEHR Site. Most of these actions, including decontamination of four on-site buildings, were accomplished prior to EPA adding the Site to the National Priority List in 1994. The following sections briefly describes the more significant D&D and source removal actions accomplished to date.

4.1 Decontamination and Decommissioning (D&D) of Four On-site Buildings

Four on-site buildings known as Animal Hospital Number 1 (AH-1), Animal Hospital Number 2 (AH-2), the cobalt-60 building, and the Specimen Storage Room (SSR) (Figure 2-2) were successfully decontaminated between 1992 and 1995.

In general, decontamination procedures involved the following sequence of activities:

- Performing a comprehensive radiological and hazardous material survey to scope and plan the D&D effort;
- Preparing D&D work plans based on survey results;
- Isolating the area(s) to be decontaminated and installing access control;
- Surveying and removing uncontaminated equipment and packaging contaminated waste for disposal;
- Decontaminating ceilings, walls, floors, tanks, drains, and pipes;
- Conducting surveys for residual contamination and decontaminating as necessary;
- Performing systematic release surveys; and,
- Performing independent verification surveys as specified in the DOE Decommissioning Resource Manual.

In most cases, passive decontamination techniques such as high-efficiency particulate air (HEPA) vacuuming, damp cloth wiping, and, to a limited degree, hand washing/scrubbing were applied first. However, when the contaminants were more tightly bound to the surface material, such as in AH-1 and AH-2 where it was trapped in layers of fiberglass and epoxy, and the Co-60 Building where radiation was contained in the top inch of the concrete floor, more aggressive decontamination methods such as scabbling/scarification were applied. When decontamination was no longer cost

effective, the remaining contaminated material, equipment, or structures were removed, volume-reduced, and packaged for disposal at the DOE Hanford site as low-level radioactive waste.

Post decontamination radiological surveys, as verified by the California Department of Health Service (DHS) and the DOE Independent Verification Contractor (IVC), have confirmed that the residual radioactive contamination in these four buildings has been reduced to levels below regulatory limits for unrestricted use. These buildings are being released by DOE to the University of California (landlord) for unrestricted use.

4.2 Demolition of the Imhoff Waste Water Treatment Facility

The Imhoff waste water treatment facility was demolished in 1995. Waste generated from this activity was volume-reduced and packaged and shipped to the DOE Hanford site for disposal as low-level radioactive waste. The demolition option was the most cost effective, considering the building's deteriorating condition and the need to assess and possibly remove the contaminated Sr-90 tank system located beneath the building.

4.3 Removal of Biological Waste

Between June and September 1990, a total of 856 biological waste packages (primarily dog carcasses) were removed from two large on-site freezers, properly packaged and shipped to the DOE Hanford site for disposal as low-level radioactive waste.

4.4 Removal of Contaminated Liquid and Sludge

Approximately 40,000 gallons of low-level radioactive liquid and sludge waste was removed from a series of underground concrete tanks located beneath and adjacent to the Imhoff waste water treatment facility. This strontium and radium contaminated waste was solidified on-site, properly packed in 55 gallon drums, and shipped to the DOE Hanford site for disposal in 1992.

4.5 Removal of Radioactive Sources

Between 1993 and 1995, several radioactive sources were removed and shipped to off-site facilities for reuse in industrial processes or scientific research. These sources included a cobalt-60 device, strontium and radium standards, and thorium and uranium salts. The 100 Ci Co-60 source was removed from the top of the cobalt-60 building and transferred to an off-site hot cell facility to remove the source from its shielding prior to being offered to the private sector for reuse.

4.6 Removal of Tanker Trailer

A ten-ton tanker trailer that was used to transport low-level radioactive waste to off-site locations was shipped in 1995 to a commercial waste processing facility near the Hanford site. At this facility, the tanker was dismantled and its components were supercompacted, packaged, and transported to the DOE Hanford site for disposal.

4.7 Removal of Laboratory Research Waste

A total of 84 drums of various laboratory mixed waste were characterized, packaged, and shipped to several off-site locations for treatment and disposal.

4.8 Removal of On-Site Trench Waste

As part of the 1996 removal action program, approximately 3,000 cu. ft of low-level radioactive waste, including gravel and laboratory hardware, was excavated from an on-site trench known as the "DOE Box" and shipped to the DOE Hanford site for disposal. Post-removal sampling of residual trench soil showed that the removal action objective was achieved. This action was performed through a CERCLA Time Critical Action Memorandum.

4.9 Removal of Outdoor Dog Pens

The 352 outdoor aboveground dog pens including barrels and concrete pedestals, were removed in 1996, properly packaged, and shipped to the DOE Hanford site for disposal as low-level radioactive waste. This expedited removal action will provide access for the remediation of the dog pen areas.

5. 1996 LIMITED FIELD INVESTIGATION (LFI)

5.1 Overview

In July and August 1996, IT Corporation conducted field investigations in the Southwest Trenches Area (OU-1), the Ra/Sr Treatment System Area (OU-2), and the Domestic Septic Tank Areas (OU-4) (Figure 5-1) as described in the LFI Work Plan (IT Corporation, 1996). In June 1997, IT Corporation and WA conducted additional investigations near Domestic Septic Tanks 1 and 3 through 6 as described in the Data Gaps Investigation Work Plan (IT Corporation, 1997). Quality assurance criteria for these investigations were based on QAMS-005, NQA-1, and DOE 5700.6C.

5.1.1 Sampling Procedures

In general, field activities were conducted in accordance with the LFI Data Gaps Investigation Work Plan, including the Standard Operating Procedures presented in Appendix A of those documents (IT Corporation, 1996 and 1997). Specific exceptions are noted in the following sections. IT Corporation personnel were present on-site at all times during all trenching and borehole drilling to log and monitor the excavated material. The work was performed under the direction of a California Registered Geologist and California Occupational Safety and Health Administration (CAL/OSHA) Title 8, Article 6 “competent person”. A sample collection data log for each of the samples collected during the LFI is included as Appendix D. Photographs of LFI field activities are in Appendix E. Surface radiation survey data, soil boring logs, geophysical logs, and the geotechnical laboratory report summary are in Appendices F, G, H, and J, respectively.

5.1.2 Data Quality Assurance

WA performed data validation on all analytical results according to the procedures described in the Quality Assurance Project Plan (PNNL, 1995b) and the LFI Work Plan (IT Corporation, 1996). Data received from the laboratory were reviewed with respect to the PARCC parameters (i.e., precision, accuracy, representativeness, comparability, and completeness) to ensure the quality assurance criteria and data quality objectives (DQOs) were met.

Detailed validation was performed on 10% of the data, based on EPA National Functional Guidelines. The detailed data validation entailed randomly selecting 10% of the data packages and then completely regenerating the data values based on the original raw data. The remaining 90% of

the data were compared to a limited set of validation criteria, including quality control guidelines for holding times, surrogate recovery, blanks, matrix spikes, and matrix spike duplicates.

All data received from LAS were valid and useable for their intended purpose except for:

- Sr-90 results for eight LFI soil/waste samples were identified as anomalous, based on activities significantly exceeding the gross beta activities for the same samples. Five of these samples were from one laboratory sample batch, while the other three were from three different sample batches. For the five samples from the same batch, the laboratory was able to recover the sample precipitate and determine that a barium-133 tracer that had been added to the sample had not been completely removed prior to the Sr-90 analysis, thereby producing significant gamma radiation that was measured as beta activity and was erroneously reported as Sr-90. Therefore, the original Sr-90 analyses for all samples in this batch (S-435 through S-453) were invalidated and are not reported.

  Although the laboratory was unable to recover the other three anomalous samples, they determined that the three batches these samples represent, as well as all other LFI sample batches, were prepared the same way as the other batch, and that they may have contained some barium-133 at the time of the Sr-90 analyses. Therefore, all of these Sr-90 results are suspect, and are noted as such in the database and on all tables and figures in this section.

  Because the 90-day required laboratory storage time had passed by the time this problem was discovered, the laboratory had disposed all the LFI samples shipped to them in summer 1996. However, split samples in the possession of the DHS were available for seven of the eight samples with suspect Sr-90 results, as well as a number of other LFI samples. Thirty samples were selected for Sr-90 reanalysis, and the results are included in the database and on the tables and figures in this section. Results of these reanalyzes indicated significantly lower Sr-90 activities than those originally reported.

  In addition, the analytic laboratory has implemented corrective actions to ensure that barium-133 contamination of Sr-90 samples will not occur in the future. For all future analyses the laboratory will analyze separate sample aliquots for Ra-226 and Sr-90, rather than performing these analyses sequentially using the same aliquot. The laboratory will also confirm that the gross beta activity equals or exceeds the Sr-90 activity for each sample, thereby verifying that the Sr-90 result is reasonable.

- Some nitrate (8 samples), chloride (19 samples), and sulfate (13 samples) data were rejected due to a failure to meet the required holding time. These samples were extracted and analyzed out of holding time, and sample results were non-detects.

- Some SVOC data (13 analyses) were rejected due to lack of a method blank for the sample batch. The SVOC samples were re-analyzed slightly out of holding time. The re-analyzed SVOC data were valid and useable.

Data tables for all LFI analytical data are presented in Appendix I. These tables include detection limits and flag all data that do not meet the data validation criteria. Data tables for all Data Gaps analytical data will be presented in a separate technical memorandum.

5.1.3 Data Evaluation

For this report, background soil concentrations for radionuclides, metals, and other inorganic constituents calculated from the 1994 background investigation (Section 3.1) are used as reference points for evaluating the LFI and other LEHR Site data. For synthetic organic constituents, all concentrations above the detection limits are considered to be above background.

The background tritium activity established from the 1994 data is reported in pCi/L of soil moisture, as are most of the LFI and recent Dog Pen results. However, the tritium activities for several waste samples from the Southwest Trenches Area were reported in pCi/g of dry soil. These activities were compared to a background level in pCi/g that was calculated from the 1994 background level in pCi/L by assuming a gravimetric moisture content of 18%, which is the average for LFI samples analyzed for moisture content.

Data flagged as estimated values are noted on the figures and tables in this section. Several organic constituents that were detected at low concentrations and were also detected in associated laboratory blank samples and/or are common laboratory contaminants are probably the result of laboratory contamination. These include acetone, phthalate compounds, and benzene.

5.2 OU-1 - Southwest Trenches

5.2.1 Investigation Activities

Investigation activities conducted in the Southwest Trenches Area consisted of:

- Conducting a surface radiation survey on a 10 ft by 10 ft grid spacing;
- Excavating six exploratory trenches;
- Collecting thirty-eight soil and solid waste (e.g., bones, feces, plastic) samples from the trenches for laboratory analysis;
- Drilling and logging three soil borings to depths of 30-38 ft bgs;
- Geophysical logging (gamma and inductive resistivity) of one borehole;

- Collecting sixteen soil samples from the soil borings for laboratory analysis;
- Collecting fourteen shallow soil samples at depths of less than 5 ft bgs for laboratory analysis;
- Field screening all soil and solid waste samples with a photoionization detector (PID), a scintillator (SCIN) detector, and a Geiger-Muller (GM) detector;
- Analyzing soil and solid waste samples for select radionuclides, volatile organics, semi-volatile organics, pesticides, PCBs, metals, nitrates, anions, and pH;
- Analyzing four soil boring samples for physical parameters including moisture content, bulk density, moisture characteristics, porosity, grain size, particle density, and saturated and unsaturated permeability; and,
- Surveying the area to provide accurate locations of all sampling points and waste areas.

All field work was conducted in accordance with the LFI Work Plan, with three specific exceptions: 1) Geophysical logging of SB-6 was added to better define the subsurface geologic characteristics; 2) analysis of four soil boring samples for physical parameters was added to support vadose zone fate and transport modeling; and, 3) one exploratory trench, T-6 was added to the scope of work to investigate a disposal trench which was exposed in another exploratory trench. Additionally, lengths and depths of all of the exploratory trenches were modified in the field, as site conditions became known.

5.2.2 Field Observations

Field activities in the Southwest Trenches Area were conducted primarily to achieve the following objectives:

- Determine if waste disposal in this OU poses an unacceptable risk to ground water;
- Confirm the presence/location of reported disposal trenches and potential trenches identified through ground penetrating radar;
- Better define what types of materials were disposed in the trenches; and,
- Determine if disposal of potentially radioactive and hazardous materials in the disposal trenches has adversely affected surrounding soil.

For discussion purposes, the LFI activities in the Southwest Trenches Area are divided into four separate activities: surface radiation survey, trenching, soil boring, and shallow soil sampling. Each is discussed in detail in the following sections.

5.2.2.1 Surface Radiation Survey

A surface gamma radiation survey was conducted prior to soil sampling to identify surface radiation anomalies, which might indicate buried waste. The survey was conducted on a 10 ft by 10 ft square grid spacing over a surface area of approximately 78,400 sq. ft in the Southwest Trenches Area (Figure 5-2). A scalar instrument with a sodium iodide (NaI) detector was used to complete the survey. A screening survey was conducted with the instrument on the ratemeter mode. Integrated one-minute counts were taken at any point where screening readings were twice the background level. At a minimum, five readings were recorded for each grid node. Raw data sheets for the surface radiation survey are included in Appendix F.

The radiation survey data indicated only one grid where readings were more than two times greater than the background level. Activities ranging from 71 cpm to 3,289 cpm above background were recorded at grid 7-9 (see Figure 5-2). The anomaly detected at grid 7-9 was selected for exploration, as described in Section 5.2.2.2.

5.2.2.2 Trenching

The six exploratory trenches were excavated in the Southwest Trenches Area using a backhoe. Since one of the primary objectives of the trenching was to positively locate the potential and reported disposal trenches, trench depths and locations were modified in the field from those proposed in the LFI Work Plan in order to provide the best coverage of the area. A total of six exploratory trenches, T-1 through T-6, and three exploratory pits (two of the exploratory pits were excavated in conjunction with exploratory trench T-6, and one exploratory pit was excavated to evaluate the grid 7-9 area) were excavated (Figure 5-2) to depths ranging from 4 to 14.5 ft. With the exception of some wastes that were packaged for disposal (Section 5.2.5), all excavated materials were replaced in the trenches after sampling was completed. All samples collected from the trenches are described in Table 5-1. Perspective views from the Southwest and Southeast corners of the Southwest Trenches Area showing all exploratory, soil boring and shallow sampling locations are included on Figures 5-3 and 5-4, respectively. Field observations from each trench are described in the following sections.

Table 5-1. Exploratory Trench Sample Log for Southwest Trenches Area

Sample No.	Location	Depth (ft)	Description
S-331	Trench 1, 10 ft N of S end	2-3	clay, interstitial to waste
S-332	Trench 1, 10 ft N of S end	3	clay, at disposal pit/clay contact
S-333	Trench 1, 10 ft N of S end	5.5-6	clay, beneath disposal pit
S-334	Trench 2	3	wood and bone
S-335	Trench 2	3	interstitial soil
S-336	Trench 2	3.5	soil, immediately beneath waste
S-337	Trench 2	6	soil, 2.5 ft beneath waste
S-338	Trench 2, 26 ft E of W end	6 to 7	gravel
S-339	Trench 2, 26 ft E of W end	6 to 7	bones
S-340	Trench 2, 26 ft E of W end	6.75	sludge
S-341	Trench 2, 26 ft E of W end	6.75	soil, immediately beneath sludge
S-342	Trench 2, 26 ft E of W end	3 to 6	plastic bags
S-343	Trench 2, 26 ft E of W end	9	soil, 2.5 ft beneath sludge bag
S-344	Trench 4	2.5	gravel
S-345	Trench 4	3	soil, immediately beneath gravel
S-346	Trench 4	5.5 to 6	soil, 2.5 ft beneath gravel
S-347	Trench 5	2 to 2.5	gravel
S-348	Trench 5	2.5 to 3	soil, immediately beneath gravel
S-349	Trench 5	5.5 to 6	soil, 2.5 ft beneath gravel
S-350	Grid 7-9 pit	0.5 to 1	gravel clump
S-351	Grid 7-9 pit	1	soil, immediately beneath gravel
S-352	Grid 7-9 pit	3.5	soil, 2.5 ft beneath gravel
S-353	Grid 7-9 pit	3.5	QA/QC sample
S-354	Trench 6, 12 ft S of T-2/T-6 intersection	6 to 8	gravel around bones
S-355	Trench 6, 12 ft S of T-2/T-6 intersection	6 to 8	bones
S-356	Trench 6, 12 ft S of T-2/T-6 intersection	12	soil, immediately beneath gravel & bones
S-357	Trench 6, 12 ft S of T-2/T-6 intersection	14.5	soil, 2.5 ft beneath gravel & bones
S-358	Trench 6, 2 ft S of T-2/T-6 intersection	6 to 7	absorbent clump
S-359	Trench 6	12	gravel
S-360	Trench 6	12	soil, immediately beneath gravel
S-361	Trench 6	14.5	soil, 2.5 ft beneath gravel
S-362	Trench 6, 35 ft S of T-2/T-6 intersection	12	wood
S-378	Trench 3,	2.5	interstitial soil, mixed w/ waste
S-379	Trench 3,	3	soil, immediately beneath waste
S-380	Trench 3,	5	soil, 2 ft beneath waste
S-381	Trench 3	2.5	gravel and waste
S-382	Trench 3	8	soil at base of disposal trench
S-383	Trench 3	10.5	soil, 2.5 ft beneath disposal trench base

Exploratory Trench T-1

Trench T-1 is a north-south trending, 22-ft long, 7-ft deep exploratory trench located along the southern boundary of the LEHR Site (Figure 5-2). The location and orientation of the trench was chosen to evaluate an east-west trending anomaly identified during the GPR survey (Figure 5-2). Samples collected from this trench are described in Table 5-1. The following general observations were made during excavation of this trench (see Appendix D):

- A 1" diameter electrical line was uncovered at a depth of 18" at the south end of the trench.
- A number of plastic syringe covers, glass shards, and a glass pipette were uncovered in a shallow burial pit (Shallow Burial No. 1 in Figure 5-2) encountered near the mid-point of T-1 at a depth of 2 ft. PID readings on the materials were "non-detect" (ND). The SCIN and GM detectors measured no detectable activity above background.
- No disposal trenches were identified.
- Soil types encountered generally consisted of undisturbed silt and clay.
- The exploratory trench was terminated at a depth of 7 ft bgs.

Exploratory Trench T-2

Trench T-2 is a northeast-southwest trending, 70-ft long, 8-12-ft deep exploratory trench located on the western half of the Southwest Trenches Area (Figure 5-2). The trench location cuts across three north-south trending GPR anomalies. Samples collected from this trench are described in Table 5-1. The following general observations were made during excavation of this trench:

- An abandoned pipe was identified at a depth of 4 ft on the west end of the trench; PID readings at the end of the pipe were ND.
- A shallow burial pit (Shallow Burial No. 2 as shown on Figure 5-2) was encountered approximately 23 ft east of the west end of T-2.
- Disposal contents of the burial pit included gravel, redwood lumber, and non-human bones. PID readings on the materials were ND and no detectable activity above background was detected with the SCIN and GM detectors.
- A disposal trench was encountered approximately 26 ft from the west end of T-2 (a portion of this trench was encountered in exploratory trench T-6).
- The disposal trench contents included gravel, redwood lumber, numerous non-human bones, empty plastic bags, and one bag of sludge. NaI detector readings on the material ranged as high as 52,000 dpm/cm^2 (S-340). PID readings were ND.
- Native soil types encountered generally consisted of silts and clays.
- The exploratory trench was terminated at a depth of 12 ft in native soil.

Exploratory Trench T-3

Trench T-3 is an east-west trending, 28-ft long, 8-ft deep exploratory trench located in the northern portion of the Southwest Trenches Area. The location of the trench was chosen to intersect reported DOE trenches No. 15 and No. 17 and to assess a GPR anomaly. The following general observations were made during excavation of this trench:

- A shallow disposal pit (Shallow Burial No. 3 on Figure 5-2) was encountered approximately 4 ft east of the west end of the trench.
- The waste, buried at a depth of approximately 2.5 ft, consisted of 2 bagged plastic bottles, a small number of non-human bones, and a small amount of material identified as absorbent.
- A disposal trench was encountered approximately 21 ft east of the west end of T-3. T-3 appears to intersect the north end of the disposal trench.
- Waste encountered in the disposal trench consisted of gravel, numerous plastic syringes, needles, and non-human bones. The disposal zone extends from 2.5 ft to 8 ft bgs.
- Soil types encountered consisted of silty sand from the surface to a depth of 8 ft.
- The exploratory trench was terminated in native soils at a depth of 8 ft bgs.

Exploratory Trench T-4

Trench T-4 is a north-south trending, 24-ft long, 8-foot deep exploratory trench located in the northern half of the Southwest Trenches Area. The location of the trench was chosen to intersect an east west trending GPR anomaly. Samples collected from this trench are described in Table 5-1. The following general observations were made during excavation of this trench:

- A disposal trench was encountered approximately 18 ft south of the north end of T-4.
- Gravel was the only waste identified in the disposal trench. Field screening instrument readings on the gravel were ND or no detectable activity above background.
- Soil types encountered generally consisted of silt, silty sand, and clay.

Exploratory Trench T-5

Trench T-5 is an east-west trending, 38-ft long, 8-ft deep exploratory trench located in the eastern half of the Southwest Trenches Area. The location of the trench was chosen to intersect three north-south trending GPR anomalies in the eastern portion of the study area. Samples collected from this trench are described in Table 5-1. The following general observations were made during excavation of this trench:

- A disposal trench was encountered approximately 8 ft east of the west end of T-5.
- Gravel, the only waste identified in the disposal trench, was encountered at a depth of 1 ft bgs.
- Native soil types encountered generally consisted of silts and clays.

Exploratory Trench T-6

Trench T-6 is a north-south trending, 70-ft long, 5 to 12-ft deep exploratory trench located in the western half of the Southwest Trenches Area. This trench was added to the scope of work outlined in the LFI Work Plan to delineate the disposal trench located in trench T-2. The trench was excavated in two sections, one beginning at the T-2/T-6 intersection and extending north, and one beginning at the T-2/T-6 intersection and extending south. Two disposal pits were encountered in the southern section of T-6 which warranted expanding the exploratory trench laterally. These pits are noted as Pit No. 1 and Pit No. 2 on Figure 5-2 and are addressed with the discussion of the trench. Samples collected from this trench are described in Table 5-1. The following general observations were made during excavation of this trench:

- The disposal trench encountered in T-2 was uncovered along the entire length of T-6.
- A disposal pit (Pit No. 2) was encountered approximately 10 ft south of the T-2/T-6 intersection. This disposal pit is part of the disposal trench, but is wider and deeper than the main portion of the trench. A 15-ft long section of the exploratory trench was extended to approximately 6 ft wide and 14.5 ft deep to investigate the disposal pit.
- The contents of the disposal pit consisted of gravel, plywood sheeting, lumber, absorbent, and a roll of hardwire cloth and non-human bones.
- A disposal pit (Pit No. 1) was encountered approximately 32 ft south of the T-2 intersection. This disposal pit was also connected to the disposal trench, but is wider and deeper than the main portion of the trench. Dimensions of the disposal pit are approximately 6 ft x 10 ft x 12 ft deep. NaI detector readings on the pit material ranged as high as 15,000 cpm (S-362). PID readings were ND.
- The contents of the pit included plastic garbage cans, absorbent, plastic sheeting, garden hose, sump pumps, gravel, wood, piping, conduit, and non-human bones.
- At the extreme southern end of T-6, the disposal trench appears to split into two trenches, trending northeast-southwest and northwest-southeast.
- An east-west trending disposal trench (likely the same disposal trench encountered in T-4) was encountered approximately 25 ft north of the T-2 intersection.
- The northern extent of the disposal trench was not defined; the exploratory trench was terminated at 30 ft north of the T-2 intersection.

- The exploratory trench was terminated between 5 and 8 ft bgs in native soil.

Grid 7-9 "Hot Spot" Excavation

A small area was excavated just south of the eastern end of exploratory trench T-2 to evaluate an anomaly measured in the surface radiation survey at grid location 7-9 (see Figure 5-2). The excavation limits measured approximately 5 ft x 5 ft and the total depth of the excavation was 3.5 ft. Samples collected from this excavation are described in Table 5-1. The following general observations were made during excavation of this trench:

- A small clump of gravel (approx. 7" x 12") was encountered approximately 4 ft southeast of the east end of trench T-2 at a depth of approximately 4 inches.
- The gravel was cemented together with natural cement (caliche).
- Field screening of the gravel indicated elevated radiation counts (10,000 to 12,000 cpm, NaI detector).
- The remainder of the soil encountered in the excavation consisted of clayey silt and very fine sand.
- The exploratory pit was terminated in native soil at a depth of 3.5 ft.

5.2.2.3 Soil Borings

Three soil borings, SB-6, SB-7, and SB-8, were drilled in the Southwest Trenches Area to further characterize soil deeper than 15 ft. Boring locations are shown on Figure 5-2. Drilling and sample collection were conducted according to procedures outlined in the LFI Work Plan. The borings were drilled using the resonant sonic drilling method. Soil samples were generally collected for laboratory analysis at 2.5 foot intervals while drilling in waste and 5 foot intervals while drilling in undisturbed material. Soil core samples were continuously screened with PID, GM, and SCIN instruments to detect organic vapors and radioactivity. Samples were packaged for laboratory analysis based on the field screening results and the judgment of the field geologist. Geophysical logging was performed on soil boring SB-6. Gamma ray and inductive resistivity logs were performed in temporary PVC casing placed in the open borehole. Boreholes were backfilled with grout upon completion of field activities. Boring logs for these three boreholes are included in Appendix G, and the geophysical logs for SB-6 are included in Appendix H.

SB-6 was drilled at the southern end of exploratory trench T-6, in Pit No. 1 (Figure 5-2). A waste zone consisting of gravel, bones and plastic was encountered at depths between 5 and 10.5 ft bgs. No PID, GM, or SCIN readings above background were measured in any samples, except at 7.5 ft bgs. The waste zone sample at that depth indicated radionuclide activity at 200 cpm above background. The waste zone was overlain by a sand fill and underlain by silty clay that was reported present between 10.5 and 25 ft bgs. Yellow-brown clay identified in all three borings was encountered from 25 ft to the final depth of the boring at 38 ft bgs. Soil samples S-468, S-465, S-466, S-467, and S-469 from SB-6 were selected for laboratory analysis at depths of 9-10.5 ft, 10.5-12 ft, 17.5-19 ft, 25-26.5 ft, and 29-30.5 ft bgs, respectively. Soil samples 6, 7, 8, and 9 were also

collected at depths of 12-13 ft, 19-20.5 ft, 26.5-27.5 ft, and 30.5-31.5 ft bgs, respectively, for geotechnical laboratory analysis for physical parameters (Section 5.2.4). Dry formations are generally poor electrical conductors and generally show very high resistivities. In contrast, an increase in silt or clay generally tends to lower the measured resistivity in dry formations. This resistivity trend is particularly well developed in the geophysical log for boring SB-6. The shallow sands and gravels logged lithologically from the ground surface to a depth of approximately 11 ft correspond to an abrupt resistivity increase on the geophysical log. At approximately 11 ft depth, where the silty clays are lithologically logged to total depth, the measured resistivity decreases, as one would expect with a decrease in grain size.

SB-7 was drilled at the intersection of exploratory trenches T-2 and T-6. A waste zone consisting of clean gravel was encountered between depths of 4 and 7 ft bgs. The waste was overlain by a silty loam fill layer and a sandy gravel layer at the surface. The waste zone was underlain by a reddish-yellow clayey silt to a depth of 21 ft. A yellow-brown sandy clay was encountered between depths of 21 and 25 ft bgs and a yellow clay was encountered from 25 ft bgs to the terminal depth of the boring at 30 ft bgs. No PID, GM, or SCIN readings above background were measured in any of the collected samples. Soil samples S-470, S-471, S-472, S-473, and S-474 were selected for laboratory analysis, from depths of 5-6.5 ft, 6.5-8 ft, 15-16.5 ft, 21-22.5 ft, and 29-30.5 ft bgs, respectively.

SB-8 was drilled in the immediate vicinity of the former southwest chemical dispensing area, approximately 5 ft northwest of exploratory trench T-1 (Figure 5-2). No wastes were observed in this boring. Soil types encountered during drilling consisted of sand and gravel fill from the surface to 2 ft bgs, brown silt from 2 ft to 6 ft bgs, dark brown clay from 6 ft to 10 ft bgs, brown silt from 10 ft to 15 ft bgs, and a yellow-brown clay from 15 ft bgs to the final depth of the boring at 30 ft bgs. No PID, GM, or SCIN readings above background were measured in any of the collected samples. Soil samples S-475, S-476, S-477, S-478/S-479, S-480 and S-481 were retained for laboratory analysis. These samples were collected at depths of 4-6 ft, 6-7.5 ft, 13-15 ft, 15-17 ft, 25-26.5 ft and 29-30.5 ft bgs, respectively.

5.2.2.4 Shallow Soil Sampling

Fourteen shallow soil samples were collected in the Southwest Trenches Area to evaluate potential surficial release points and areas where significant concentrations of chlordane and cesium-137 had been previously detected (Figure 5-2). Table 5-2 summarizes sampling locations and depths. These shallow samples were generally collected in undisturbed soil described to consist of fine sand, silty sand, and sandy silt. Soil samples were collected at depths of 3 ft to 4.5 ft bgs using a hand auger and drive sampling equipment.

A shallow disposal trench was encountered between 0.25 and 0.5 ft bgs at soil sample location S-490. Trench contents included gravel, plastic, glass, and metal caps. The soil sample at this location was collected at 4 ft bgs and was native soil. All samples were collected according to the procedures outlined in the LFI Work Plan. Upon completion of field work, shallow hand auger boreholes were backfilled with recompacted soil removed from the hole.

Table 5-2. Shallow Soil Sampling Locations - Southwest Trenches Area

Sample Number	Sample Depth (ft bgs)	Sample Location
S-482	3	Southwest corner of site
S-483	3	Southwest corner of site
S-484	3.5	Along western site boundary
S-485	3	Near former sample location with elevated chlordane and cesium-137.
S-486	3	Near former sample location with elevated chlordane and cesium-137.
S-487	4	West of former chemical storage area
S-488	3	South of former chemical storage area
S-489	3	Southern site boundary
S-490	4	Southern site boundary, 1.5' beneath shallow gravel trench
S-491	4.5	South of exploratory trench T-5
S-492	3	South side of washdown pad
S-493	3	West side of washdown pad
S-494	3-4.5	East side of washdown pad
S-495	3-4.5	North side of washdown pad

5.2.3 Analytical Results

Soil and solid waste samples collected in the Southwest Trenches Area were analyzed by LAS for the groups of compounds listed in Table 5-3.

Table 5-3. Summary of Analytical Parameters and Methods - Southwest Trenches Area

Parameter	Analytical Method
Gross Alpha	EPA Method 9310
Gross Beta	EPA Method 9310
Tritium	EPA Method 906.0
Carbon-14	LSC
Radium-226	EPA Method 903.1 modified
Strontium-90	EPA Method 905.0
Gamma emitters	EPA Method 901.1
Volatile organic compounds (VOCs)	CLP SOW, OLM 01.8
Formaldehyde	NIOSH Method 3500 modified
Semivolatile organic compounds (SVOCs)	CLP SOW, OLM 01.8
Organochlorine pesticides	CLP SOW, OLM 01.8
Polychlorinated biphenyls (PCBs)	CLP SOW, OLM 01.8
Nitrate	EPA Method 300.0
Parameter	Analytical Method
CAM 17 Metals	CLP SOW, OLM 02.1
Hexavalent chromium	EPA Method 7196
Anions	EPA Method 300.0

Notes:
CLP SOW = Contract Laboratory Program Statement of Work
OLM 01.8 = Organic Laboratory Method 01.8.
LSC = Liquid Scintillation Counter.
NIOSH = National Institute for Occupational Safety and Health

ASTM = American Society for Testing and Materials

All analytical data are presented in tables in Appendix I. Figures 5-5 and 5-6 show sampling locations and measured concentrations for all chemical compounds and radionuclides detected above background. Analytical results for all samples collected in the Southwest Trenches Area are discussed by category in the following sections.

5.2.3.1 Radionuclides

Sr-90, Cs-137, Ra-226, tritium, gross alpha, gross beta, Co-60, Pb-214, Th-228, Th-232, Th-234, U-235, Ac-228, C-14, Tl-208, K-40, and Bi-214 were each reported above background activities in at least one of the soil and/or solid waste samples collected from the Southwest Trenches Area. Sr-90, gross beta, and tritium were the radionuclides most frequently detected above background. Sr-90 activities were above background in 40 of the 70 samples analyzed; however, as noted in Section 5.1.2, these Sr-90 results may be erroneously high due to a systematic laboratory problem. Gross beta exceeded background in 21 of the 70 samples and tritium exceeded background in 8 samples. Table 5-4 shows background levels and maximum reported activities of each radionuclide that exceeded the background activities.

Table 5-4. Summary of Maximum Radionuclide Activities Exceeding Background - Southwest Trenches Area

Radionuclide	Max. Activity (pCi/g)	Background (pCi/g)	Sample No.	Matrix	Location/Depth (ft bgs)
Cs-137	23.0	0.053	S-350	Soil	Grid 7-9/5
Sr-90	16,700	0.36	S-340	Sludge	T-2, T-6/6.5
Ra-226	7.06	0.77	S-338	Gravel	T-2/6.5
Gross Alpha	16.7	11.8	S-357	Soil	T-6, Pit No. 2/14.5
Gross Beta	34,700	17.4	S-340	Sludge	T-2/T-6/6.5
Tritium	91.1	0.023	S-347	Gravel	T-5/1.5
Pb-214	4.3	0.75	S-342	Plastic Bag	T-2/3-6
U-235	2.6	0.072	S-362	Wood	T-6, Pit No. 1/12
Ac-228	5.5	0.71	S-342	Plastic Bag	T-2/3-6
C-14	117.0	0.87	S-339	Bone	T-2/6
Tl-208	0.6	0.21	S-340	Sludge	T-2/T-6/6.5
K-40	16.7	13.6	S-473	Soil	SB-7/21
Bi-214	1.68	0.57	S-356	Soil	T-6/1
Co-60	0.04	0.016	S-340	Sludge	T-2, T-6/6.5
Th-234	39.5	1.09	S-362	Wood	T-6, Pit No. 1/12

The most elevated radiological activities were generally observed within and immediately below the waste disposal zones. The highest activity for Cs-137 was reported in sample S-350, collected from grid 7-9 (the “hot spot” identified by the surface radiation survey). As noted in Section 5.2.5, this sample was removed for off-site disposal. Cs-137 activity in samples collected immediately beneath sample S-350 were below background. The highest Ra-226 activity was

reported in sample S-338, collected from the gravel backfill in the disposal trench encountered in T-6. Ra-226 activity in samples collected immediately beneath sample S-350 were below background. The highest Sr-90 activity was measured in sample S-340, collected from a bag of sludge contained in a shallow burial pit. As noted in Section 5.2.5, this bagged sludge was removed for off-site disposal. Sr-90 activity in samples collected immediately beneath sample S-340 were below background.

5.2.3.2 Volatile Organic Compounds

No VOCs were detected in any of the analyzed soil samples. Total VOCs up to 821 mg/kg (mainly benzene) were detected in S-340, the bagged sludge. Ethylbenzene, toluene and xylenes were detected in a wood sample (S-362) at concentrations of 1.2 mg/kg, 0.49 mg/kg, and 6.2 mg/kg, respectively.

5.2.3.3 Semivolatile Organic Compounds

Significant concentrations of SVOCs were measured in only one soil sample (S-361) and two solid waste samples (S-340 and S-362) collected from the Southwest Trenches Area. Pyrene was detected in two additional soil samples (S-333 and S-349) at trace concentrations. S-361 was collected from a depth of 14.5 ft bgs in Pit No. 1, at the south end of exploratory trench T-6 (Figure 5-5). SVOCs detected in sample S-361 consisted primarily of polynuclear aromatic hydrocarbons (PAHs) which were reported at a total concentration (sum of all individual SVOCs) of 8.10 mg/kg. This sample was collected in native soil 2.5 ft beneath the base of the disposal pit and was the deepest sample collected at this location. No SVOCs were detected in the two samples collected above S-361.

Elevated concentrations of SVOCs were also measured in solid waste samples S-340 (bagged sludge) and S-362 (wood) (Figure 5-6), which were removed for off-site disposal. Total SVOC concentrations in these samples were approximately 780 mg/kg and greater than 34,000 mg/kg, respectively. SVOCs detected included PAHs in S-340 and PAHs and furans in S-362. Samples of soil collected immediately below the sludge and wood samples contained no detectable SVOCs. The elevated concentrations of PAHs associated with S-362 may be attributed to wood preservatives. PAHs are commonly used in wood preservation operations.

5.2.3.4 Pesticides and PCBs

Organochlorine pesticides, including chlordane, dichlorodiphenyl-dichloroethane (DDD), DDE, dieldrin, dichlorodiphenyl-trichloroethane (DDT), methoxychlor, endosulfan, and heptachlor were detected in trace concentrations in soil samples collected throughout the Southwest Trenches Area. Additionally, PCB-1260 was detected in one solid waste sample collected from the Southwest Trenches Area. Table 5-5 shows the maximum reported concentration and location of each pesticide and PCB compound detected.

Table 5-5. Summary of Maximum Pesticide and PCB Concentrations - Southwest Trenches Area

Sample No.	Matrix	Location	Depth (ft bgs)	Parameter	Maximum Concentration (mg/kg)
S-484	Soil	Shallow soil	3.5	Chlordane	3.6
S-484	Soil	shallow soil	3.5	DDD	0.26
S-378/S-486	Soil	T-3/shallow soil	2.5/3	DDE	0.014
S-486	Soil	shallow soil	3	Heptachlor	0.096
S-485	Soil	shallow soil	3	Endosulfan I	0.011
S-340	Sludge	T-2	6.5	PCB-1260	1.0
S-484	Soil	shallow soil	3	Dieldrin	0.07
S-490	Soil	shallow soil	4	DDT	0.0037
S-490	Soil	shallow soil	4	Methoxychlor	0.0011
S-490	Soil	Shallow Soil	4	Heptachlorepoxide	0.0013
S-333	Soil	T-1	6	Pyrene	0.033

Shallow soil samples S-484, S-485, and S-486 were collected near the location of a previous soil sample that contained chlordane at 2,000 mg/kg or 0.2% (Figure 5-5). The new samples did not confirm the presence of a chlordane (3.6 mg/kg) source in that area. However, sample S-484 contained the highest concentration of chlordane in the Southwest Trenches Area. The new samples were collected from a depth of approximately 3 ft bgs and were the only samples collected at each location.

5.2.3.5 Metals

Arsenic, barium, total chromium, hexavalent chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, vanadium, and zinc were each reported above background in at least one soil and/or solid waste sample collected from the Southwest Trenches Area (Figures 5-5 and 5-6). However, the measured concentrations of these metals were generally only slightly above background. Table 5-6 shows the maximum reported concentrations of each metal detected above background in the Southwest Trenches Area.

Table 5-6. Summary of Maximum Concentrations of Metals Exceeding Background - Southwest Trenches Area

Parameter	Maximum Concentration (mg/kg)	Background (mg/kg)	Sample No.	Matrix	Location	Depth (ft bgs)
Arsenic	9.7	9.46	S-481	Soil	SB-8	30
Barium	270	237	S-336/S-476	Soil/Soil	T-2/SB-8	3.5/–
Chromium	250	178	S-349	Soil	T-5	4
Hexavalent Chromium	0.22	0.099	S-350	Gravel	Grid 7-9	0.5

Table 5-6. Summary of Maximum Concentrations of Metals Exceeding Background - Southwest Trenches Area (continued)

Parameter	Maximum Concentration (mg/kg)	Background (mg/kg)	Sample No.	Matrix	Location	Depth (ft bgs)
Total Chromium	250	178	S-349	Soil	T-5	6
Cobalt	29	29	S-476	Soil	SB-8	–
Copper	890	50	S-340	Sludge	T-2	6.5
Iron	46,000	42,000	S-352	Soil	Grid 7-9	3.5
Lead	49	10.1	S-340	Sludge	T-2	6.5
Manganese	1,000	720	S-357	Soil	T-6	14.4
Mercury	5.2	0.49	S-483	Soil	SW corner of site	3
Nickel	420	326	S-495	Soil	Washdown pad	3-4.5
Selenium	1.5	1.0	S-340	Sludge	T-2	6.5
Vanadium	82	73	S-481	Soil	SB-8	30
Zinc	730	82	S-340	Sludge	T-2	6.5

Maximum concentrations of a number of metals were recorded in sample S-340. S-340 was collected from a bag of sludge encountered in exploratory trench T-2. No metals were detected above background in soil sample S-343, collected 3.5 ft below the sludge.

Total chromium was detected in concentrations slightly exceeding background in fourteen soil samples, S-352, S-341, S-337, S-382, S-477, S-487, S-490, S-353, S-492, S-493, S-494, S-495, S-348, and S-349. Hexavalent chromium slightly exceeded background, in sample S-350; however, total chromium in this sample was below background. Total chromium concentrations measured in the fourteen samples ranged from 180 mg/kg to 250 mg/kg. The background concentration for chromium at the LEHR Site is 178 mg/kg. Given the natural variability in total chromium in soils near the Site (Table 3-1), the measured concentrations slightly above background are probably due to naturally occurring minerals, and not due to disposal activities. The hexavalent chromium concentration in S-350 is 0.22 mg/kg, which is only slightly above background (0.099 mg/kg), and probably results from soil mineralogy and is not due to disposal activities.

5.2.3.6 Anions and Formaldehyde

Nitrate exceeded background in twenty soil samples and four solid waste samples collected from the Southwest Trenches Area. Nitrate concentrations were as high as 390 mg/kg (S-357); however, nitrate concentrations in the majority of the samples above background ranged from 50 mg/kg to 100 mg/kg. All samples which contained nitrate in concentrations above background were collected within or beneath disposal trenches.

Sulfate also exceeded background in 18 soil samples and 3 solid waste samples. Sulfate concentrations in soil were as high as 1,700 mg/kg (S-331), and the highest sulfate concentration in

waste was 5,700 mg/kg in S-340, the sludge sample. However, sulfate concentrations in the majority of the samples above background were less than 200 mg/kg.

Chloride exceeded background in six soil samples and two solid waste samples. Chloride concentrations were as high as 470 mg/kg in sample S-331, but were generally less than 50 mg/kg.

Formaldehyde was detected at 1.6 mg/kg in soil sample S-348, which is just above the 1 mg/kg detection limit.

5.2.4 Physical Parameter Analysis Results

Soil samples GEO6, GEO7, GEO8, and GEO9 were collected for geotechnical testing. These samples were collected at the same locations as samples S-465, S-466, S-467, and S-469, respectively (Figure 5-5). The samples were analyzed by Daniel B. Stephens and Associates, Inc. for moisture content, bulk density, porosity, saturated and unsaturated hydraulic conductivity, moisture characteristics and particle density. A copy of the laboratory report is included as Appendix J.

In general, the results were consistent with the silty clay to clay soil type observed in the field. The physical measurements described above were relatively consistent between all four samples. The following is a synopsis of the data:

- Moisture contents ranged from 14.9% to 17.7% by weight;
- Bulk densities ranged from 1.96 to 2.11 grams per cubic centimeter (g/cc);
- Calculated porosities ranged from 30.8% to 39.3%;
- Saturated hydraulic conductivities ranged from 1.1×10^{-8} cm/sec to 5.8×10^{-8} cm/sec; and,
- Soil particle densities ranged from 2.66 g/cc to 2.74 g/cc.

5.2.5 Investigative Derived Wastes (IDW)

Wastes encountered during trenching activities in the Southwest Trenches Area consisted of former dog pen gravels, glass shards and laboratory glassware, plastic and rubber tubing, garden hose, wood, pumps, syringes, absorbent, non-human bones, plastic bags, bagged sludge, electrical conduit, plastic sheeting, and other laboratory wastes. According to IT Corporation, (Personal Communication, Bill Schaal, 1996), easily gatherable and/or large item wastes were bagged as low-level radioactive waste and were packaged for off-site disposal. Gravel and other small wastes such as glass shards, small bones and wood were generally returned to the trenches. One exception was the gravel clump which was encountered at Grid 7-9; this material was removed for off-site disposal.

Radiation screening with SCIN and GM detectors and organic vapor screening with a PID were conducted on the wastes. However, according to IT Corporation, the larger waste items were

recovered for off-site disposal regardless of the screening results. An effort was made to keep the soils separate from the gravel and other wastes and to return the wastes to the same approximate depth as they were originally encountered in the disposal trenches. Materials to be disposed off-site were inventoried, bagged in yellow radiation bags, tagged, placed in a steel B25 box and stored on-site. Except for some fluid from sump pumps recovered during trenching, which may be potentially mixed waste, all waste inventoried and bagged was shipped and disposed as low-level radioactive waste at the Hanford facility in Washington in June 1997.

Soil cuttings recovered from the soil borings and shallow soil sample holes were buried in shallow excavations immediately adjacent to the drilling locations. Rinseate water from decontamination of the backhoe and sampling equipment was also poured into the shallow excavations.

5.3 OU-2 - Ra/Sr Leach Systems

5.3.1 Investigation Activities

The LFI Work Plan specified the following activities for the Ra/Sr leach system area (OU-2):

- Excavate five exploratory trenches;
- Drill 5 soil borings;
- Collect soil samples from the trenches and soil borings; and,
- Collect three surface soil samples from locations near Old Davis Road.

In addition to the scope of work specified in the LFI Work Plan, an extra set of samples was collected and analyzed from Trench 1, an additional surface soil sample was collected along Old Davis Road, five extra samples were collected and analyzed for physical parameters, and geophysical logging was conducted in borehole SB-5.

Three of the five exploratory trenches were excavated around the former Imhoff building, one was perpendicular to the radium leach trench, and one was north and east of the radium distribution box (Figure 5-7). The trenches ranged from 15 to 40 ft long and were approximately 15 ft deep, with the exception of Trench 5, which was 11.5 ft deep. Perspective views of the radium-226 and Sr-90 treatment systems are shown in Figures 5-8 through 5-10. The LFI Work Plan specified that 1 vertical set of 3 samples would be collected per 10 linear ft of trench, and that 6 sets would be submitted to the lab for chemical analysis: 2 sets of samples from Trench 2 and 1 set of samples from each of the other trenches. A total of 31 samples were collected from the five trenches and 21 samples were analyzed.

The LFI Work Plan specified that the five soil borings would be drilled along the leach line to a depth of approximately 30 ft, with approximately 8 to 9 samples collected per borehole. The following sample locations were specified:

- 1 sample adjacent to the leach drain rock;
- 1 sample in native soil just beneath the leach cobbles;
- 1 sample from each 2.5-to-5 ft interval below the leach cobbles; and,
- 1 sample from the bottom of the boring.

The bottom sample and the four other samples with the highest VOC and/or radiological field screening results were submitted for laboratory analysis. The five soil borings were drilled in the vicinity of the dry wells and along the radium leach trench (Figure 5-7). A total of 27 samples were collected and analyzed from the borings.

Four surface soil samples along Old Davis Road were collected and analyzed (Figure 5-7). These samples were collected from the storm water drainage ditch to assess possible impacts due to overflow and surface runoff from the radium and strontium treatment systems.

To determine which samples to submit to the laboratory, IT Corporation screened the samples with a PID and GM and SCIN equipment, inspected the samples for discoloration and other indications of contamination, and considered the spatial distribution of each sample in relation to other samples collected in the vicinity.

5.3.2 Field Observations

Imhoff Building Trenches

Trenches 1 through 3 were excavated to evaluate whether there was any impact to the surrounding area from the treatment processes conducted within the Imhoff building and associated Imhoff treatment tanks. The samples inside the trenches were generally collected from immediately below, 2.5 ft below, and 5 ft below the leach cobble/soil interface.

Exploratory Trench 1

Trench 1 is a north-south trending, 25 ft long, 3 ft wide, and 15 ft deep exploratory trench located on the east side of the former Imhoff building. The trench location traverses the original leach field. Seven soil samples, S-384 through S-387 and S-389 through S-391, were collected and submitted for analysis. The following observations were made during the excavation of this trench (see Appendix D):

- The concrete footing around the pad perimeter was determined to be too thick and deep to remove in reasonable time, and was therefore left in place.

- A 6 in. diameter, perforated leach line was identified 7 ft from the north end of the trench at a depth of 3 ft 4 in. The line was surrounded by 2 ft of 2-to-4 in. cobbles.
- Four samples, S-384 through S-387 were collected adjacent to and up to 5 ft below this leach line (Figure 5-7).
- A second 6" diameter, perforated leach line and associated surrounding cobble layer were identified 17 ft from the north end of the trench.
- Three samples, S-389 through S-391, were collected next to this leach line and were submitted for analyses (Figure 5-9).
- An abandoned electrical conduit and 4 in cast iron sewer line were uncovered approximately 15 ft from the north end of Trench 1, just north of this leach line.
- Field screening of the perforated leach line indicated radiation counts of 0 - 330 cpm/cm^2 using an NaI Detector.
- Soil types encountered generally consisted of undisturbed yellow brown clayey silt, which increased, in clay quantity with depth. The backfill for the leach lines consisted of gravel or silty gravel. All trench depths were terminated in native soil.

Exploratory Trench 2

Trench 2 is an east-west trending, 40 ft long, 3 ft wide, 15 ft deep exploratory trench located on the southern side of the former Imhoff building (Figure 5-7). The trench location is parallel to the Imhoff tanks and the Ra-226 tanks. Fourteen samples, S-392 through S-404, were collected and seven samples were submitted for analyses. The following general observations were made during the excavation of this trench:

- Four samples, S-392 through S-395, were collected 3 ft west of the east end of the trench, but were not submitted for analyses. Concrete debris was discovered in the southeast corner of the trench.
- Four samples, S-397 through S-400, were collected 17 ft west of the east end of the trench at depths ranging from 10 to 13 ft bgs, and were submitted for analysis.
- Three samples, S-396, S-401 and S-402 were collected 23 ft west of the east end of the trench and analyzed. Sample S-397 was collected near a hole in the top of the pipe at approximately 5 ft bgs. The footing at the bottom of the former Imhoff Building cement wall was observed, along with a 4 in pipe with stick-up (probably sewer).
- Three samples, S-403 through S-405, were collected 30 ft from the east end of the trench at depths ranging from 5 to 13 ft bgs, but were not submitted for analyses.

- Soil types encountered generally consisted of undisturbed yellow brown clayey silt, which increased, in clay quantity with depth. The backfill for the leach lines consisted of gravel or silty gravel. All trenches were terminated in native soil.

Exploratory Trench 3

Trench 3 is a north-south trending, 20 ft long, 3 ft wide, 15 ft deep exploratory trench located on the western side of the former Imhoff building (Figure 5-7). Seven samples, S-406 through S-412, were collected from Trench 3; however three samples were not submitted for analyses based on field observations. The trench location and orientation were chosen to evaluate the impact of the Imhoff tanks. The following general observations were made during excavation of this trench:

- Three samples, S-406, -408 and -411, were collected approximately 5.5 ft south of the north end of the trench but were not submitted for analysis.
- Four samples, S-407, -409, -410 and -412, were collected approximately 15.5 ft south of the north end of the trench from 6 to 13 ft bgs and were submitted for analyses.
- Soil types encountered generally consisted of undisturbed yellow brown clayey silt, which increased, in clay quantity with depth. The backfill for the leach lines consisted of gravel or silty gravel. All trenches were terminated in native soil.

Radium Leach System Trenches

Trenches 4 and 5 were excavated across the radium leach line and next to the radium distribution box, respectively. Samples were collected within and below the leach field.

Exploratory Trench 4

Trench 4 is an east-west trending, 15 ft long, 3 ft wide, 15 ft deep exploratory trench located approximately 45 ft south of the radium distribution box. The trench location cuts across the leach line for the Ra-226 system (Figure 5-7). Four samples were collected and analyzed from this trench. The following general observations were made during excavation of this trench:

- Four samples, S-422 through S-425, were collected at depths from 9.5 to 14 ft bgs (Figure 5-7) and analyzed. A plywood sheet was discovered above the leach line; and sample S-422 was collected just below the leach line.
- Soil types encountered generally consisted of undisturbed yellow brown clayey silt which increased in clay quantity with depth. The backfill for the leach lines consisted of gravel or silty gravel. All trenches were terminated in native soil.

Exploratory Trench 5

Trench 5 consists of two 7.5 ft long east-west trending sections located along the east and north sides of the Ra distribution box (Figure 5-7). A total of ten samples, S-413 through S-421 and S-426, were collected from this trench. Six of the ten samples were submitted for analyses. The following general observations were made during excavation of this trench:

- Four samples, S-413 through S-416, were collected on the east side of the radium distribution box (Figure 5-7) but were not submitted for analyses.
- Three samples, S-420, -421, and -426, were collected on the north side of the distribution box and submitted for analyses. The sample depths on both the east and north sides ranged from immediately below the distribution box to 5.5 ft below the distribution box.
- Three samples, S-417 through S-419, were collected near a broken pipe which leads from the domestic septic tank effluent and "tees" into the radium distribution box influent (Figure 5-7). The samples were collected directly beneath the broken pipe to 5 ft below the pipe. The pipe was noticeably corroded.
- Sample S-427 consisted of sediment collected from the bottom of the radium distribution box.
- Soil types encountered generally consisted of undisturbed yellow brown clayey silt, which increased, in clay quantity with depth. The backfill for the leach lines consisted of gravel or silty gravel. All trenches were terminated in native soil.
- Radiation readings inside the radium distribution box (Figure 5-7) were:
    - 12 microroentgens (µR) - flush with manhole opening
    - 40 µR - 3 ft down (approximately mid-way down the box)
    - 100 µR - near the bottom (6 ft down)
    - Field screening of the dry wells manhole cover and inside lip indicated radiation counts ranging from 50 - 500 cpm/100cm^2.

Radium Leach System Borings

Five soil borings, SB-1 through SB-5, were drilled to depths of 31 ft bgs in the radium leach system area to further characterize the area and to provide data on soil deeper than 15 ft. Boring locations are shown on Figure 5-7. Drilling and sample collection were conducted according to procedures outlined in the LFI Work Plan. Geophysical logging was performed in SB-5 by running gamma ray and induction tools down a temporary polyvinylchloride (PVC) casing placed in the open hole. After logging, the PVC casing was lodged in the hole and could not be removed, so it was backfilled with grout upon the completion of field activities. Soil boring logs are included in Appendix G. The geophysical logs for SB-5 are included in Appendix H.

Soil boring SB-1 was drilled adjacent to the northernmost dry well approximately 22.5 ft northwest of Trench 5 (Figure 5-7). Five samples, S-435 at 8-10 ft bgs, S-436 at 10-12 ft bgs, S-437 at 18-20 ft bgs, S-438 at 25-27 ft bgs, and S-439 at 29-30 ft bgs, were collected and submitted to the laboratory for analysis. The first sample was collected directly beneath the radium leach line at approximately 9 ft bgs.

Soil boring SB-2 was drilled adjacent to the dry well immediately west of the radium distribution box and approximately 11 ft west of Trench 5 (Figure 5-7). Seven samples, S-440 at 6 to 8 ft bgs, S-441 at 8 to 10 ft bgs, S-442 at 15-17 ft bgs, S-443 at 17-19 ft bgs, S-444 at 20-22 ft bgs, S-445 at 22-24 ft bgs, and S-446 at 28 to 30 ft bgs, were collected and submitted to the laboratory for analysis.

Soil boring SB-3 was drilled approximately 52.5 ft south of Trench 5 (Figure 5-7). Five soil samples, S-447 at 7-10 ft bgs, S-448 at 12-14 ft bgs, S-449 at 20-22 ft bgs, S-450 at 25-27 ft bgs, and S-451 at 29-31 ft bgs, were collected and submitted to the laboratory for analysis.

Soil boring SB-4 was drilled along the radium leach trench approximately 120 ft south of Trench 4 (Figure 5-7). Six soil samples, S-452 at 10-12 ft bgs, S-453 at 12-14 ft bgs, S-454 and S-455 at 20-22 ft bgs, S-456 at 25-27 ft bgs, and S-457 at 29-31 ft bgs, were collected and submitted to the laboratory for analysis.

Soil boring SB-5 was drilled adjacent to the southernmost dry well approximately 22.5 ft southwest of Trench 5 (Figure 5-7). Six soil samples, S-458 at 6.5-8 ft bgs, S-459 at 13-15 ft bgs, S-460 at 19-20 ft bgs, S-461 and S-462 at 23-25 ft bgs, and S-463 at 28.5 to 30 ft bgs, were collected and submitted to the laboratory for analysis. Additional soil samples from the S-458 , S-459, S-460, S-461, and S-463 locations labeled GEO1 through GEO5, respectively, were submitted for geotechnical laboratory analysis for physical parameters (Section 5.3.4).

Geologic cross section A-A' (Figure 5-11) was prepared using lithologic data from the soil borings and exploratory trenches. As shown in cross-section A-A', the sediments encountered in all five soil borings were quite similar. The first interval sampled consisted mainly of cobble and gravel backfill either from the dry wells or from the leach trench. The native soil below the backfill consisted of brown silty clay and yellow brown clay, with the clay increasing in stiffness with depth. Black organic clay was encountered in SB-2 and SB-5 at 23 and 29 ft, respectively. Two more permeable layers were encountered in SB-2 at approximately 15 ft bgs and at 21 ft bgs. The gamma ray and inductive resistivity logs run on SB-5 show general agreement with the description of the logged soils.

No PID, GM or SCIN readings above background were measured in any of the samples collected from these five soil borings.

Shallow Soil Sampling

Four shallow soil samples were collected along Old Davis Road to evaluate potential surficial releases from the Ra-226 dry wells (Figure 5-14). The near-surface soil samples were collected at a

depth of 0.8-ft bgs using a hand auger and slide hammer sampling equipment. All samples were collected according to the procedures outlined in the LFI Work Plan. Upon completion of field work, the shallow hand auger boreholes were backfilled with recompacted soil removed from the borehole.

5.3.3 Analytical Results

Soil samples collected in the radium/strontium leach line investigation were analyzed by LAS for the analytes shown in Table 5-7.

Samples S-454 through S-463 from soil borings SB-4 and SB-5 were not analyzed for Pu-241 and Am-241, due to an inadvertent omission on the Chain-of-Custody form.

Table 5-7. Summary of Analytical Parameters and Methods - Radium and Strontium Area

Parameter	Analytical Method
Gross alpha	EPA Method 9310
Gross beta	EPA Method 9310
Tritium	EPA Method 906.0
Carbon-14	LSC
Radium-226	EPA Method 903.1 modified
Strontium-90	EPA Method 905.0
Americium-241	CLP, OLM 01-8
Plutonium-241	CLP, OLM 01-8
Gamma emitters	EPA Method 901.1
Volatile organic compounds (VOCs)	CLP SOW, OLM 01.8
Semi-volatile organic compounds (SVOCs)	CLP SOW, OLM 01.8
Nitrate	CLP SOW, OLM 01.8
CAM 17 Metals	CLP SOW, OLM 02.1
Hexavalent chromium	EPA Method 7196
Anions	EPA Method 300.0
pH	ASTM 4972

Notes:

CLP SOW = Contract Laboratory Program Statement of Work
OLM 01.8 = Organic Laboratory Method 01.8
LSC = Liquid Scintillation Counter
ASTM = American Society for Testing and Materials

All analytical data are included in tables in Appendix I. Figures 5-12 through 5-14 show sampling locations and measured concentrations for all chemical compounds and radionuclides that were detected above background. Analytical results for soil samples collected in the radium and strontium area are discussed by parameter group in the following sections. Within the radionuclide section, the radium leach system, the strontium leach system and Old Davis Road samples are discussed separately. Soil borings SB-1 through SB-5 and Trenches 4 and 5 are associated with the

radium leach system and Trenches 1 through 3 are associated with the strontium leach system (Figure 5-7). Tables 5-8 and 5-9 summarize the maximum contaminants detected above background in the Ra-226 and Sr-90 treatment system areas, respectively.

Table 5-8. Summary of Maximum Contaminants Detected Above Background in Ra-226 Treatment System Area.

Analyte	Maximum Concentration/Activity	Location of Maximum	Depth (ft)	Background
Radionuclides (pCi/g)				
Radium-226	106.2	Dist. Box	9.5	0.77
Strontium-90	2.18	Dist. Box	9.5	0.36
Bismuth-214	6.52	SB-1	18-20	0.57
Cesium-137	0.434	SB-1	18-20	0.053
Lead-214	7.73	SB-1	18-20	0.75
Cobalt-60	0.017	SB-1	18-20	0.016
Actinium-228	0.93	SB-4	25-27	0.71
Thallium-208	0.25	SB-5	19-20	0.21
Thorium-234	1.41	SB-5	19-20	1.09
Uranium-235	0.15	SB-2	15-17	0.071
Tritium (pCi/L)	230	Dist. Box	9.5	105
Lead-212	0.94	SB-5	19-20	0.74
Potassium-40	15.3	SB-5	19-20	13.6
Carbon-14	16	SB-5	6.5-8	0.87
Gross Alpha	185	Dist. Box	9.5	11.8
Gross Beta	156	Dist. Box	9.5	17.4
Metals (mg/kg)				
Copper	160	SB-5	23-25	50
Manganese	870	SB-4	29-31	720
Vanadium	75	SB-5	13-15/28.5-30	73
Zinc	360	SB-4	25-27	82
Total Chromium	300	Dist. Box	9.5	178
SVOCs (mg/kg)	164	SB-3	7-10	N/A
Pesticides (mg/kg)				
DDD	0.00032	SB-5	23-25	N/A
DDT	0.0018	SB-5	23-25	N/A
Others (mg/kg)				
NO_3	110	Dist. Box	9.5	10
SO_4	400	Dist. Box	9.5	36

Table 5-9. Summary of Maximum Contaminants Detected Above Background in the Sr-90 Treatment System Area

Analyte	Maximum Concentration/Activity	Location of Maximum	Depth (ft)	Background
Radionuclides (pCi/g)				
Radium-226	0.99	Trench 3	6”	0.77
Strontium-90	1.61	Trench 1	5’4”	0.36
Gross Alpha	12	Trench 1	8’	11.8
Gross Beta	20.6	Trench 1	5’4”	17.4
Metals (mg/kg)				
Total Chromium	190	Trench 3	6’	178
VOCs (mg/kg)				
Benzene	0.005	Trench 2	5	N/A
Toluene	0.004	Trench 2	5	N/A
SVOCs (mg/kg)	0.404	Trench 1	4.5	N/A
Others (mg/kg)				
NO_3	42	Trench 1	4.5	10
SO_4	51	Trench 1	4.5	36
Cl	29	Trench 1	7	14

5.3.3.1 Radionuclides

Ra-226 Dry Wells and Ra-226 Distribution Box

In SB-1, SB-2 and SB-5, the three borings drilled near the dry wells (Figure 5-12), Ra-226, Sr-90, gross alpha, gross beta, Pb-212, Bi-214, Cs-137, Co-60, C-14, Ac-228, Pb-212, and Tl-208 were detected above background, as described below.

Ra-226 was detected above background at up to 8.2 pCi/g in 14 of 18 samples from soil borings SB-1, SB-2 and SB-5. The highest Ra-226 activity was in soil from SB-1 at 19.2 ft. Sr-90 was detected above background at up to 1.17 pCi/g in eight of the eleven samples with potentially valid Sr-90 results. The highest activity detected was in soil from SB-5 at 13-15 ft. However, as discussed in Section 5.1.2, all LFI Sr-90 results may be erroneously high due to a systematic laboratory error. Gross alpha activity above background at up to 46 pCi/g was detected in two samples from SB-1, three samples from SB-2, and three samples from SB-5 between 14 and 25 ft. The highest activity was from SB-1 at 18-20 ft. Gross beta activity above background at up to 39.7 pCi/g was detected in two or three samples from each of the three borings between 11 and 23 ft, with the highest activity in SB-1 at 19 ft. Pb-214 up to 7.7 pCi/g and Bi-214 up to 6.5 pCi/g were detected above background in several samples from each of the three borings between the depths of 6 and 36 ft. The highest activities for both Pb-214 and Bi-214 were from a depth of 18-20 ft in SB-1. Cs-137 at 0.4 pCi/g was also detected in SB-1 at a depth of 18-20 ft. Co-60 at 0.017 pCi/g was detected in SB-1 at a depth of 18-20 ft. The other three radionuclides, Ac-228 at 0.8 pCi/g, Pb-212 at 0.9 pCi/g, and Tl-208 at 0.3 pCi/g, were only detected above background in SB-5 at a depth of 19-20 ft. Also detected above background in SB-5 was C-14 at 16 pCi/g at 7 ft depth.

Six samples were collected from Trench 5 from locations on the north side of the radium distribution box and underneath a broken pipe. Ra-226 up to 1.6 pCi/g was detected above background in two samples from the north side at depths of 6 ft and 11 ft and on the east side at depths of 6.5 and 11.5 ft. Sr-90 above background at up to 1.82 pCi/g was detected in four of the six samples. Tritium was detected above background at 180 pCi/L in the 6-ft sample from the north side and at 210 pCi/L in the 6.5 ft sample from underneath the broken pipe.

Ra-226 Leach Line

Trench 4 and soil borings SB-3 and SB-4 are associated with the Ra-226 leach line, and encountered sediments similar to those encountered in the soil borings in the vicinity of the dry wells and the Ra-226 distribution box. Four samples were collected from Trench 4 (Figure 5-12). Sr-90 at 0.37 pCi/g was detected in the 14-ft sample, Ra-226 at 14 pCi/g, gross-alpha at 46 pCi/g and gross-beta at 29 pCi/g were detected in the 9.5 ft sample from Trench 4.

Samples from SB-3, immediately south of Trench 4, contained Ra-226 and gross beta at up to 3.7 and 20.2 pCi/g, respectively. Radionuclides detected above background in SB-4 are Ra-226 up to 1.35 pCi/g, Ac-228 at 0.9 pCi/g, Pb-212 at 0.9 pCi/g, K-40 up to 14.3 pCi/g, gross alpha up to 13.8 pCi/g, and Tl-208 at 0.2 pCi/g. These radionuclides were also detected above background in SB-5 near the southernmost dry well at similar activities and depths, but generally were not detected above background in any other samples from this area.

Former Imhoff Building Area

Eighteen samples were collected from Trenches 1 through 3 around the former Imhoff building (Figure 5-13). Sr-90 was detected above background at up to 1.61 pCi/g in 12 of the 18 samples. In 11 of the samples, the Sr-90 activity was 0.9 pCi/g or less. The highest Sr-90 activity was from Trench 1 at 5.4 ft. Sr-90 was detected at 0.63 pCi/g in the 13 ft sample from Trench 2; however it was not detected above background in the duplicate sample. Ra-226 up to 0.99 pCi/g was detected above background in five of the 18 samples collected. Gross alpha was only detected above background at 12 pCi/g in S-386 in Trench 1 at 8 ft. Gross Beta was detected above background in two samples from Trench 1 at 17.8 and 20.6 pCi/g.

Old Davis Road

The only radionuclides detected above background in the four shallow soil samples collected along Old Davis road were Ra-226 up to 1.73 pCi/g, gross beta at 19.6 pCi/g, and Cs-137 at 0.054 pCi/g (Figure 5-14). Ra-226 was detected in the samples that are in the vicinity of the dry wells. Cs-137 and gross beta were detected in the samples from across the street near the storm water culvert.

5.3.3.2 Organic Compounds

No volatile organic compounds were measured in any of the soil samples collected from the Ra/Sr leach systems. SVOCs, primarily PAHs, were detected in soil boring SB-3 immediately south

of Trench 4. SVOCs were detected at 243 mg/kg in the 8.5 ft sample, but were not detected above detection limits in the 13 ft and deeper samples (Figure 5-12). SVOCs were also detected in SB-4 in S-452 at 0.127 mg/kg at a depth of 10-12 ft. SVOCs up to 0.82 mg/kg were detected in the sediment from the distribution box. SVOCs up to 0.404 mg/kg were detected in Trenches 1 and 3 of the former Imhoff building.

DDD and DDT were measured in one of the soil samples collected from the Ra/Sr leach systems. DDD at 0.00032 and DDT at 0.0018 mg/kg were detected in sample S-461 from boring SB-5 at a depth of 23-25 ft. However, DDD and DDT were not detected in the duplicate sample.

5.3.3.3 Inorganic Constituents

The only metals detected above background in this area were copper, zinc, vanadium, manganese, and chromium. Copper at 160 mg/kg and zinc at 120 mg/kg were detected in SB-5 at a depth of 24 ft. Vanadium at 75 mg/kg was detected in SB-5 at depths of 13-15 ft and 28.5-30 ft. Copper at 82 mg/kg and zinc at 360 mg/kg were also detected in SB-4 at a depth of 26 ft. Manganese was detected at 870 mg/kg in SB-4 at a depth of 29-31 ft. Because these samples were from similar depths and of similar sediment types, and concentrations were below background at shallower depths, these metals are probably naturally-occurring rather than related to the Ra-226 system.

Total chromium at 280 mg/kg was detected in the 8.5 ft sample from SB-3. Total chromium at 230 mg/kg was also detected in the sample from S-496 along Old Davis Road and at 190 mg/kg in sample S-407 from Trench 3 at a depth of 6 ft. These concentrations are just slightly above the 178 mg/kg background level. The highest concentration of total chromium was 300 mg/kg in the sample from the distribution box, S-427.

Other analytes detected above background in the vicinity of the dry wells were nitrate at 79 mg/kg in SB-1 at 9 ft and 110 mg/kg in SB-2 at 7 ft. Sulfate was also detected in SB-1 between 49 and 150 mg/kg and in SB-2 between 45 and 100 mg/kg. In Trench 5 on the north side of the distribution box, nitrate was detected at 34 mg/kg in the 11 ft depth sample and sulfate was detected at 49 and 40 mg/kg in the 6 ft and 11 ft samples, respectively. In Trench 4, up to 65 mg/kg nitrate was detected in three of the four samples collected, with the highest concentration at a depth of 9.5 ft. Sulfate at 71 and 42 mg/kg was detected in samples from depths of 9.5 and 14 ft, respectively, in Trench 4. Sulfate at 150 mg/kg was detected in soil boring SB-4 at a depth of 12-14 ft.

In Trench 1 on the east side of the Imhoff building, samples collected 17 ft south of the north end showed nitrate at 42 and 33 mg/kg, sulfate at 51 and 40 mg/kg and chloride at 25 and 29 mg/kg in the 4.6 and 7 ft samples, respectively. Nitrate was also detected in Trench 1 at 14 and 10 mg/kg at depths of 8 and 10.8 ft, respectively.

5.3.4 Physical Parameter Analytic Results

Five samples from soil boring SB-5 (GEO1 through GEO5) were collected for physical parameter analysis. The tests performed were initial moisture content, dry bulk density, calculated porosity, saturated hydraulic conductivity, unsaturated hydraulic conductivity, particle density and moisture characteristics. A copy of the laboratory report is included as Appendix J.

GEO1 consisted of gravely sand and GEO2 through GEO5 consisted of black clay. In general the physical parameter results were consistent with these soil types. The measurements for GEO2 through GEO5 were fairly similar, but most of the GEO1 results were significantly different. The following is a synopsis of the data:

- Gravimetric moisture contents ranged from 2.2% in GEO1 to 23.8% in GEO4;
- Wet bulk densities ranged from 1.87 to 2.05 g/cc;
- Calculated porosities ranged from 29.3% in GEO1 to 43.6% in GEO4;
- Saturated hydraulic conductivities ranged from 1.1×10^{-3} cm/sec in GEO1 to 6.7×10^{-8} cm/sec in GEO2; and,
- Soil particle densities ranged from 2.68 g/cc in GEO2 and GEO4 to 2.71 g/cc in GEO1.

5.3.5 Investigative Derived Wastes

Wastes encountered during trenching activities in the Ra/Sr Leach System Area consisted of perforated orangeberg pipe and cast iron plumbing pipe. According to IT Corporation (Personal Communication, Bill Schaal, 1996), the pipe waste was bagged as low-level radioactive waste and was packaged for off-site disposal.

Radiation screening with SCIN and GM detectors and organic vapor screening with a PID were conducted on the wastes. Materials to be disposed off-site were inventoried, bagged in yellow radiation bags, tagged, placed in a steel B25 box and stored on-site. Except for the cast iron plumbing pipe, which may be potentially mixed waste, all waste inventoried and bagged was shipped and disposed as low-level radioactive waste at the Hanford facility in Washington in June 1997.

Soil cuttings recovered from the soil borings and shallow soil samples holes were buried in shallow excavations immediately adjacent to the drilling locations. Rinseate water from decontamination of the backhoe and sampling equipment was also poured into the shallow excavations.

5.4 Domestic Septic Systems (OU-4)

During the LFI, two of the seven on-site septic tank systems, Tank No. 1 and Tank No. 7, were investigated. Because only the approximate locations of Tanks No. 3, No. 4, and No. 5 are known, and due to utility placement, exploration in these areas was postponed. During the LFI, an attempt was made to trench at Tank No. 6; however, underground utility lines prevented investigation of this area. Tank No. 2 is within the Ra-226 leach field and is addressed as part of that area (Section 5.3).

After the LFI was completed, a "Data Gaps Work Plan" was developed for further investigation of Tank No. 1 and exploratory investigations for Tanks 3, 4, 5 and 6 (IT Corporation, 1997). The Data Gaps Investigations were conducted in June 1997. Results of both the LFI and the Data Gaps Investigations are presented in the following sections.

5.4.1 Investigation Activities

During the LFI, exploratory trenches were excavated with a backhoe around Tank No. 1 and Tank No. 7. Soil samples were collected at discrete depths beneath each tank by driving a thin-walled sampling tube into excavated soil in the backhoe bucket. As specified in the LFI Work Plan, the soil samples were analyzed for the same analytes as in the Southwest Trenches Area (see Table 5-3 in Section 5.2), with the exception of benzene, toluene, ethylbenzene and xylene (BTEX) by EPA Method 8020. Bacteriological analysis had also been planned for sludges encountered in the septic tanks. However, these analyses were not performed as no sludge was encountered.

The field activities proposed in the Data Gaps Work Plan for the septic tanks consisted of:

- Exploration trenching and sampling at Tank 1;
- Exploration hand augering and sampling at Tanks 3, 4, 5, and 6; and,
- Drilling and sampling at Tanks 3, 4, 5, and 6.

The actual Data Gaps field activities varied slightly from those proposed in the Work Plan. The variations were: two borings were hand augered in the area of Septic Tank 1; none of the septic tanks were opened and sampled; and five borings instead of six were drilled in the vicinity of Septic Tank 5. All field work was conducted according to the Standard Operating Procedures (SOPs) presented in Appendix A of the Data Gaps Work Plan. Samples were analyzed for the same suite of analytes as those collected from the septic tank areas during the LFI.

Twelve additional samples were collected in September 1997 to complete the Data Gaps field activities. The additional samples were T1A05, T1A06 and T1A07 from Septic Tank No. 1 area, T304, T305 and T306 from Septic Tank No. 3 area, T404, T405 and T406 from Septic Tank No. 4 area, and T604, T605 and T606 from Septic Tank No. 6 area.

5.4.2 Field Observations

Tank No. 1

Septic Tank No. 1 is a concrete, 5 foot diameter, 6 foot tall, (approximately 800 gal) vertical cylindrical tank located on the west side of the Administration Building. The general location of the tank is shown on Figure 5-1 and more detail is shown on Figure 5-15. During the LFI, the concrete lid of the tank was found to be broken and the tank had been filled with sand and gravel. The top of the tank was buried 1.5 ft bgs and the base of the tank was found at 7.5 ft bgs. Four-inch diameter cast iron influent and effluent lines were still attached to the tank. The influent line enters the tank approximately 22 in. below the surface and extends east. The effluent line connects to the tank approximately 24 in. below the surface and extends west. A cleanout trap located approximately 14 ft west of the tank appears to connect to the effluent line. The leach field area for septic Tank No. 1 was not located or investigated for the LFI.

Soil samples S-431, S-432, S-433, and S-434 (duplicate of S-433) were collected from the excavation around the tank at depths of 7.5 ft, 10 ft, 13 ft, and 13 ft bgs, respectively. No sediment samples were collected within the tank because material found inside the tank (i.e., sand and gravel) was not characteristic of septic tank contents.

During the LFI, the Septic Tank 1 effluent line was traced 80 ft to the south of the tank and was believed to be truncated by a sanitary sewer pipe (Figure 5-15). During the June 1997 Data Gaps Investigations, Trench T1 was excavated south of the sanitary sewer pipe in an attempt to locate the southern portion of the effluent line and associated leach line. There was no indication of the pipe or the leach line in this area. Two exploratory hand auger borings (HAB), 7 and 9, were drilled to the south of Trench T1 to eliminate any possibility that the effluent line continued in this direction (Figure 5-15). Exploratory trench T2, located north of the sanitary sewer line, contained fill material and the effluent line was located within it. The trench was expanded south to expose the end of the pipe. This middle trench was given the identification of T1A, and samples were collected in this trench according to the Data Gaps Work Plan. Sand was encountered at the end of the effluent pipe, which was different than the fill material. It could not be determined whether this material is associated with a leach line or the later installed sanitary sewer.

Tank No. 3

Septic Tank No. 3 was not investigated during the LFI. However, during the Data Gaps Investigations thirteen HABs were drilled in the area of Tank 3 and its associated leach lines (Figure 5-16). The septic tank was not encountered in any of the HABs. Three borings, 7, 8 and 14, possibly intersected the leach line and were drilled deeper and sampled according to the Data Gaps Work Plan.

Tank No. 4

Septic Tank No. 4 was not investigated during the LFI. However, during the subsequent Data Gaps Investigation, ten HABs were drilled in the area of Tank 4 and its associated leach lines

(Figure 5-16). The septic tank was not encountered in any of the HABs. Three borings, 8, 9 and 10, possibly intersected the leach line and were drilled deeper and sampled according to the Data Gaps Work Plan.

Tank No. 5

Septic Tank 5 is believed to be located under the main Lab building. No attempts were made to locate this tank during the LFI. However, during the Data Gaps Investigation, five exploratory HABs were drilled to identify the associated leach line of Tank 5. Attempts to identify the leach line were unsuccessful, and surface obstructions in the area prevented further HABs. No samples were taken.

Tank No. 6

Septic Tank 6 was not investigated during the LFI, but was investigated during the subsequent Data Gaps Investigations. Tank 6 is believed to be covered by a cement pad, therefore, seven HABs were completed around the perimeter of the pad (Figure 5-17). Three borings, 10, 12 and 13, possibly intersected the leach line and were drilled deeper and sampled according to the Data Gaps Work Plan.

Tank No. 7

Septic Tank No. 7 was investigated during the LFI. Tank No. 7 is a concrete tank on the north side of the cobalt-60 Building (Figure 5-1 and Figure 5-18). The size of the tank has not been confirmed. The long axis of the tank is oriented north-south. A telephone line on the east side and sewer lines to the north of the tank prevented exposing the entire tank. The concrete lid of the tank had been broken and the tank was filled with concrete and dirt.

Soil samples S-428, S-429, and S-430 were collected immediately below the tank, 2.5 to 3 ft below the tank, and 5.5 ft below the tank. Samples were screened with the PID, SCIN and GM; screening results were ND or no detected activity above background.

5.4.3 Analytical Results

All analytical data collected for the Septic Tank systems during the LFI and Data Gaps Investigations are included in tables in Appendix I, and significant analytical results are presented in Table 5-10, and are discussed below.

Table 5-10. Summary of Maximum Contaminant Concentrations Detected Above Background in the Domestic Septic System Areas

Analyte	Background	Max. Conc./Activity	Location	Depth	Date
Cations and Anions (mg/kg)					
Chloride	14	100	Tank 7	12	8/16/96
Nitrate (as N)	10	120	Tank 7	9.5	8/16/96
		23.5	Trench T1A	7.5	6/11/97
Sulfate	36	69	Tank 7	9.5	8/16/96
Metals (mg/kg)					
Arsenic	9.46	11	Tank 3	11	6/12/97
Barium	237	270	Tank 7	9.5	8/16/96
Cadmium	0.46	0.78	Tank 4	5.5	6/12/97
Chromium	178	319	Tank 4	8	6/12/97
Chromium (IV)	0.099	0.132	Tank 3	15.5	6/12/97
Copper	50	56	Tank 1	10	8/19/96
		59.3	Tank 3	8	6/12/97
		60	Tank 7	7	8/16/96
Iron	42,000	42,400	Tank 3	11	6/12/97
		43,200	Tank 6	13	6/12/97
Lead	10.1	12	Tank 4	5.5	6/12/97
Manganese	720	770	Tank 1	13	8/19/96
		808	Tank 3	15.5	6/12/97
		790	Tank 7	7	8/16/96
		776	Trench T1A	7.5	6/11/97
Mercury	0.49	1.52	Tank 4	5.5	6/12/97
		49.4	Tank 6	5.5	6/12/97
Nickel	326	405	Tank 4	8	6/12/97
Vanadium	73	76.7	Tank 3	11	6/12/97
		74.5	Tank 4	13	6/12/97
		84.8	Tank 6	13	6/12/97
		73.1	Trench T1A	12	6/11/97
Zinc	82	84	Tank 1	7.5	8/19/96
		258	Tank 3	8	6/12/97
		97	Tank 4	5.5	6/12/97
		94.6	Tank 6	13	6/12/97
		110	Tank 7	12	8/16/96
		136	Trench T1A	5	6/11/97
Radionuclides (pCi/g)					
Bismuth-214	0.57	0.593	Tank 3	15.5	6/12/97
		0.61	Tank 6	8	6/12/97
		0.68	Trench T1A	7.5	6/11/97

Table 5-10. Summary of Maximum Contaminant Concentrations Detected Above Background in the Domestic Septic System Areas (continued)

Analyte	Background	Max. Conc./Activity	Location	Depth	Date
Radionuclides (continued)					
Carbon-14	0.87	2.1	Tank 1	7.5	8/19/96
Cesium-137	0.053	0.126	Tank 3	8	6/12/97
Gross Alpha	11.8	16.2	Trench T1A	5	6/11/97
Gross Beta	17.4	17.6	Tank 1	10	8/16/96
Radium-226	0.77	0.78	Tank 1	13	8/19/96
		1.45	Tank 3	15.5	6/12/97
		0.85	Tank 7	12	8/16/96
		0.9	Trench T1A	5	6/11/97
Strontium-90	0.36	0.4	Tank 1	10	8/19/96
		0.45	Tank 7	12	8/16/96
Thallium-208	0.21	0.214	Tank 3	15.5	6/12/97
		0.242	Tank 6	8	6/12/97
		0.211	Trench T1A	7.5	6/11/97
Tritium (pCi/L)	105	1270	Tank 4	8	6/12/97
		460	Tank 6	8	6/12/97
		340	Trench T1A	5	6/11/97
Uranium-235	0.071	0.1	Tank 3	15.5	6/12/97
		0.16	Tank 4	5.5	6/12/97
		0.16	Tank 6	8	6/12/97
		0.1	Tank 7	7	8/16/96
		0.091	Trench T1A	12	6/11/97
Organics (mg/kg)					
1,2-Dichloroethene	-	0.004	Trench T1A	12.5	9/17/97
Trichloroethene	-	0.01	Trench T1A	12.5	9/17/97
		0.004	Tank 6	8	9/17/97
Aroclor-1254	-	0.091	Trench T1A	12.5	9/17/97
Formaldehyde	-	2.2	Tank 7	12	8/16/96

Tank No. 1

Soil sampling locations for Tank No. 1 are shown on Figure 5-15. During the LFI, C-14 gross beta, Ra-226 and Sr-90 were detected slightly above their background activity. C-14 was detected in S-431 at 2.1 pCi/g and the background level is 1.8 pCi/g. Gross beta and Sr-90 were detected in S-432 at 17.6 and 0.4 pCi/g, respectively, and the background levels are 17.4 and 0.36 pCi/g, respectively. Copper, manganese and zinc were the only metals detected slightly above background. All other analyte levels measured in the LFI samples were below background.

During the Data Gaps Investigations, several analytes were detected above background in Trench 1A located approximately 80 ft south of Septic Tank 1 (Figure 5-15). The following radionuclides were detected slightly above background: Bi-214 at 0.68 pCi/g at 7.5 ft depth; gross alpha at 16.2 pCi/g at 5 ft; Ra-226 at 0.9 pCi/g at 12 ft; Tl-208 at 0.211 pCi/g at 7.5 ft; U-235 at 0.08 pCi/g and 0.091 pCi/g at 5 and 12 ft, respectively. Tritium was detected at 340 and 320 pCi/L at a depth of 5 ft. The only metals detected above background were vanadium at 73.1 mg/kg at 12 ft, manganese at 776 mg/kg at 7.5 ft, and zinc at 136 mg/kg at 5 ft. Nitrate was detected above background at 23.5 mg/kg at a depth of 7.5 ft. 1,2 dichloroethene (1,2 DCE), trichloroethene (TCE) and aroclor-1254 were also detected in samples collected from 12.5 ft depth at concentrations of 0.004, 0.010 and 0.091 mg/kg, respectively.

Tank No. 3

Data Gaps sample locations that may have intercepted the leach line for Tank No. 3 are shown on Figure 5-16. Ra-226 activity above background was detected at 1.45 pCi/g at 15.5 ft. The background level for Ra-226 is 0.77 pCi/g. Other radionuclides present with levels only slightly higher than background include Cs-137 at 0.126 pCi/g at 8 ft, and Bi-214 at 0.593 pCi/g, Tl-208 at 0.214 pCi/g and U-235 at 0.1 pCi/g at 15.5 ft. The metals detected slightly above background are arsenic at 10.6 and 11 mg/kg at 8 and 11 ft bgs, respectively, copper at 59.3 mg/kg at 8 ft, hexavalent chromium at 0.132 mg/kg at 15.5 ft, iron at 42,400 mg/kg at 11 ft, manganese at 808 mg/kg at 15.5 ft, vanadium at 76.7 mg/kg at 11 ft, and zinc at 82.6 mg/kg at 11 ft. Zinc at 258 mg/kg at a depth of 8 ft is the only detection significantly above background.

Tank No. 4

Tritium and U-235 were the only radionuclides detected above background in Data Gaps samples collected in this area (see Figure 5-16). Tritium was detected at 1,270 pCi/L at a depth of 8.0 ft. U-235 was detected at 0.16 pCi/g at 5.5 ft. The metals detected above background are lead at 12 mg/kg, mercury at 1.52 mg/kg and zinc at 97 mg/kg at 5.5 ft, and total chromium at 319 mg/kg and nickel at 405 mg/kg at a depth of 8 ft.

Tank No. 5

As mentioned in Section 5.4.2 above, no samples were taken from the area of investigation for Tank 5. The location of the tank and the associated leach line were undetermined.

Tank No. 6

Several analytes were detected above background in the Data Gaps leach line samples in the vicinity of Septic Tank 6 (Figure 5-17). The radionuclides detected above background are Bi-214 at 0.581 pCi/g and 0.61 pCi/g at 5.5 and 8 ft bgs, and Tl-208 at 0.242 pCi/g, tritium at 460 pCi/L and U-235 at 0.16 pCi/g at 8 ft bgs. The metals detected above background were iron at 43,200 mg/kg and zinc at 94.6 mg/kg at 13 ft, mercury at 49.4 mg/kg at 5.5 ft, and vanadium at 73.8, 76.7 and 84.8 mg/kg at 5.5, 8 and 13 ft, respectively. TCE was detected at 0.004 mg/kg in sample T605 from 8 ft bgs.

Mercury was detected at a concentration of 49.4 mg/kg in the sample collected form 5.5 ft depth on 6/12/97 (LEHR-S-T601). However, mercury was detected at a low concentration of 0.15 mg/kg only for the co-located sample collected on 9/17/97 (LEHR-S-T604). It was noted that the sample LEHR-S-T604 consisted of clayey silt soil only, whereas the sample LEHR-S-T601 consisted of both clayey silt soil and sand/gravel material. The clayey silt soil and sand/gravel materials were analyzed separately, on 11/7/97 and 11/12/97 respectively; mercury was not detected in the clayey silt soil and was detected in the sand/gravel material at 16.8 mg/kg. The background level for mercury is 0.49 mg/kg.

Tank No. 7

LFI soil sampling locations for Tank No. 7 are shown on Figure 5-18. The only radionuclides detected above background were Ra-226 at 0.85 pCi/g at 12.5 ft depth; Sr-90 at 0.45 pCi/g at 12.5 ft; and U-235 at 0.1 pCi/g at 7.0 ft. Nitrate, copper, zinc, chloride, and sulfate were detected in soil samples collected near Tank No. 7 in concentrations slightly exceeding background levels. Nitrate was detected at a maximum concentration of 120 mg/kg compared to the 29.1 mg/kg background concentration. Copper was detected at a maximum concentration of 60 mg/kg, which is slightly above its 56.2 mg/kg background level. Zinc was detected above background in two samples from Tank No. 7. However, zinc was detected at a maximum concentration of 110 mg/kg, just slightly above the 90.2 mg/kg background concentration. Chloride was detected at a maximum concentration of 100 mg/kg, which is above the background concentration (24.8 mg/kg). Sulfate was also detected at a maximum concentration of 65 mg/kg which is slightly above the background concentration (39.4 mg/kg).

Formaldehyde was also detected in sample S-430, the deepest sample (collected at 5.5 ft below the base of the tank), at a concentration of 2.2 mg/kg.

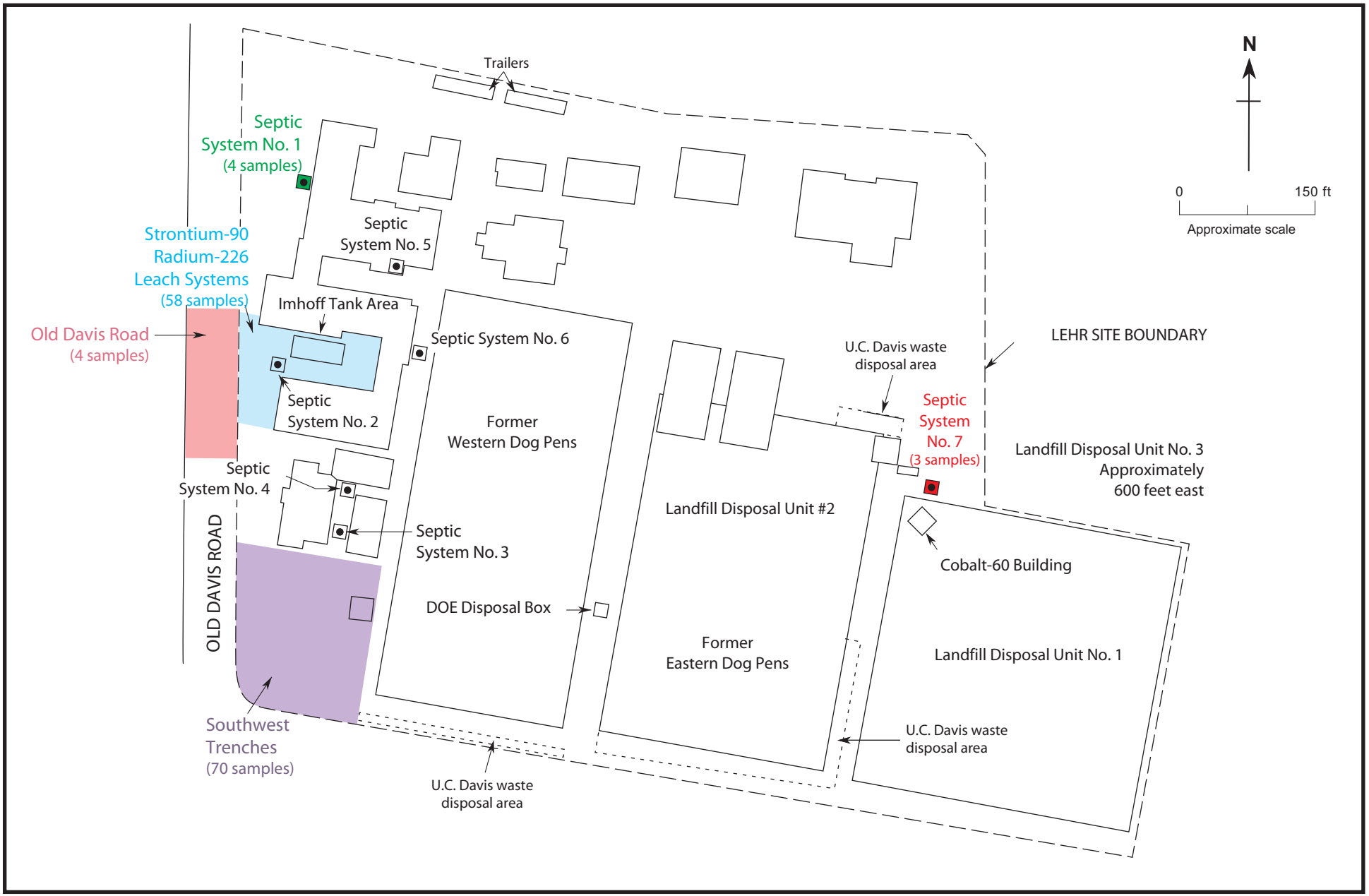

Figure 5-1. LFI Soil Sampling Areas

Weiss Associates

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11/19/97

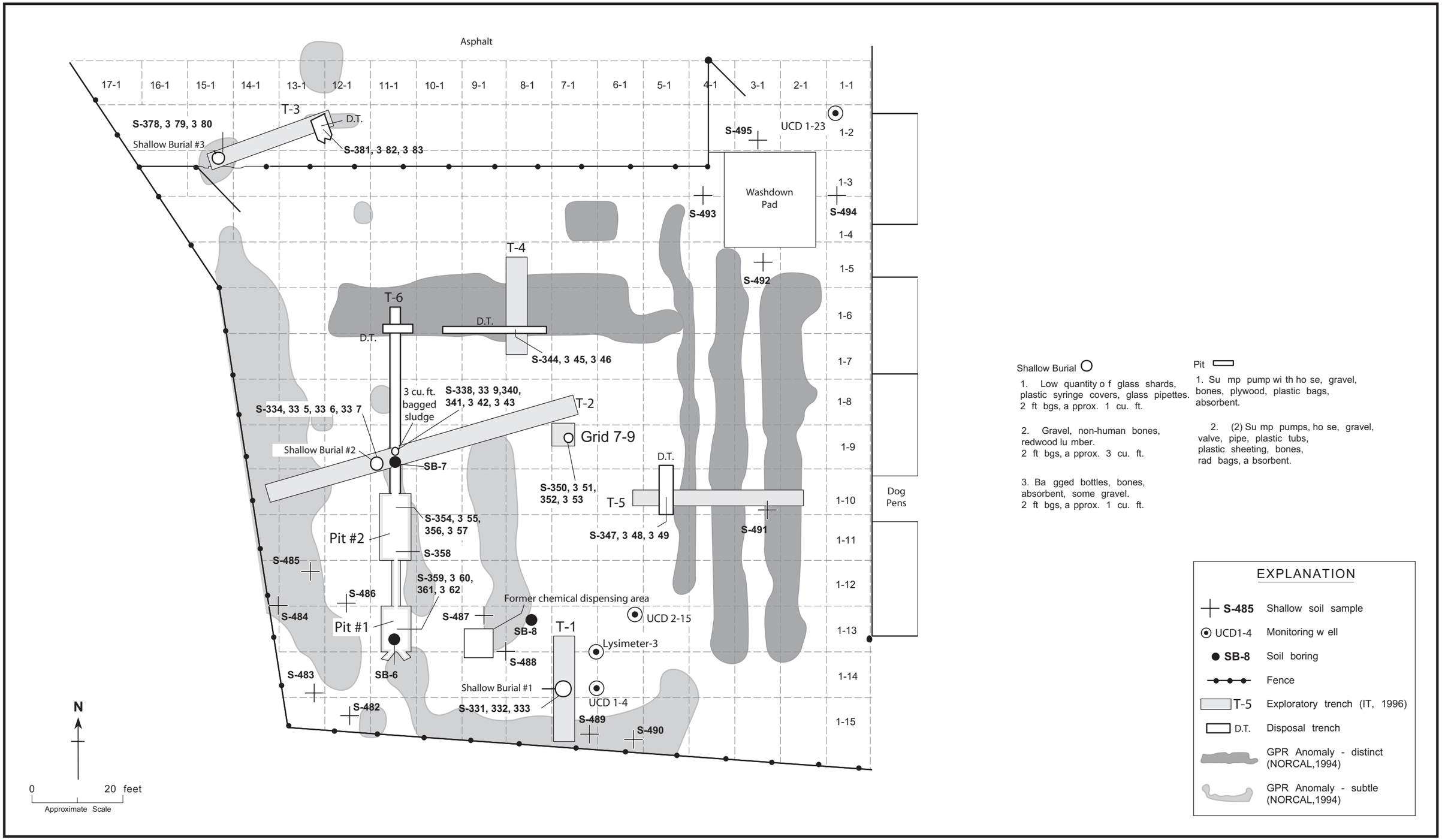

Figure 5-2. LFI Soil and Solid Waste Sampling Locations, Southwest Trench Area

Weiss Associates

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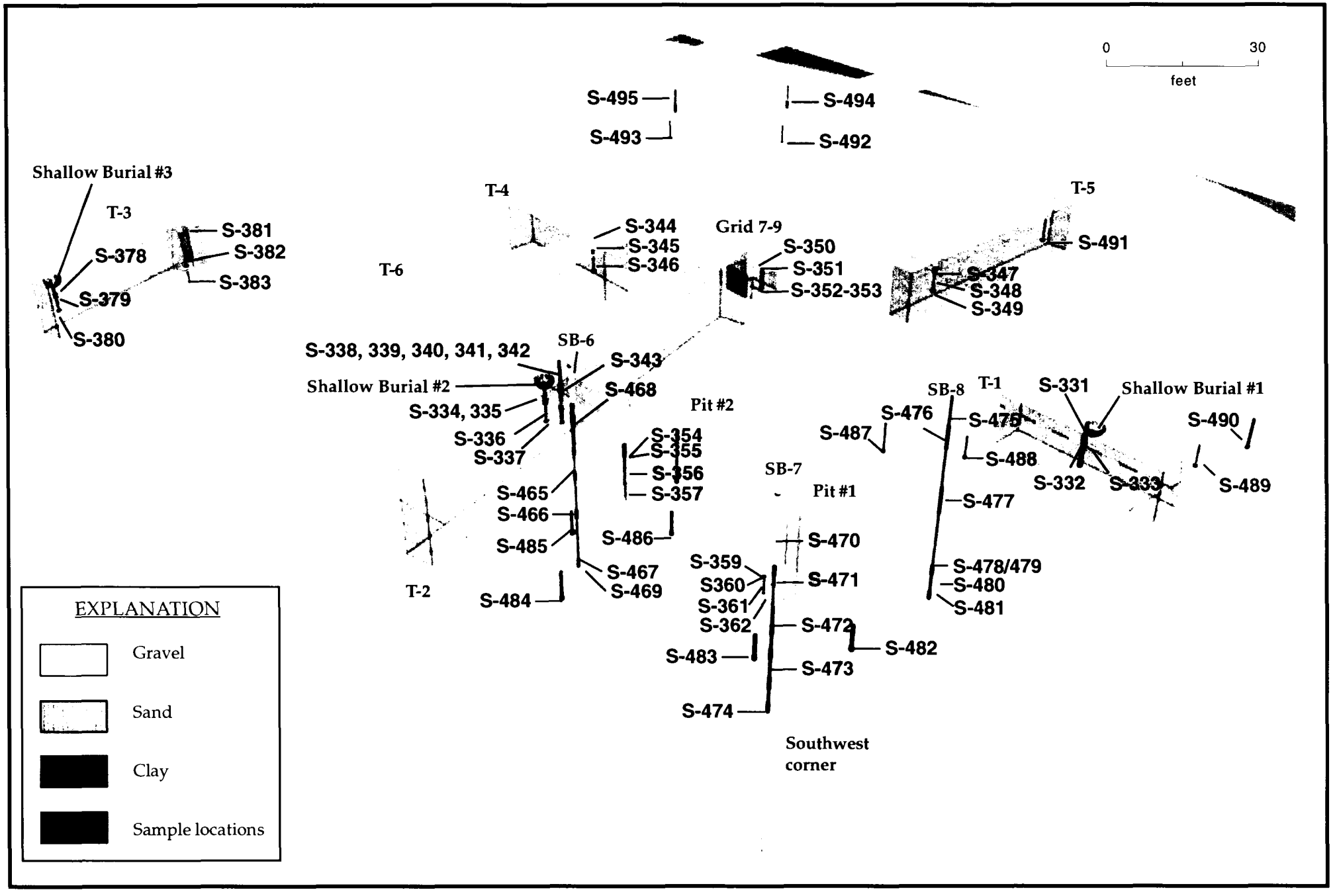


Figure 5-3. Perspective View of the Southwest Trenches (from Southwest corner) Showing Exploratory Trenches and Sampling Locations

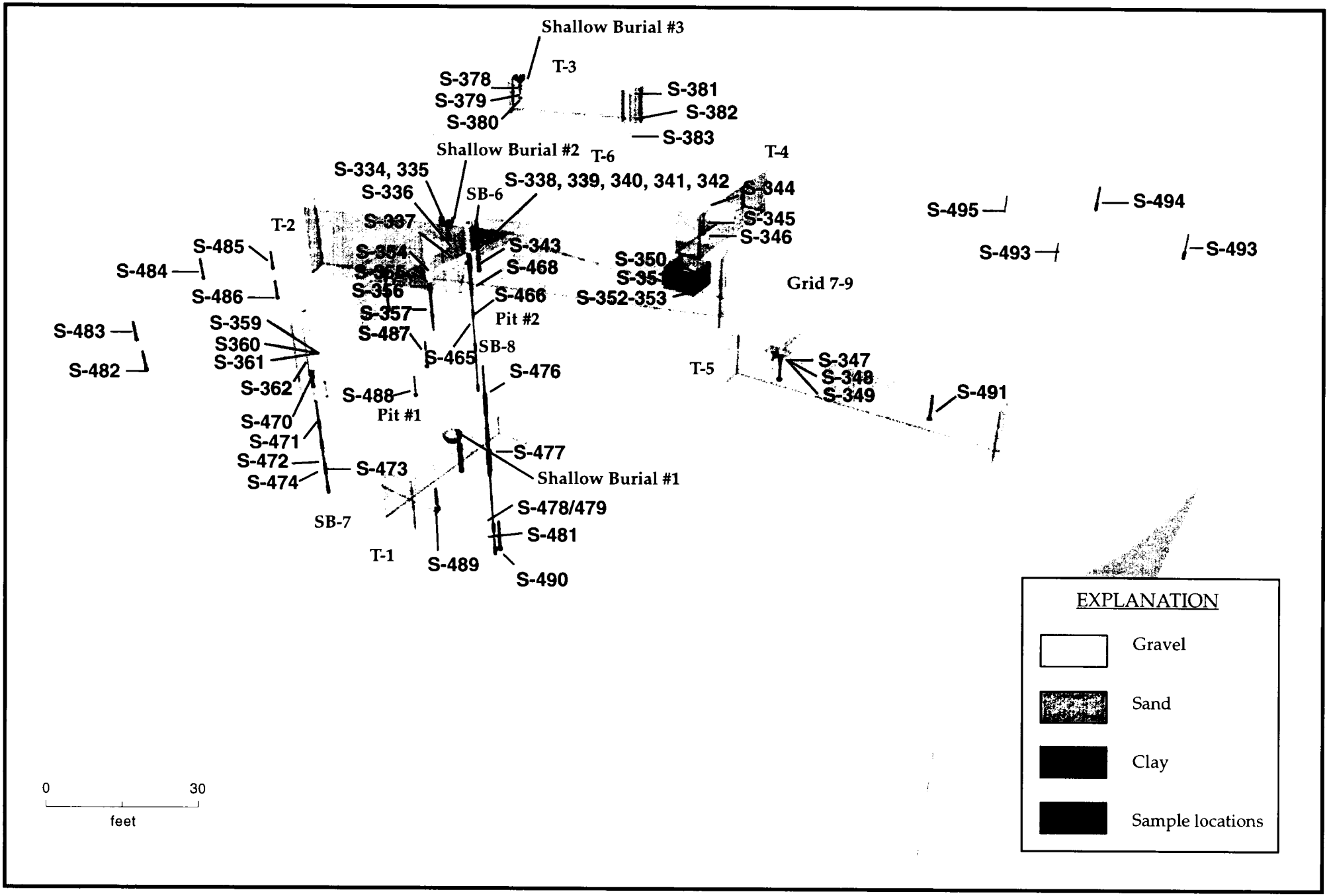
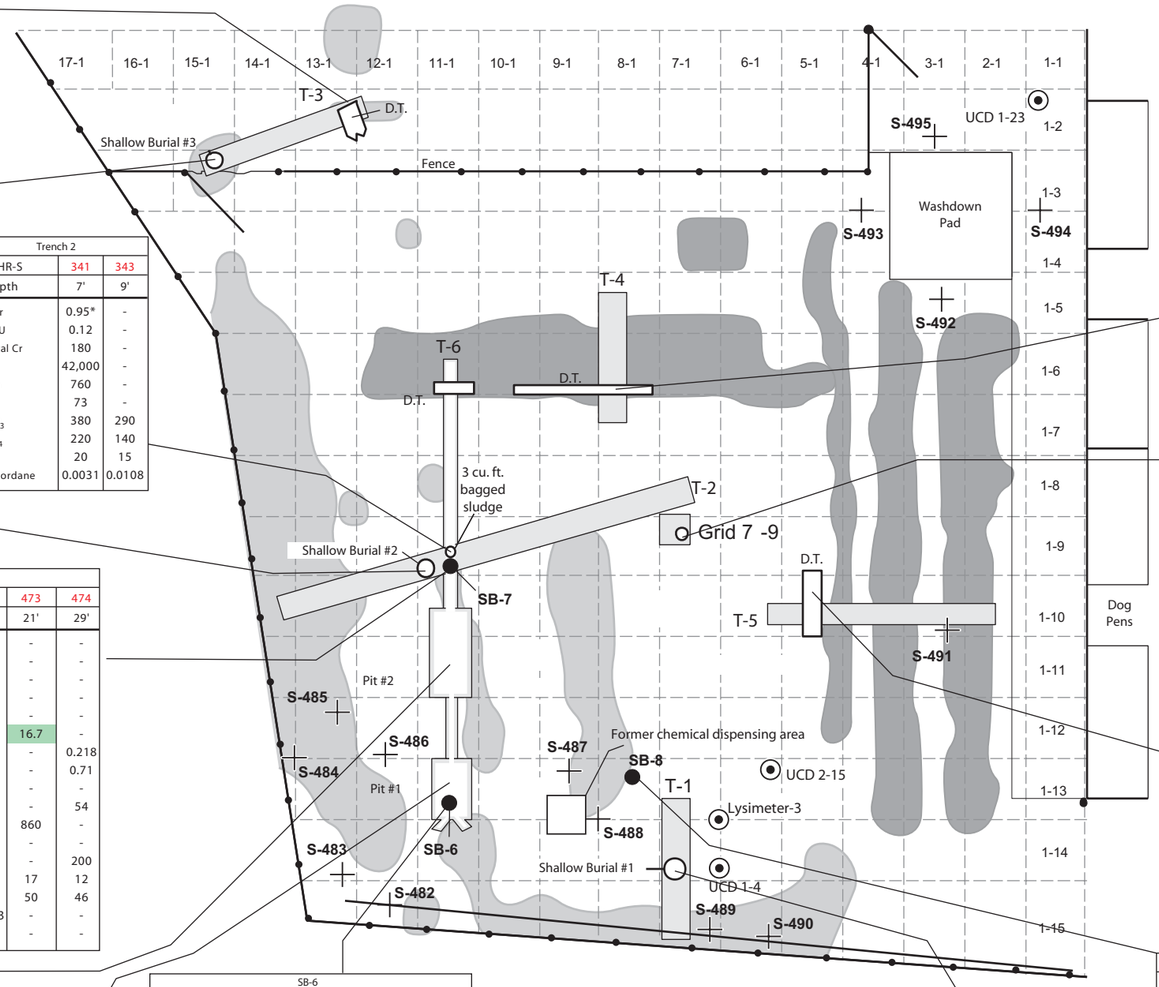


Figure 5-4. Perspective View of the Southwest Trenches, (from Southeast corner)



Trench 3		
LEHR-S	382	383
Depth	8'	10.5'
^{226}Ra	-	0.96
^{90}Sr	6.53	5.25
Gross Beta	36.9	51.8
Total Cr	180	-
Chlordane	0.0098	-
DDD	0.0034	-

Trench 3			
LEHR-S	378	379	380
Depth	2.5'	3'	5'
^{226}Ra	0.86	-	-
^{90}Sr	2.47	-	-
^{137}Cs	0.092	-	-
^{208}Tl	-	0.224	-
^{235}U	-	0.12	0.1
Gross Beta	26	-	-
Hg	0.57	0.94	-
Mn	-	740	-
NO_3	-	21	18
SO_4	53	47	81
Cl	-	-	17
Chlordane	0.0112	-	-
DDD	0.0076	-	-
DDE	0.014	-	-

Trench 2			
LEHR-S	335	336	337
Depth	3'	3.5'	6'
^{90}Sr	0.77*	-	1.88*
^{14}C	-	-	3.9
^{3}H(pCi/L)	-	-	340
^{137}Cs	0.057	-	-
^{235}U	-	0.1	-
Total Cr	-	-	180
Hg	-	-	0.58
Ba	-	270	-
Mn	750	720	-
NO_3	54	88	21
SO_4	37	120	-
C1	-	15	-
Chlordane	0.087	0.0039	0.183
DDD	0.017	-	0.031

Trench 2		
LEHR-S	341	343
Depth	7'	9'
^{90}Sr	0.95*	-
^{235}U	0.12	-
Total Cr	180	-
Fe	42,000	-
Mn	760	-
Va	73	-
NO_3	380	290
SO_4	220	140
C1	20	15
Chlordane	0.0031	0.0108

Trench 6		
LEHR-S	356	357
Depth	12'	14.4'
^{226}Ra	1.98	1.73
^{60}Co	-	0.017
^{228}Ac	-	0.75
^{214}Bi	1.68	1.37
^{214}Pb	1.90	1.32
^{235}U	-	0.1
Gross Alpha	12.9	16.7
Gross Beta	18.3	23.2
Ba	240	-
Fe	43,000	-
Hg	0.79	-
Mn	-	1,000
Cu	53	58
Va	79	73
Zn	90	99
NO_3	56	390
SO_4	-	250
Chlordane	0.0029	0.0035

SB-7					
LEHR-S	470	471	472	473	474
Depth	5-6'	6-8'	15'	21'	29'
^{226}Ra	1.18	2.44	-	-	-
^{90}Sr	2.4*	-	0.36*	-	-
^{3}H (pCi/L)	-	200	-	-	-
^{214}Bi	0.0571	1.56	0.6	-	-
^{214}Pb	0.791	1.73	-	-	-
^{40}K	-	-	-	16.7	-
^{208}Tl	-	0.227	-	-	0.218
^{228}AC	-	-	-	-	0.71
Gross Beta	20.8	-	-	-	-
Cu	64	51	67	-	54
Mn	-	-	-	860	-
Pb	11	-	-	-	-
Zn	88	92	110	-	200
NO_3	56	91	48	17	12
SO_4	99	110	66	50	46
Chlordane	0.1	-	0.00123	-	-
DDD	0.032	-	-	-	-

LEHR-S	482	483	484	485	486
Depth	3'	3'	3'6"	3'	3'
^{226}Ra	0.79	-	-	-	-
^{90}Sr	0.95*	-	0.5*	0.64*	0.49*
^{14}C	-	-	2.0	-	-
^{214}Bi	-	0.57	-	-	-
^{214}Pb	0.78	-	-	-	-
^{208}Tl	0.243	-	-	-	-
^{235}U	-	-	0.136	-	-
Hg	0.64	5.2	0.72	-	0.98
Mn	720	720	-	720	-
Pb	-	-	-	11	-
Se	-	-	1.1	1	-
Chlordane	0.00173	0.0152	3.6	1.21	0.92
Endosulfan I	-	0.002	-	0.11	-
DDD	-	0.004	0.26	-	0.099
DDE	0.00069	-	-	0.013	0.014
Heptachlor	-	-	0.043	0.011	0.096
Dieldrin	-	-	0.07	0.029	0.019
Formaldeyde	1.4	-	-	-	-

Trench 6		
LEHR-S	360	361
Depth	12'	14.5'
^{226}Ra	0.91	-
^{90}Sr	4.38	22.3
^{235}U	-	0.09
Gross Beta	19.2	20.9
Hg	0.54	0.5
Mn	850	-
Va	-	73
NO_3	64	17
SO_4	45	-
Chlordane	0.0034	0.0044
SVOCS	-	8.1

SB-6					
LEHR-S	465	466	467	468	469
Depth	12'	19'	25'	10'	29'
^{226}Ra	-	-	-	0.92	-
^{90}Sr	0.46*	0.47*	-	9.46*	-
^{137}Cs	-	-	-	0.062	-
^{208}Tl	-	-	0.213	-	-
^{235}U	-	-	-	-	0.09
Gross Beta	-	-	-	42.6	17.7
Cu	52	59	-	59	78
Fe	-	-	-	-	44,000
Mn	-	-	-	-	750
Pb	-	-	-	12	-
Va	-	-	-	-	80
Zn	-	130	-	350	130
SO_4	-	-	-	69	43
Chlordane	0.00224	1.08	0.004	0.198	0.002
DDD	0.00048	0.14	0.00073	0.03	0.0005
Endosulfan I	-	-	0.00044	-	0.0002
Dieldrin	-	0.026	-	0.0042	-
Heptachlor	-	0.047	-	0.017	-
SVOCS	-	0.250	0.041	0.247	0.091

LEHR-S	487	488	489	490	491
Depth	4'	3'	3'	4'	3.5'
^{226}Ra	-	1.06	-	-	-
^{90}Sr	-	-	-	0.53*	1.01*
^{40}K	-	-	14.8	-	-
Total Cr	200	-	-	180	-
Hg	-	0.52	-	-	-
Mn	-	-	910	-	-
Chlordane	0.49	0.198	0.0172	0.017	-
Heptachlor	0.0088	0.0013	-	-	-
Dieldrin	-	0.0029	-	0.00041	-
Heptachlorepoxide	-	-	-	0.0013	-
Methoxychlor	-	-	-	0.0011	-
DDD	0.05	0.032	0.0038	-	-
DDE	-	-	-	0.0018	-
DDT	-	-	-	0.0037	-

Trench 1			
LEHR-S	331	332	333
Depth	2'	3'	6'
^{226}Ra	0.86	-	0.81
^{90}Sr	1.47*	2.01*	-
^{232}Th	-	-	0.71
^{228}Th	-	0.71	0.76
^{14}C	3.9	-	-
Gross Beta	-	-	17.6
Ba	-	-	240
Cu	-	-	51
Mn	-	-	770
Va	-	-	74
NO_3	250	-	-
SO_4	1,700	-	-
C1	470	27	-
Chlordane	0.09	0.00181	-
Pyrene	-	-	0.033
DDD	0.019	-	-

LEHR-S	492	493	494	495
Depth	3'	3'	3-4.5'	3-4.5'
^{226}Ra	-	-	-	0.88
^{90}Sr	0.91*	-	0.81*	0.59*
^{235}U	-	-	-	0.09
Total Cr	210	180	210	240
Ni	330	-	340	420
Hg	-	0.72	1.1	-
Methylene Chloride	-	-	-	0.004
Toluene	-	-	0.005	-
DDD	-	-	-	0.0011
Chlordane	-	-	-	0.0030

Trench 4		
LEHR-S	345	346
Depth	3'	6'
^{90}Sr	-	0.49*
Chlordane	0.00188	-

Grid 7-9			
LEHR-S	351	352	353
Depth	1'	3.5'	3-5'
^{60}Co	0.016	-	-
Total Cr	-	230	180
Mn	-	750	-
Fe	-	46,000	-
Ni	-	360	-
NO_3	39	49	59
SO_4	-	-	36
Carbontetra- Chloride	-	0.004	-
DDE	-	0.0018	0.0056
DDT	-	-	0.0022

Trench 5		
LEHR-S	348	349
Depth	3'	6'
Total Cr	230	250
Formaldehyde	1.6	-
Pyrene	-	0.023
Chlordane	0.048	0.0046

SB-8							
LEHR-S	475	476	477	478	479	480	481
Depth	5'	-	14'	16'	-	26'	30'
^{226}Ra	-	0.84	-	-	-	-	1.07
^{90}Sr	-	-	2.44*	0.84*	-	-	-
^{14}C	4.3	-	-	-	-	-	-
Gross Alpha	-	-	-	14.3	-	-	-
Ar	-	-	-	-	-	-	9.7
Ba	-	270	-	-	240	-	250
Total Cr	-	-	180	-	-	-	-
Co	-	29	-	-	-	-	-
Hg	0.59	-	-	-	-	0.84	-
Cu	-	55	-	66	-	-	59
Mn	-	910	-	800	750	-	940
Pb	-	-	-	-	-	-	11
Va	-	-	-	-	-	-	82
Fe	-	-	-	-	-	-	45,000
Se	-	1.2	-	1.1	-	-	-
Zn	-	82	-	88	-	-	89
Chlordane	0.0107	-	0.00159	-	0.0015	-	0.0035
DDD	-	-	-	-	-	-	0.00057
DDE	0.0037	-	-	-	-	-	-

EXPLANATION

- S-482 — Shallow soil sample
- UCD1-4 — Monitoring well
- SB-8 — Soil boring
- Fence
- T-6 — Exploratory t rench (IT, 1996)
- D.T. — Disposal t rench
- GPR Anomaly - distinct (NORCAL, 1994)
- GPR Anomaly - subtle (NORCAL, 1994)

Note: Shading indicates maximum concentrations recorded in SW Trench Area during LFI

Unless otherwise noted, all radionuclides reported in pCi/g, all other results reported in mg/kg, italics indicate approximate data based on validation results, dash indicates result below background

* May be higher t han actual activity present due t o

N

0 25 feet
Approximate Scale

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Figure 5-5. Analytic Results above Background for LFI Soil Samples - Southwest Trenches Area

LEHR-S	338	339	340	342
Depth	6.5' gravel	6.5' bones	6.5' bagged storage	3-6 Platic bag
^{226}Ra	7.06	-	-	1.06
^{90}Sr	34.1*	10.7*	16,700*	18.7*
^{3}H(pCi/g)	-	1.0	-	-
^{14}C	2.70	117	-	-
^{60}Co	-	-	0.04	-
^{214}Pb	0.83	-	1.8	4.3
^{234}Th	-	-	7	-
^{208}Tl	-	-	0.6	-
^{228}Ac	-	-	-	5.5
^{235}U	-	0.22	0.1	-
Gross Beta	103	27.6	34,700	29.3
Cu	-	NA	890	NA
Hg	-	NA	0.61	NA
Se	-	NA	1.5	NA
Zn	-	NA	730	NA
Pb	16	NA	49	NA
NO_3	210	NA	-	NA
SO_4	270	NA	5,700	NA
Cl	-	NA	78	NA
PCB 1260	-	NA	1.0	-
Chlordane	0.138	NA	-	0.43
DDD	0.028	NA	-	0.080
VOCS	-	NA	0.821	NA
SVOCS	-	-	777.7	-

Trench 3	
LEHR-S	381
Depth	2.5' gravel
^{226}Ra	1.16
^{90}Sr	1.48
^{60}Co	0.021
^{214}Bi	0.59
^{137}Cs	0.105
Gross Beta	22.8
Cu	62
Mn	880
Pb	21
Zn	130
NO_3	55
DDD	0.0033
Chlordane	0.0103

Trench 4	
LEHR-S	344
Depth	2.5' gravel
^{137}Cs	0.085
Chlordane	0.05

Grid 7-9	
LEHR-S	350
Depth	0.5' gravel
^{137}Cs	23
^{3}H(pCi/L)	190
^{235}U	0.1
Gross Beta	33.3
Pb	11
Cr VI	0.22
NO_3	11
DDD	0.20
Chlordane	1.54

EXPLANATION

UCD1-4	Monitoring well
SB-8	Soil boring
	Fence
S-492	Shallow soil sample
T-6	Exploratory t rench (IT, 1996)
D.T.	Disposal t rench
NA	Not analyzed

Note: Shading indicates maximum concentrations recorded in SW Trench Area during LFI

Unless otherwise noted, all radionuclides reported in pCi/g, all other results reported in mg/kg, italics indicate approximate data based on validation results, dash indicates result below background

* May be higher t han actual activity present due t o

Trench 5	
LEHR-S	347
Depth	2' gravel
^{90}Sr	2.59*
^{60}Co	0.016
^{3}H(pCi/g)	91.1
DDD	0.24
Chlordane	0.61

Trench 6		
LEHR-S	354	355
Depth	6-8' gravel	6-8' bones
^{226}Ra	2.26	2.02
^{90}Sr	3.15	13.8
^{214}Bi	-	1.47
^{214}Pb	-	1.68
^{3}H(pCi/g)	-	0.05
Gross Alpha	14.7	12.4
Gross Beta	36.7	52.8
Hg	0.55	-
NO_3	350	-
SO_4	170	-
DDD	0.0057	-
Chlordane	0.021	-

LEHR-S	362
Depth	12' wood
^{90}Sr	3,690
^{14}C	2.1
^{228}Ac	1.6
^{234}Th	39.5
^{235}U	2.6
Gross Beta	1,698
Zn	95
Cu	88
SO_4	260
Cl	43
Ethyl Benzene	1.2
Xylenes	6.2
Toluene	0.490
Styrene	0.800
2-Hexanone	0.075
SVOCS	34,056

Trench 2		
LEHR-S	334	334
Depth	3' wood	3' bones
^{90}Sr	1.08	25.1*
^{3}H(pCi/g)	-	22
^{234}Th	2.3	-
^{235}U	0.4	-
Gross Beta	-	33

LEHR-S	359
Depth	12' gravel
^{226}Ra	1.28
^{90}Sr	3.16
^{137}Cs	0.119
Hg	0.66
Zn	310
Pb	14
Benzene	0.001
DDD	0.0078
Chlordane	0.033

LEHR-S	358
Depth	6-7' sorbent material
^{90}Sr	0.37
^{3}H(pCi/g)	2.6

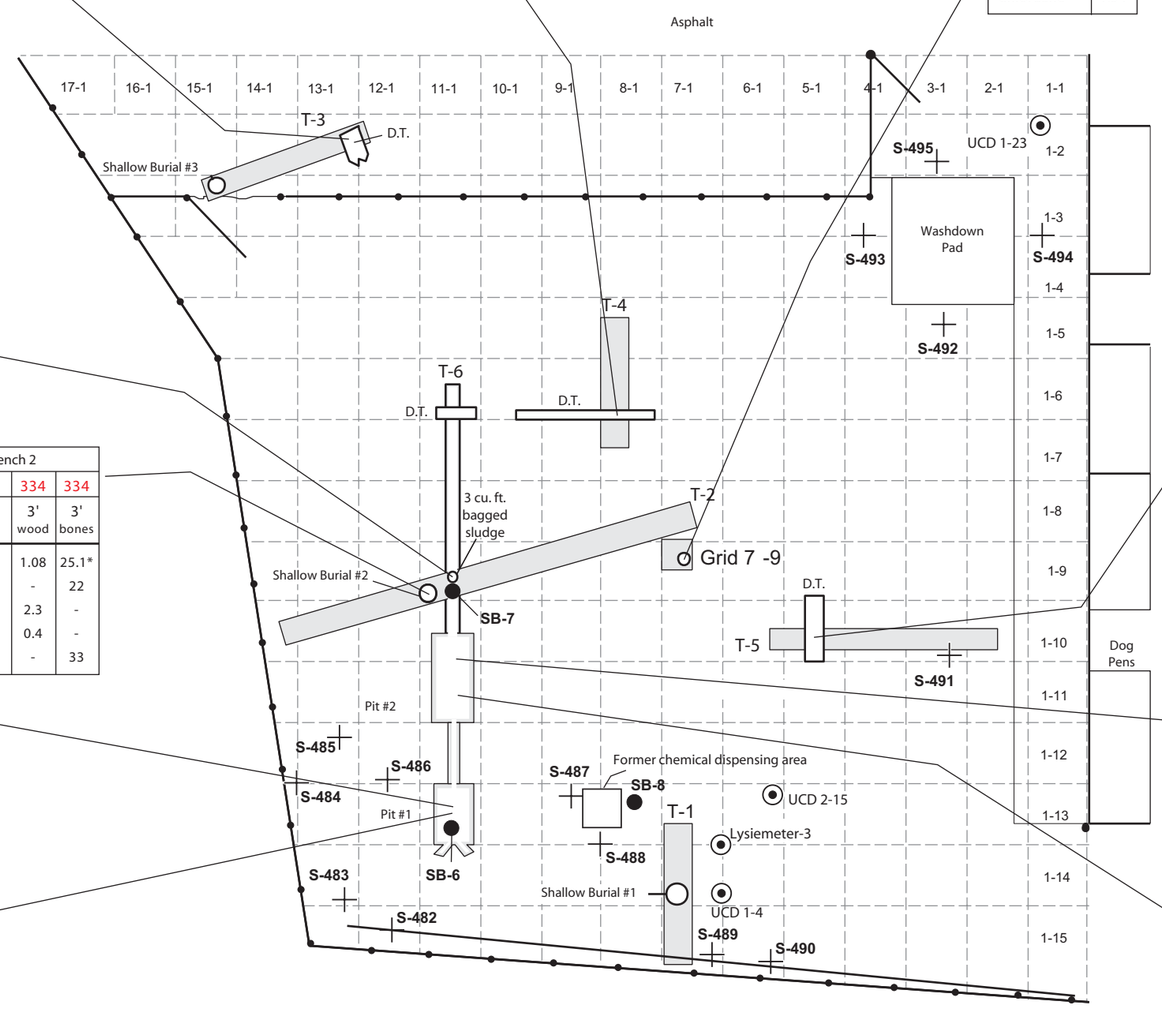

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Figure 5-6. Analytic Results above Background for LFI Solid Waste Samples, Southwest Trenches Area.

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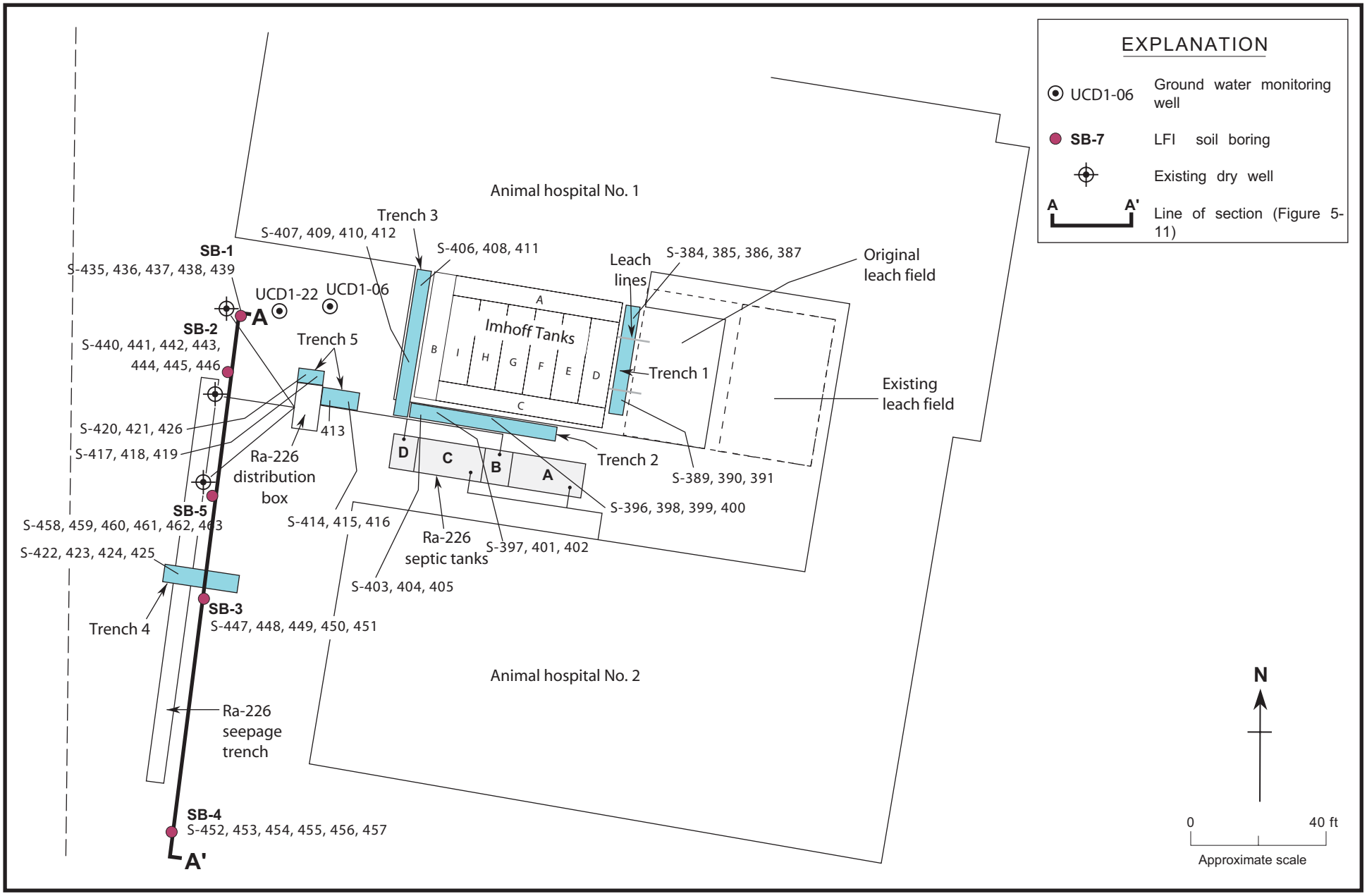

Figure 5-7. LFI Exploratory Trench, Soil Boring and Cross-Section Locations, Radium-226 and Strontium-90 Treatment System Area

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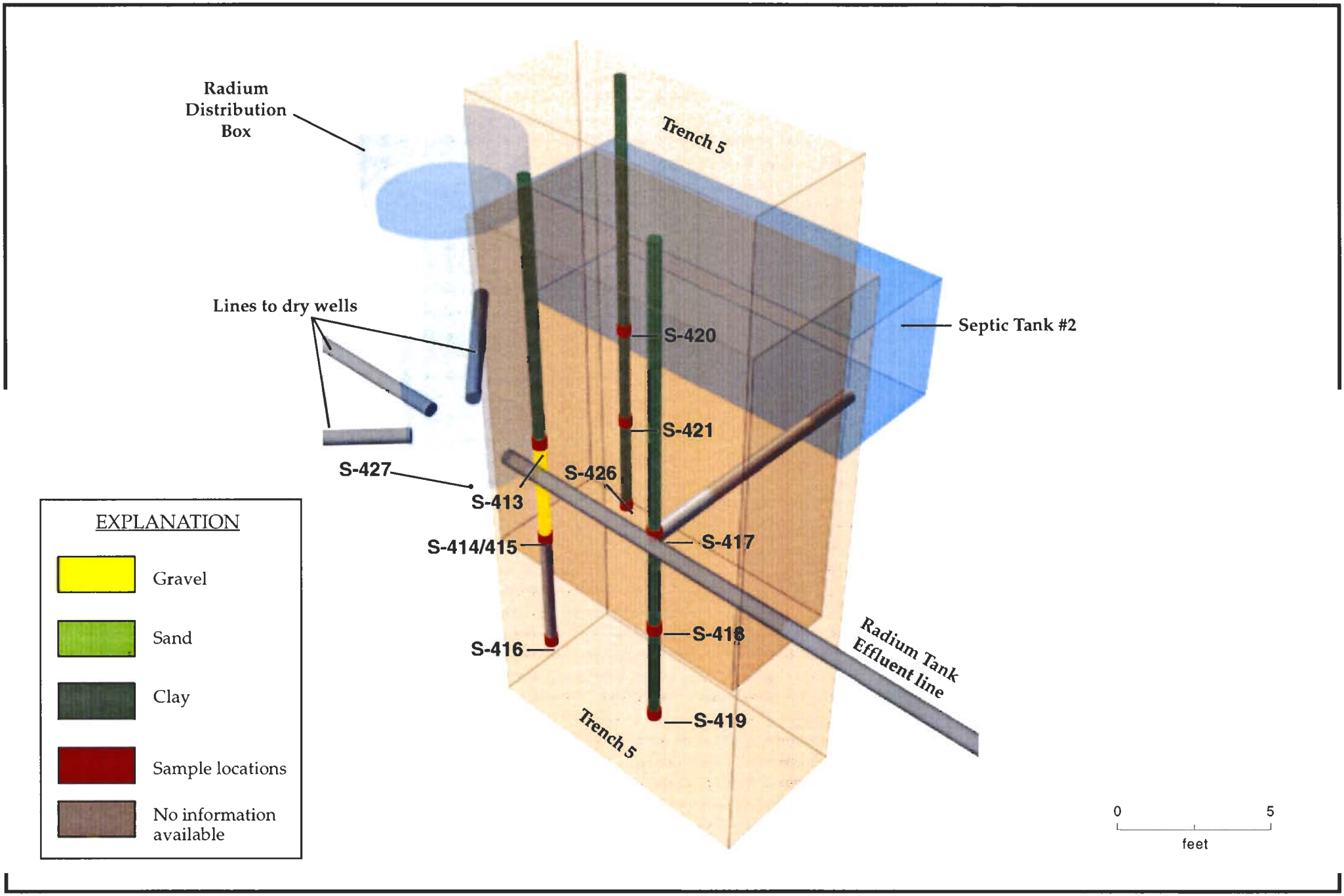

Figure 5-8. Perspective View of the Radium-226 Treatment System Area, (from Southeast Corner)

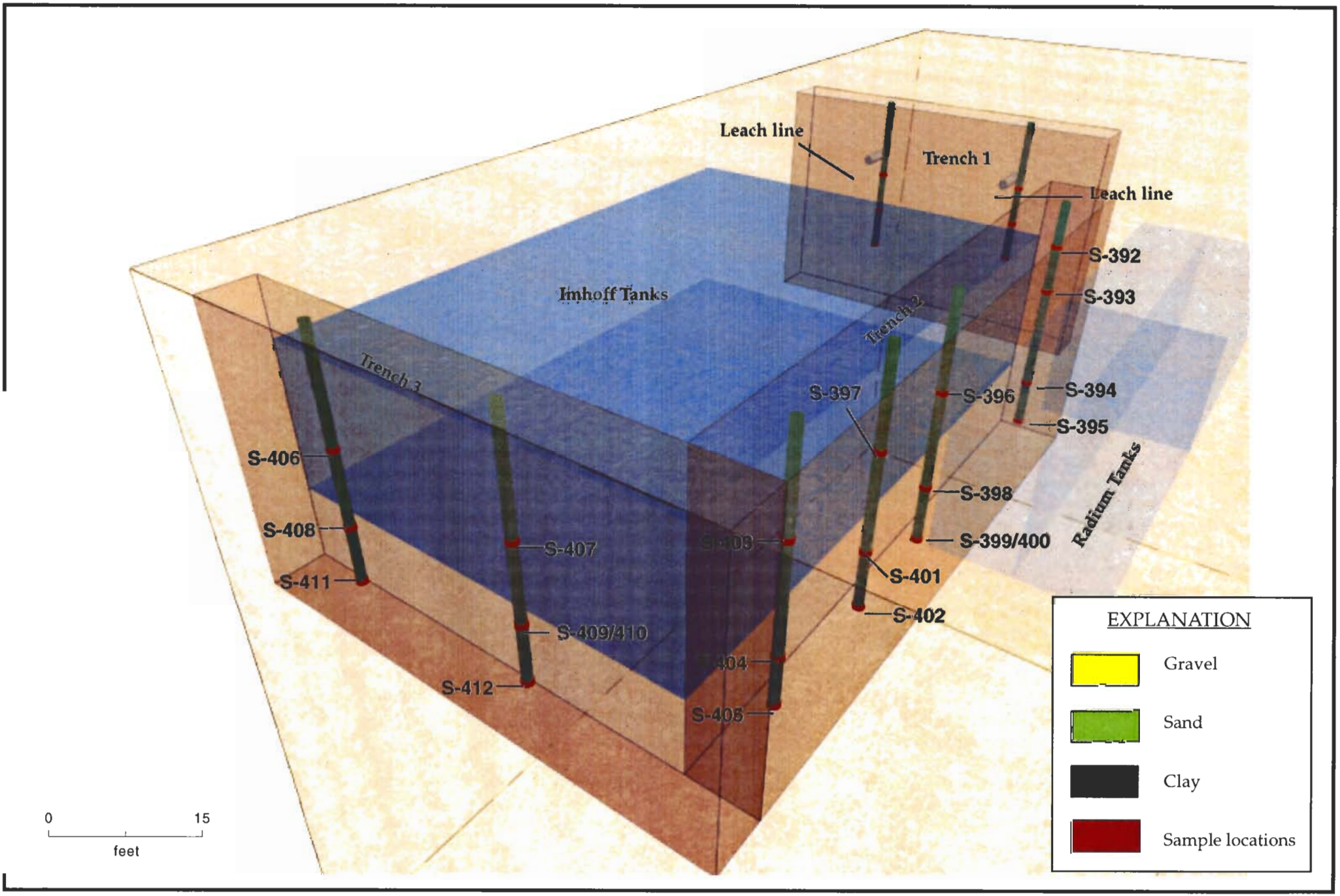

Figure 5-9. Perspective View of the Strontium-90 Treatment System Area, (from Southwest corner)

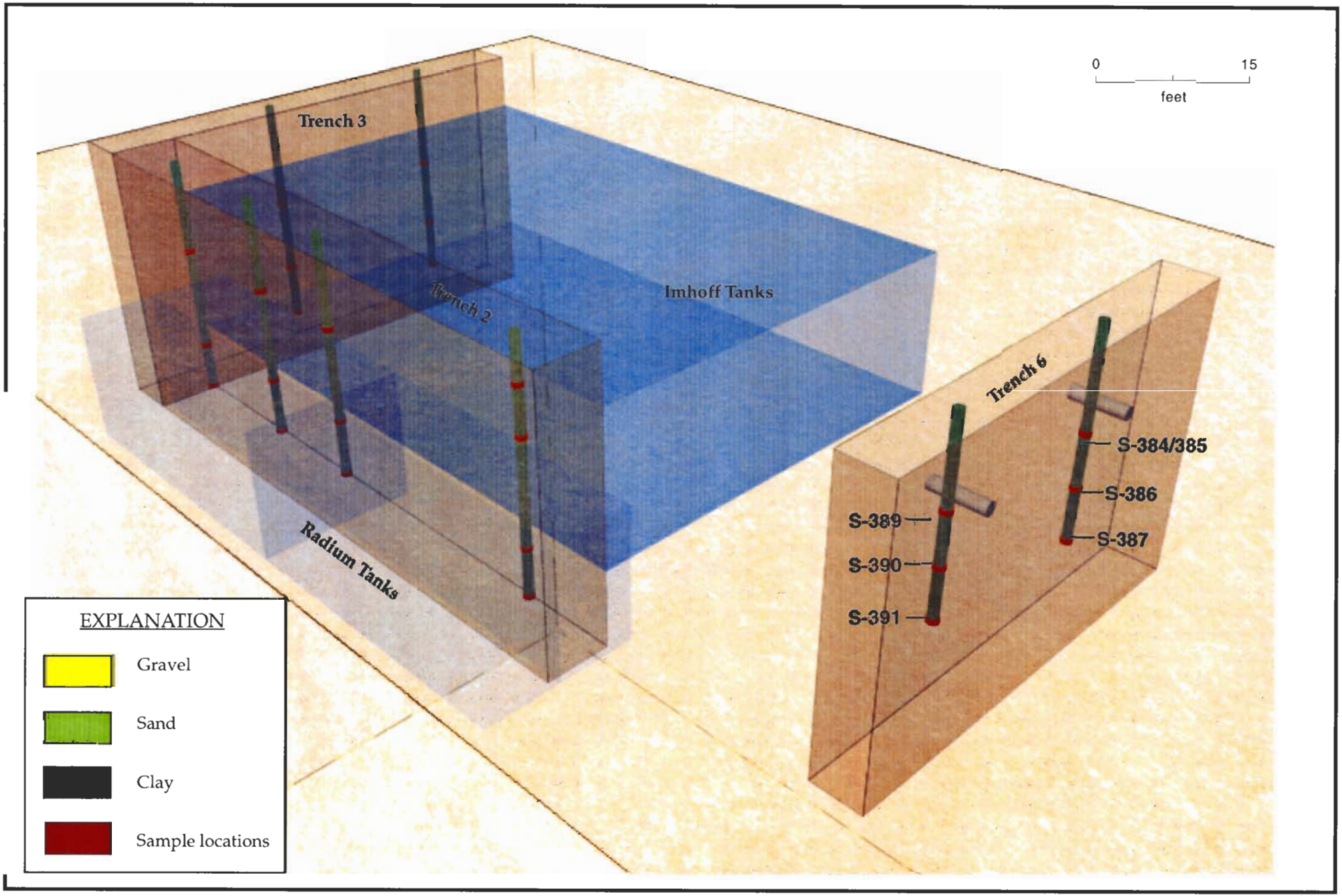

Figure 5-10. Perspective View of the Strontium-90 Treatment System Area, (from Southeast Corner)

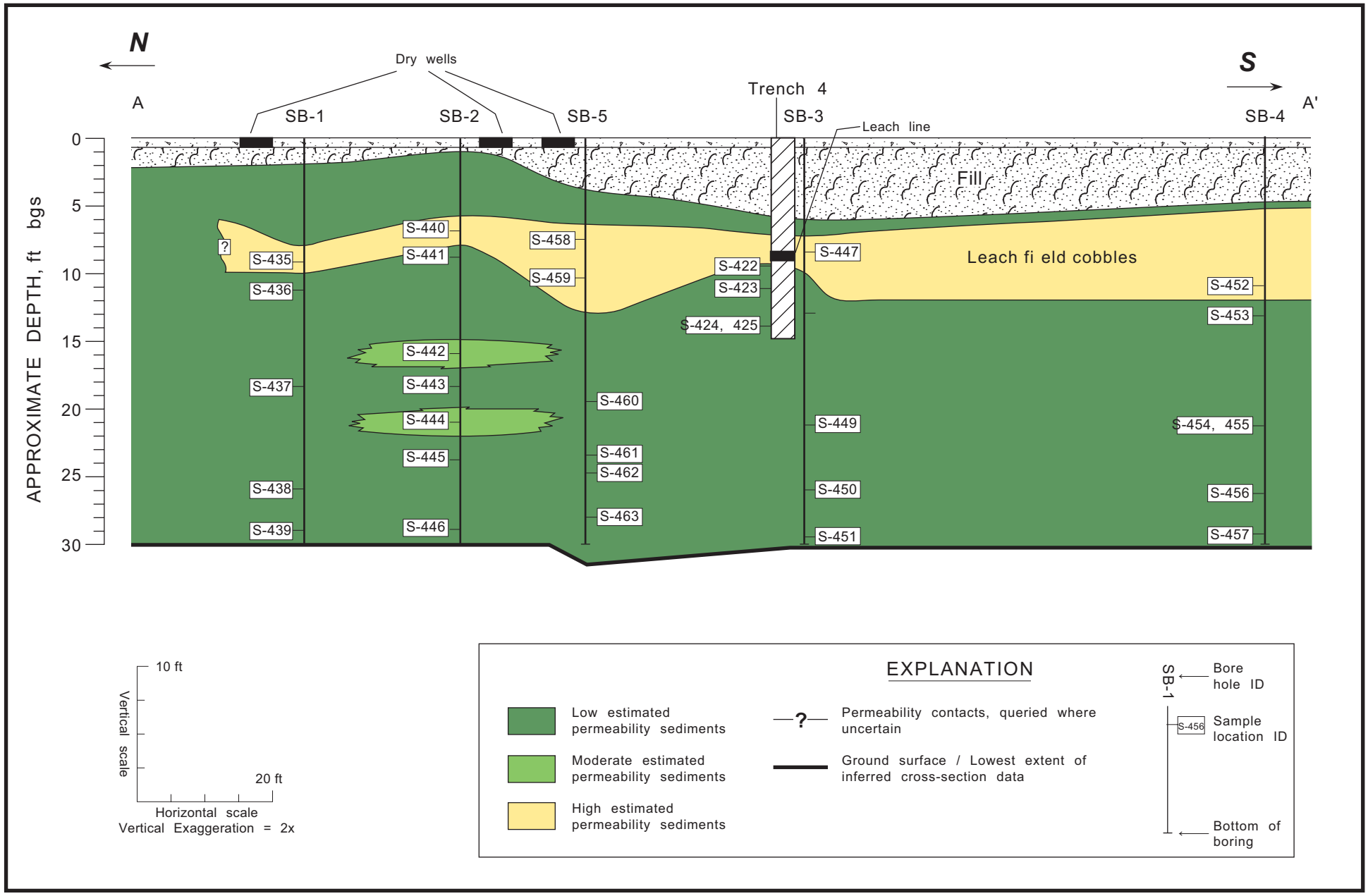

Figure 5-11. Geologic Cross-Section A-A' of Ra-226 Treatment System Area

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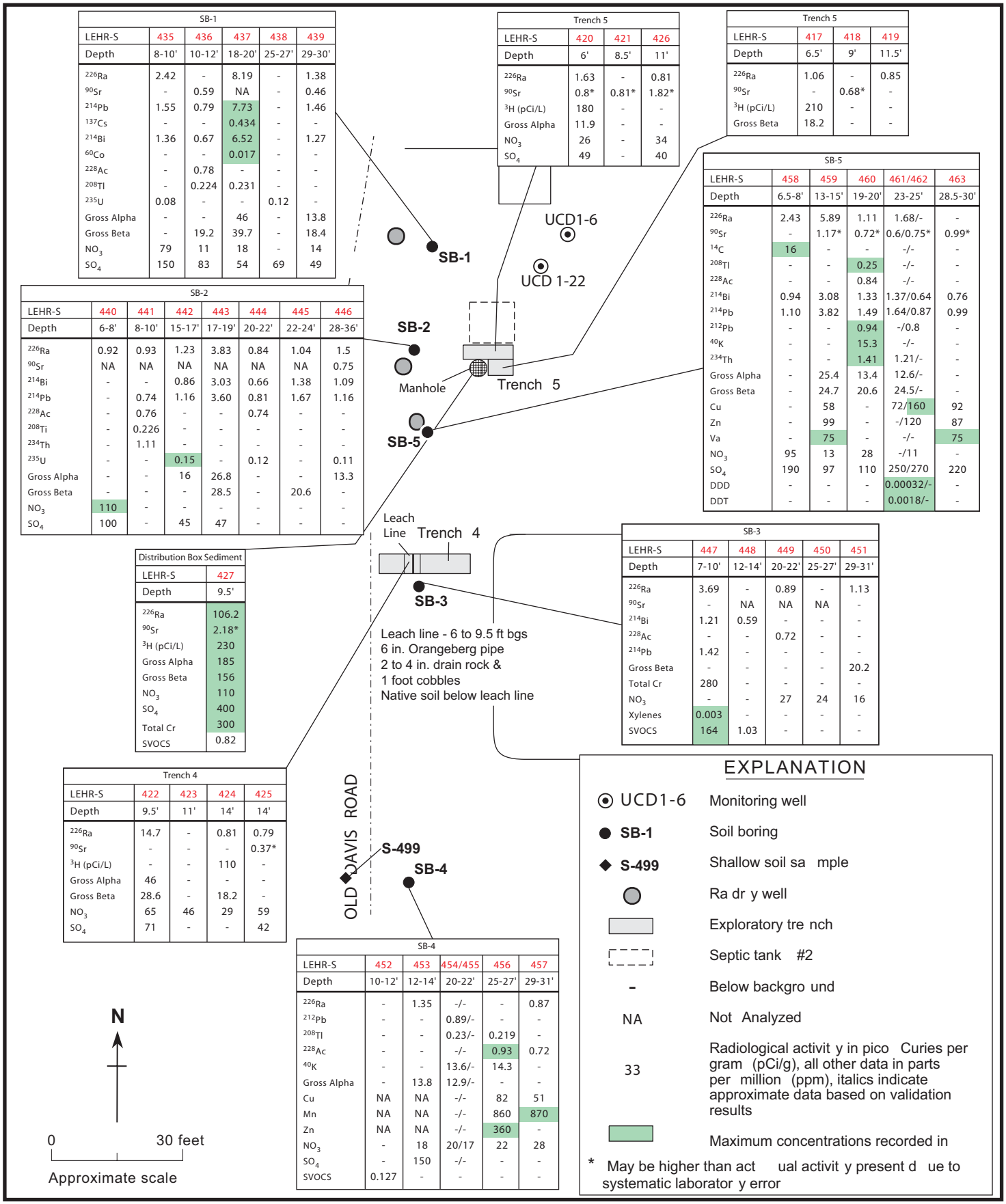

SB-1					
LEHR-S	435	436	437	438	439
Depth	8-10'	10-12'	18-20'	25-27'	29-30'
^{226}Ra	2.42	-	8.19	-	1.38
^{90}Sr	-	0.59	NA	-	0.46
^{214}Pb	1.55	0.79	7.73	-	1.46
^{137}Cs	-	-	0.434	-	-
^{214}Bi	1.36	0.67	6.52	-	1.27
^{60}Co	-	-	0.017	-	-
^{228}Ac	-	0.78	-	-	-
^{208}Tl	-	0.224	0.231	-	-
^{235}U	0.08	-	-	0.12	-
Gross Alpha	-	-	46	-	13.8
Gross Beta	-	19.2	39.7	-	18.4
NO_3	79	11	18	-	14
SO_4	150	83	54	69	49

Trench 5			
LEHR-S	420	421	426
Depth	6'	8.5'	11'
^{226}Ra	1.63	-	0.81
^{90}Sr	0.8*	0.81*	1.82*
^{3}H (pCi/L)	180	-	-
Gross Alpha	11.9	-	-
NO_3	26	-	34
SO_4	49	-	40

Trench 5			
LEHR-S	417	418	419
Depth	6.5'	9'	11.5'
^{226}Ra	1.06	-	0.85
^{90}Sr	-	0.68*	-
^{3}H (pCi/L)	210	-	-
Gross Beta	18.2	-	-

SB-5					
LEHR-S	458	459	460	461/462	463
Depth	6.5-8'	13-15'	19-20'	23-25'	28.5-30'
^{226}Ra	2.43	5.89	1.11	1.68/-	-
^{90}Sr	-	1.17*	0.72*	0.6/0.75*	0.99*
^{14}C	16	-	-	-/-	-
^{208}Tl	-	-	0.25	-/-	-
^{228}Ac	-	-	0.84	-/-	-
^{214}Bi	0.94	3.08	1.33	1.37/0.64	0.76
^{214}Pb	1.10	3.82	1.49	1.64/0.87	0.99
^{212}Pb	-	-	0.94	-/0.8	-
^{40}K	-	-	15.3	-/-	-
^{234}Th	-	-	1.41	1.21/-	-
Gross Alpha	-	25.4	13.4	12.6/-	-
Gross Beta	-	24.7	20.6	24.5/-	-
Cu	-	58	-	72/160	92
Zn	-	99	-	-/120	87
Va	-	75	-	-/-	75
NO_3	95	13	28	-/11	-
SO_4	190	97	110	250/270	220
DDD	-	-	-	0.00032/-	-
DDT	-	-	-	0.0018/-	-

SB-2							
LEHR-S	440	441	442	443	444	445	446
Depth	6-8'	8-10'	15-17'	17-19'	20-22'	22-24'	28-36'
^{226}Ra	0.92	0.93	1.23	3.83	0.84	1.04	1.5
^{90}Sr	NA	NA	NA	NA	NA	NA	0.75
^{214}Bi	-	-	0.86	3.03	0.66	1.38	1.09
^{214}Pb	-	0.74	1.16	3.60	0.81	1.67	1.16
^{228}Ac	-	0.76	-	-	0.74	-	-
^{208}Ti	-	0.226	-	-	-	-	-
^{234}Th	-	1.11	-	-	-	-	-
^{235}U	-	-	0.15	-	0.12	-	0.11
Gross Alpha	-	-	16	26.8	-	-	13.3
Gross Beta	-	-	-	28.5	-	20.6	-
NO_3	110	-	-	-	-	-	-
SO_4	100	-	45	47	-	-	-

Distribution Box Sediment	
LEHR-S	427
Depth	9.5'
^{226}Ra	106.2
^{90}Sr	2.18*
^{3}H (pCi/L)	230
Gross Alpha	185
Gross Beta	156
NO_3	110
SO_4	400
Total Cr	300
SVOCS	0.82

SB-3					
LEHR-S	447	448	449	450	451
Depth	7-10'	12-14'	20-22'	25-27'	29-31'
^{226}Ra	3.69	-	0.89	-	1.13
^{90}Sr	-	NA	NA	NA	-
^{214}Bi	1.21	0.59	-	-	-
^{228}Ac	-	-	0.72	-	-
^{214}Pb	1.42	-	-	-	-
Gross Beta	-	-	-	-	20.2
Total Cr	280	-	-	-	-
NO_3	-	-	27	24	16
Xylenes	0.003	-	-	-	-
SVOCS	164	1.03	-	-	-

Trench 4				
LEHR-S	422	423	424	425
Depth	9.5'	11'	14'	14'
^{226}Ra	14.7	-	0.81	0.79
^{90}Sr	-	-	-	0.37*
^{3}H (pCi/L)	-	-	110	-
Gross Alpha	46	-	-	-
Gross Beta	28.6	-	18.2	-
NO_3	65	46	29	59
SO_4	71	-	-	42

SB-4					
LEHR-S	452	453	454/455	456	457
Depth	10-12'	12-14'	20-22'	25-27'	29-31'
^{226}Ra	-	1.35	-/-	-	0.87
^{212}Pb	-	-	0.89/-	-	-
^{208}Tl	-	-	0.23/-	0.219	-
^{228}Ac	-	-	-/-	0.93	0.72
^{40}K	-	-	13.6/-	14.3	-
Gross Alpha	-	13.8	12.9/-	-	-
Cu	NA	NA	-/-	82	51
Mn	NA	NA	-/-	860	870
Zn	NA	NA	-/-	360	-
NO_3	-	18	20/17	22	28
SO_4	-	150	-/-	-	-
SVOCS	0.127	-	-	-	-

Figure 5-12. Analytic Results above Background for LFI Soil Samples, Radium-226 Leach System

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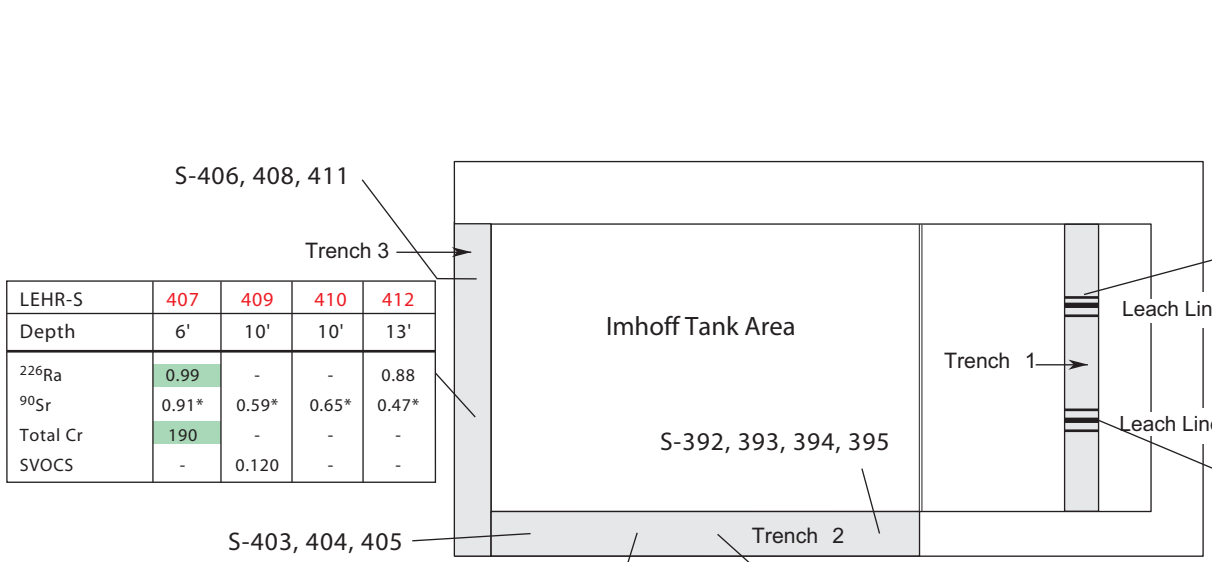

Leach Line - 3 to 5.5 ft. bgs
6 inch Orangeberg Pipe
2 to 4 inches drain rock

Leach Line - 2 to 4.5 ft. bgs
6 inch Orangeberg Pipe
2 to 4 inches drain rock

LEHR-S	407	409	410	412
Depth	6'	10'	10'	13'
^{226}Ra	0.99	-	-	0.88
^{90}Sr	0.91*	0.59*	0.65*	0.47*
Total Cr	190	-	-	-
SVOCS	-	0.120	-	-

LEHR-S	384	385	386	387
Depth	5'4"	5'4"	8'	10'8"
^{90}Sr	1.61	0.76	0.86*	-
Gross Alpha	-	-	12	-
Gross Beta	-	20.6	-	-
NO_3	-	-	14	10
SVOCS	0.07	0.276	-	-

LEHR-S	389	390	391
Depth	4'6"	7'	9'6"
^{226}Ra	0.8	-	0.87
^{90}Sr	0.59	0.45*	-
Gross Beta	-	17.8	-
NO_3	42	33	-
SO_4	51	40	-
Cl	25	29	-
SVOCS	0.404	-	-

LEHR-S	397	401	402
Depth	5'	10'	13'
^{226}Ra	-	0.79	-
^{90}Sr	0.78*	-	-
Benzene	0.005	0.004	0.004
Toulene	0.004	-	-

LEHR-S	396	398	399	400
Depth	5'	10'	13'	13'
^{90}Sr	0.6*	-	0.63	-
Benzene	-	0.004	0.004	0.004

EXPLANATION

Exploratory trenc h

\- Below backgro und

33 Radiological data in pico-Curies per gra m (pCi/g), a ll other data in parts per million (ppm) - Italics indicate appro ximate data based on validation res ults

Maximum concentrations recorded in the Strontium-90 leach s ystem area during the L FI

N

0 15 feet
Approximate scale

* May be higher than act ual acti vity present d ue to s ystematic laboratory error

Figure 5-13. Analytic Results above Background for LFI Soil Samples, Strontium-90 Leach System

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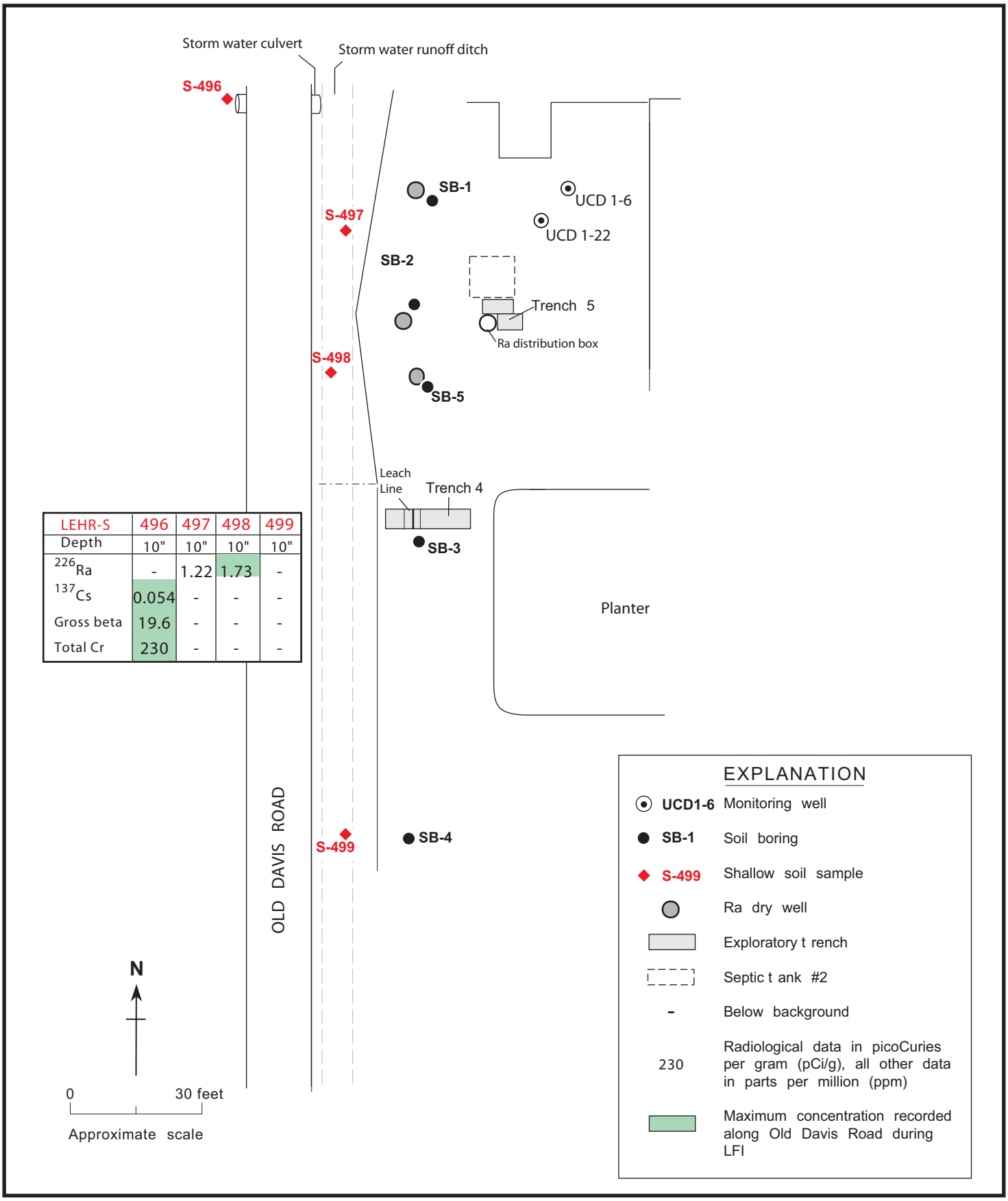

LEHR-S	496	497	498	499
Depth	10"	10"	10"	10"
^{226}Ra	-	1.22	1.73	-
^{137}Cs	0.054	-	-	-
Gross beta	19.6	-	-	-
Total Cr	230	-	-	-

Figure 5-14. Analytic Results above Background for LFI Soil Samples, Old Davis Road

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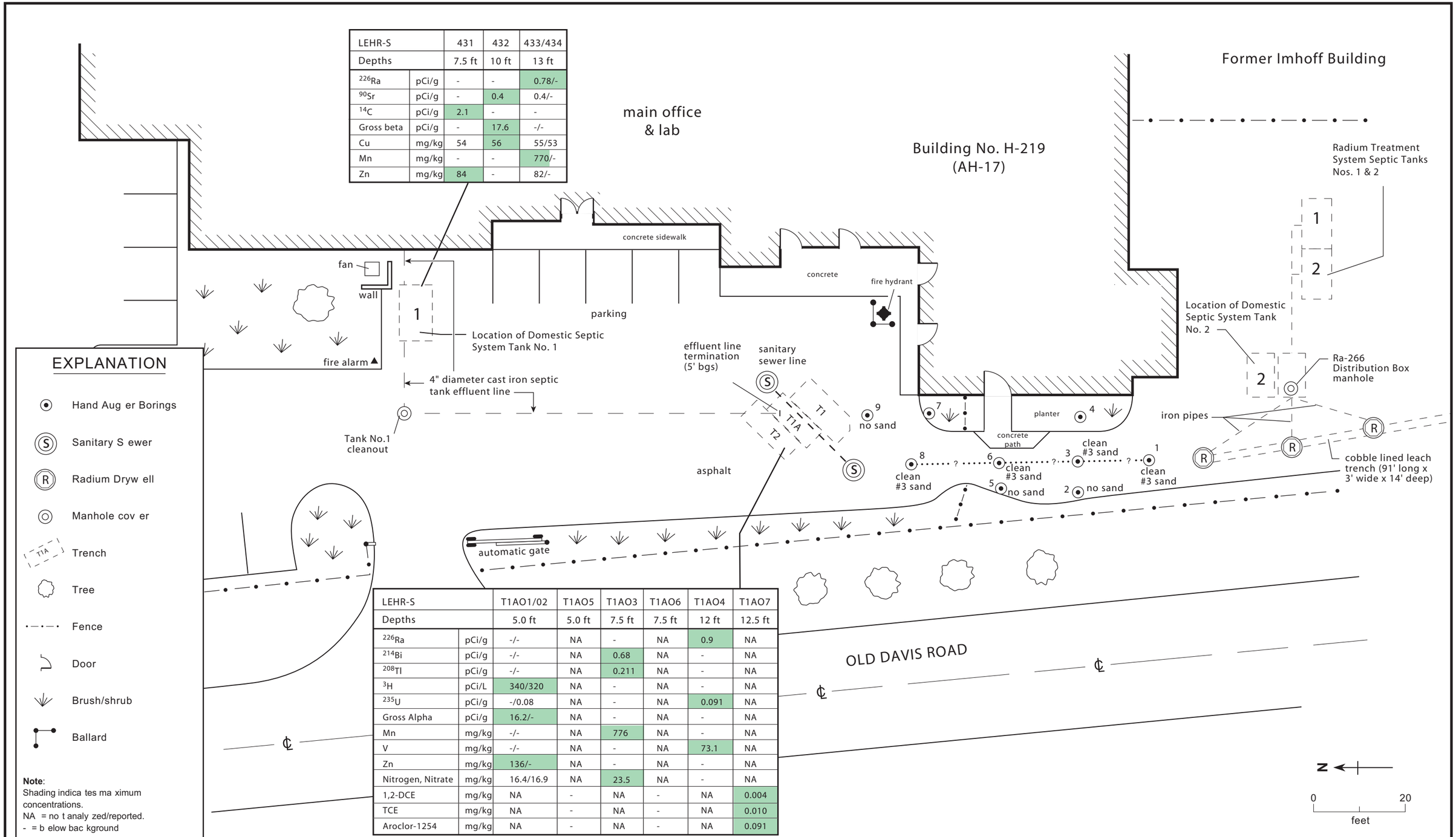

LEHR-S		431	432	433/434
Depths		7.5 ft	10 ft	13 ft
^{226}Ra	pCi/g	-	-	0.78/-
^{90}Sr	pCi/g	-	0.4	0.4/-
^{14}C	pCi/g	2.1	-	-
Gross beta	pCi/g	-	17.6	-/-
Cu	mg/kg	54	56	55/53
Mn	mg/kg	-	-	770/-
Zn	mg/kg	84	-	82/-

LEHR-S		T1AO1/02	T1AO5	T1AO3	T1AO6	T1AO4	T1AO7
Depths		5.0 ft	5.0 ft	7.5 ft	7.5 ft	12 ft	12.5 ft
^{226}Ra	pCi/g	-/-	NA	-	NA	0.9	NA
^{214}Bi	pCi/g	-/-	NA	0.68	NA	-	NA
^{208}Tl	pCi/g	-/-	NA	0.211	NA	-	NA
^{3}H	pCi/L	340/320	NA	-	NA	-	NA
^{235}U	pCi/g	-/0.08	NA	-	NA	0.091	NA
Gross Alpha	pCi/g	16.2/-	NA	-	NA	-	NA
Mn	mg/kg	-/-	NA	776	NA	-	NA
V	mg/kg	-/-	NA	-	NA	73.1	NA
Zn	mg/kg	136/-	NA	-	NA	-	NA
Nitrogen, Nitrate	mg/kg	16.4/16.9	NA	23.5	NA	-	NA
1,2-DCE	mg/kg	NA	-	NA	-	NA	0.004
TCE	mg/kg	NA	-	NA	-	NA	0.010
Aroclor-1254	mg/kg	NA	-	NA	-	NA	0.091

Figure 5-15. Analytic Results Above Background for LFI and Data Gaps Soil Samples, Domestic Septic Systems No.1

Weiss Assoc iates

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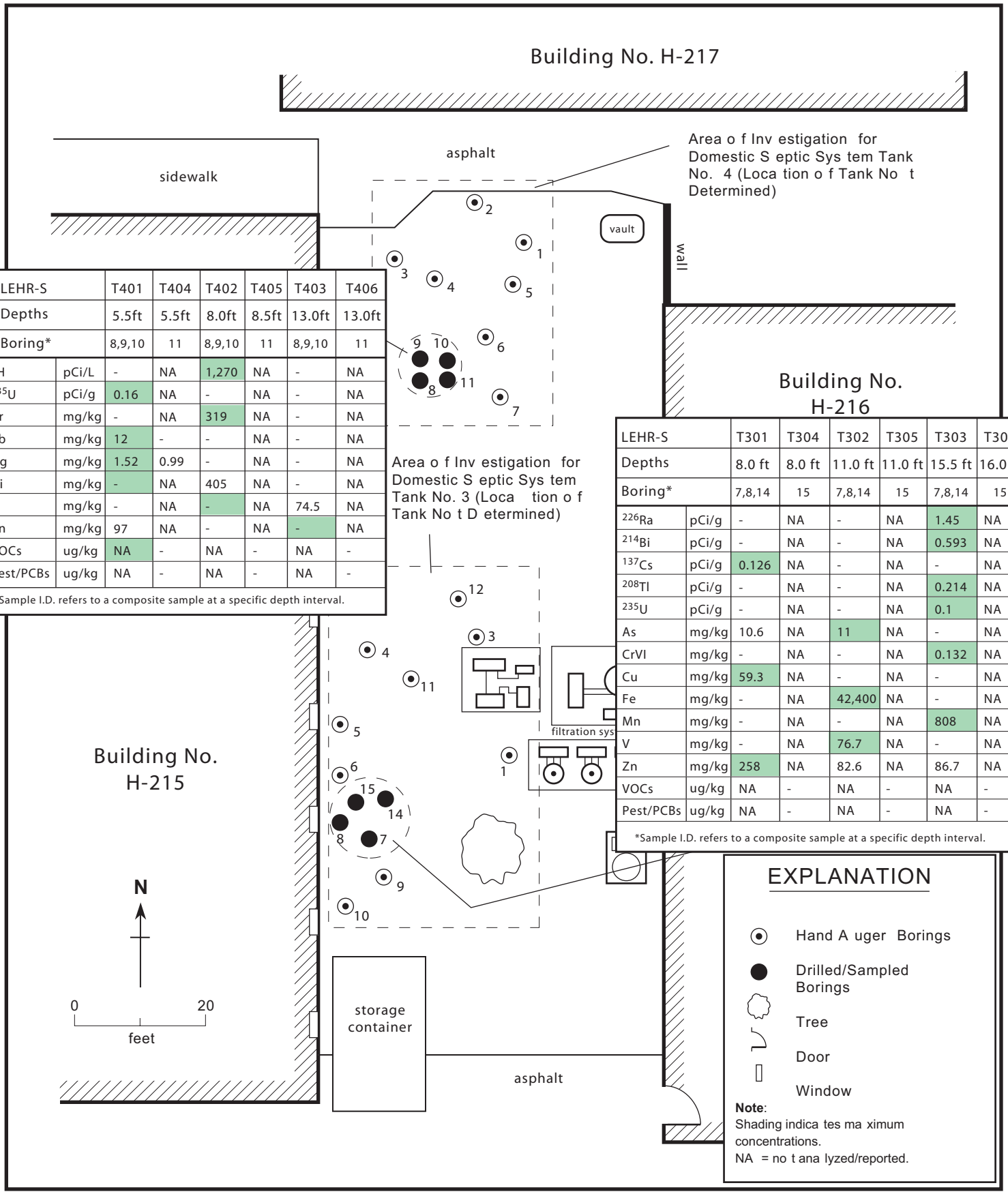


LEHR-S		T401	T404	T402	T405	T403	T406
Depths		5.5ft	5.5ft	8.0ft	8.5ft	13.0ft	13.0ft
Boring*		8,9,10	11	8,9,10	11	8,9,10	11
^{3}H	pCi/L	-	NA	1,270	NA	-	NA
^{235}U	pCi/g	0.16	NA	-	NA	-	NA
Cr	mg/kg	-	NA	319	NA	-	NA
Pb	mg/kg	12	-	-	NA	-	NA
Hg	mg/kg	1.52	0.99	-	NA	-	NA
Ni	mg/kg	-	NA	405	NA	-	NA
V	mg/kg	-	NA	-	NA	74.5	NA
Zn	mg/kg	97	NA	-	NA	-	NA
VOCs	ug/kg	NA	-	NA	-	NA	-
Pest/PCBs	ug/kg	NA	-	NA	-	NA	-

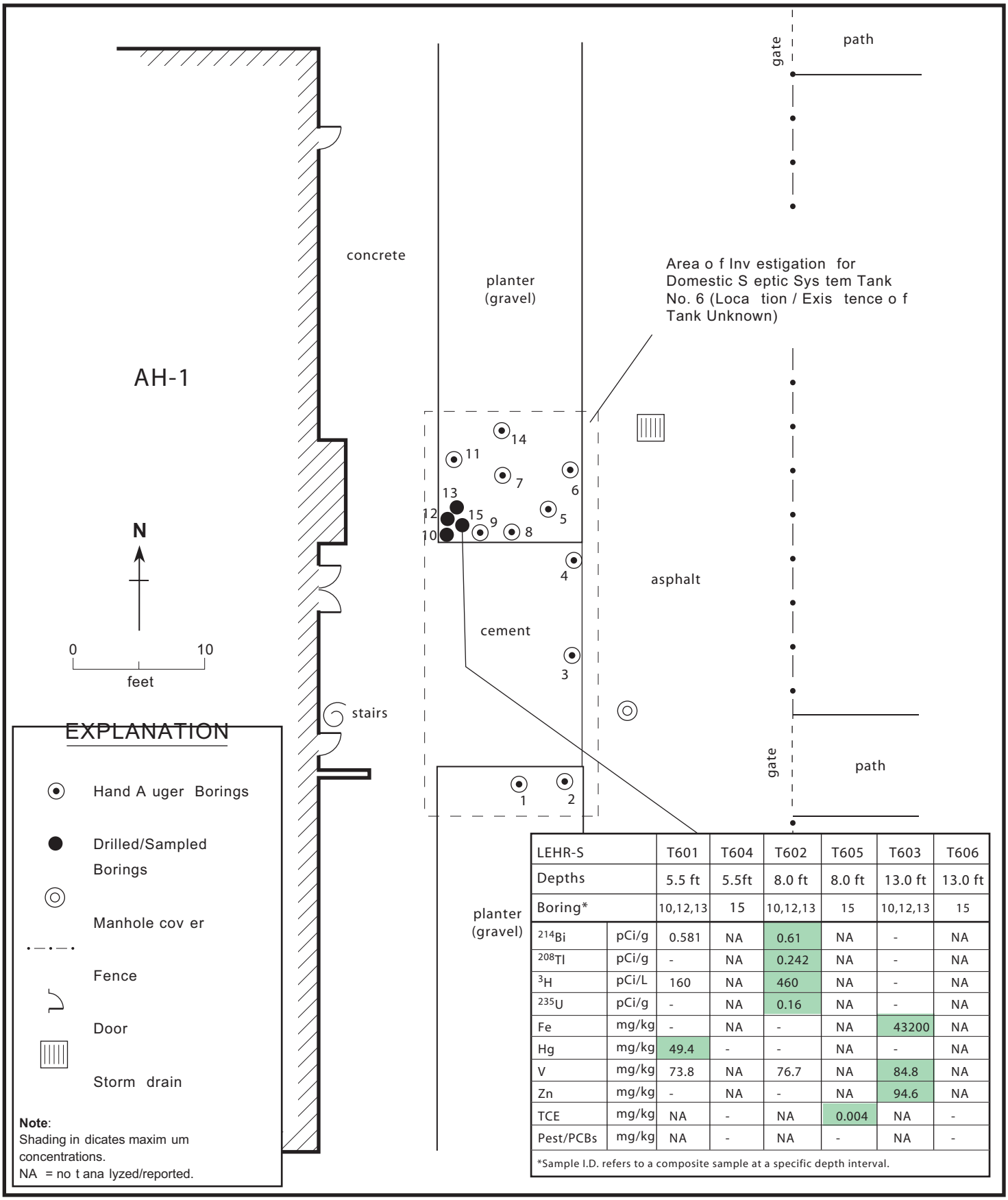
*Sample I.D. refers to a composite sample at a specific depth interval.

LEHR-S		T301	T304	T302	T305	T303	T306
Depths		8.0 ft	8.0 ft	11.0 ft	11.0 ft	15.5 ft	16.0 ft
Boring*		7,8,14	15	7,8,14	15	7,8,14	15
^{226}Ra	pCi/g	-	NA	-	NA	1.45	NA
^{214}Bi	pCi/g	-	NA	-	NA	0.593	NA
^{137}Cs	pCi/g	0.126	NA	-	NA	-	NA
^{208}Tl	pCi/g	-	NA	-	NA	0.214	NA
^{235}U	pCi/g	-	NA	-	NA	0.1	NA
As	mg/kg	10.6	NA	11	NA	-	NA
CrVI	mg/kg	-	NA	-	NA	0.132	NA
Cu	mg/kg	59.3	NA	-	NA	-	NA
Fe	mg/kg	-	NA	42,400	NA	-	NA
Mn	mg/kg	-	NA	-	NA	808	NA
V	mg/kg	-	NA	76.7	NA	-	NA
Zn	mg/kg	258	NA	82.6	NA	86.7	NA
VOCs	ug/kg	NA	-	NA	-	NA	-
Pest/PCBs	ug/kg	NA	-	NA	-	NA	-

*Sample I.D. refers to a composite sample at a specific depth interval.

Figure 5-16. Analytic Results Above Background for Soil Samples, Domestic Septic Systems No.3&4

Weiss Assoc iates

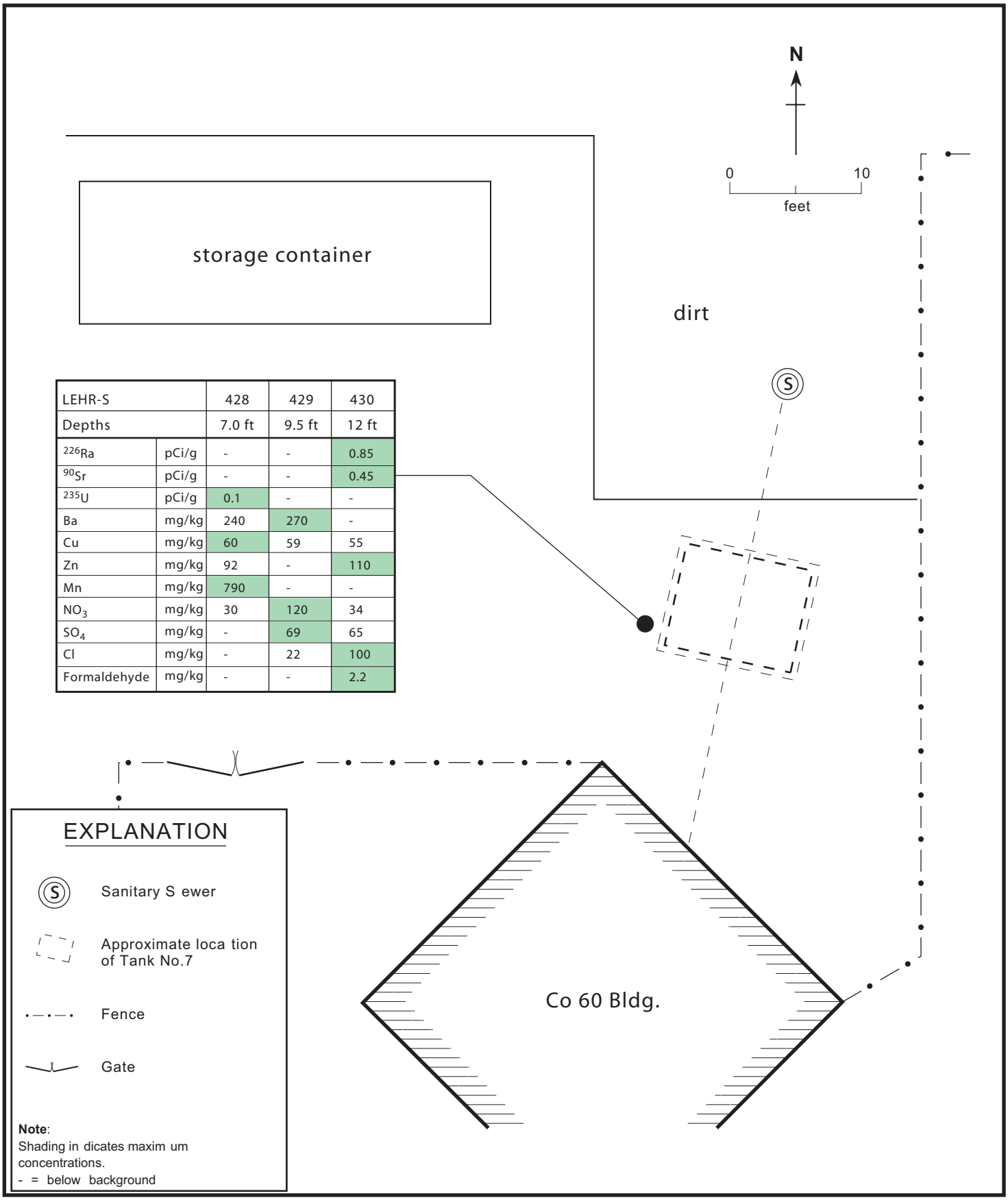


LEHR-S		T601	T604	T602	T605	T603	T606
Depths		5.5 ft	5.5ft	8.0 ft	8.0 ft	13.0 ft	13.0 ft
Boring*		10,12,13	15	10,12,13	15	10,12,13	15
^{214}Bi	pCi/g	0.581	NA	0.61	NA	-	NA
^{208}Tl	pCi/g	-	NA	0.242	NA	-	NA
^{3}H	pCi/L	160	NA	460	NA	-	NA
^{235}U	pCi/g	-	NA	0.16	NA	-	NA
Fe	mg/kg	-	NA	-	NA	43200	NA
Hg	mg/kg	49.4	-	-	NA	-	NA
V	mg/kg	73.8	NA	76.7	NA	84.8	NA
Zn	mg/kg	-	NA	-	NA	94.6	NA
TCE	mg/kg	NA	-	NA	0.004	NA	-
Pest/PCBs	mg/kg	NA	-	NA	-	NA	-

*Sample I.D. refers to a composite sample at a specific depth interval.

Figure 5-17. Analytic Results Above Background for the Data Gaps Soil Samples, Domestic Septic System No. 6

Weiss Assoc iates



LEHR-S		428	429	430
Depths		7.0 ft	9.5 ft	12 ft
^{226}Ra	pCi/g	-	-	0.85
^{90}Sr	pCi/g	-	-	0.45
^{235}U	pCi/g	0.1	-	-
Ba	mg/kg	240	270	-
Cu	mg/kg	60	59	55
Zn	mg/kg	92	-	110
Mn	mg/kg	790	-	-
NO_3	mg/kg	30	120	34
SO_4	mg/kg	-	69	65
Cl	mg/kg	-	22	100
Formaldehyde	mg/kg	-	-	2.2

Figure 5-18. Analytic Results Above Background for LFI Soil Samples, Domestic Septic System No. 7

Weiss Assoc iates

6. DATA EVALUATION FOR THE DEPARTMENT OF ENERGY OPERABLE UNITS

This section discusses the existing data collected during this LFI, the June 1997 Data Gaps Investigations and previous investigations, and the adequacy of the data to support remedial decisions. Each DOE OU is addressed in a separate section.

6.1 Southwest Trenches Area (OU-1)

6.1.1 Constituents of Concern Above Background Levels

Chemical compounds and radionuclides detected above background in the soil and/or solid waste samples collected from the Southwest Trenches Area are:

Radionuclides:

Radium-226, cesium-137, carbon-14, gross alpha, gross beta, tritium, bismuth-214, strontium-90, potassium-40, lead-212, uranium-235, actinium-228, thallium-208, thorium-234, cobalt-60

Metals:

Arsenic, barium, beryllium, cobalt, chromium, hexavalent chromium, copper, iron, nickel, manganese, mercury, selenium, vanadium, lead, zinc

VOCs:

Chloroform, methylene chloride, ethylbenzene, Freon-12, Freon-11, xylenes, toluene, benzene, styrene, 2-hexanene

SVOCs:

Polynuclear aromatic hydrocarbons (PAHs) including naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, pyrene, and others

Pesticides and PCBs:

Chlordane, DDD, DDE, DDT, endosulfan, heptachlor, PCB-1260, dieldrin, pyrene, heptachlorepoxide, carbon tetrachloride and methoxychlor

Other compounds:

Formaldehyde, nitrate, hexanol, nonanol

While all of these compounds were detected in samples collected from the Southwest Trenches Area, the majority of high concentrations were detected in only one or two samples from actual waste uncovered and referred to as solid waste samples. Many of the organic compounds were detected in only trace concentrations and many of the metals and radionuclides were detected in concentrations only slightly exceeding the background concentrations for the Site. Compounds which were either present at significant concentrations or which were laterally persistent throughout the Southwest Trenches Area include:

- Cesium-137;
- Strontium-90;
- Radium-226;
- SVOCs (phenanthrene, fluorene and acenaphthene);
- Chlordane; and,
- Nitrate.

The following section describes the extent of each of these chemical compounds/radionuclides in the soil in the Southwest Trenches Area, and the extent of buried solid waste.

6.1.2 Extent of Contamination

Buried Solid Waste

Miscellaneous laboratory wastes were buried with gravel in the Southwest Trenches. Based on prior field activities, these trenches were well defined during excavation because the backfill/waste material is visually distinct from the native soil. However, the exact locations and lengths of these trenches were not well defined. The “typical” disposal trench encountered during previous field activities in this area was approximately 2-ft to 6-ft wide by 12-ft deep with sporadic placement of bagged and loose laboratory wastes - such as sharps (syringes, etc.), bones, wood, and discarded containers within the gravel backfill.

Cesium-137

Cesium-137 was detected at concentrations exceeding background in seven of the 70 LFI samples collected from the Southwest Trenches Area. The background level for Cs-137 in soil at the Site is 0.053 pCi/g. The maximum reported activity for Cs-137 (23 pCi/g) was reported from sample S-350, which was collected from a depth of 0.5 ft bgs in Grid 7-9. This activity far exceeded those reported in the remainder of the samples, and the next highest reported activity was 0.119 pCi/g

(S-359). Cs-137 activities as high as 0.12 pCi/g had been reported from previous investigations. The vertical extent of Cs-137 appears to be confined to near surface soil with only two detections above background in soil greater than 2.5 ft bgs. The deeper samples were both collected from Pit No. 1 at a depth of 12 ft bgs. Cs-137 was not detected in soil below this depth. Laterally, Cs-137 appears to be confined to the waste disposal zones. Cs-137 was detected above background only in soil collected within, or immediately below, a disposal trench or pit. Additionally, Cs-137 contamination in soil does not appear to have affected ground water in the Southwest Trenches Area, as Cs-137 was not detected above background in any of the ground water samples collected from this area in 1996 (WA, 1997c).

Strontium-90

Sr-90 was detected above background (0.36 pCi/g) in 40 of 70 soil and solid waste samples collected from the Southwest Trenches Area during the LFI. However, as noted on Figures 3-4 and 3-5, many Sr-90 results are considered suspect because of a laboratory analytical problem. The highest reported Sr-90 activities (16,700 pCi/g and 3,960 pCi/g) were measured in a bagged sludge sample and a wood sample, respectively collected from the disposal trench uncovered by exploratory trench T-6. Sr-90 activities above background were also measured in soil samples collected beneath both of these solid waste samples. However, the affected soil does not appear to extend beyond 10 ft bgs, as Sr-90 activities in soil below 10 ft bgs in SB-6 and SB-7 (located adjacent to the wastes) were below background.

The highest Sr-90 activity reported in soil from the Southwest Trenches Area was 22.3 pCi/g in Trench 6. The lateral extent of Sr-90 in the Southwest Trenches Area does not appear to be immediately confined to waste disposal areas. Sr-90 levels above background were reported in numerous shallow soil samples collected around the washdown pad, around the chemical storage area and in the southwest corner of the Site. These samples appear to have been collected from undisturbed soil and are located a minimum distance of 7.5 feet from the nearest known disposal trench or pit. Vertically, Sr-90 appears to be confined to the upper 15-20 ft bgs. The deepest sample with Sr-90 activities measured above background was collected from SB-8 at a depth of 16 ft bgs. Sr-90 activity in the next deepest sample from this boring (26 ft bgs) was below background. Sr-90 in soil in the Southwest Trenches Area does not appear to have affected ground water, as Sr-90 was not detected above background in ground water samples collected from the Southwest Trenches Area during 1996 (WA, 1997c).

Radium-226

Radium-226 was detected above background (0.77 pCi/g) in only 15 of 55 soil samples and six of 15 solid waste samples collected from the Southwest Trenches Area. The maximum Ra-226 activities reported during the LFI in solid waste and soil were 7.06 pCi/g and 2.44 pCi/g, respectively. Ra-226 activities in soil as high as 3.94 pCi/g were reported in previous investigations. The extent of Ra-226 activity above background appears to be confined to solid waste and soil within and immediately below the disposal trenches and pits.

SVOCs

PAHs typical of wood preservatives were detected at a total concentration of over 34,000 mg/kg in one wood sample, which was removed for disposal. PAHs were also detected at approximately 780 mg/kg in the bagged sludge sample, which was also removed. Soil samples collected immediately under these wastes contained no detectable SVOCs. In fact, only one soil sample from the Southwest Trenches Area contained detectable SVOCs.

Chlordane

Chlordane was measured in trace concentrations in the majority of samples collected from the Southwest Trenches Area, in both shallow and deeper soil samples. The maximum concentration of chlordane measured in samples collected during the LFI was 3.6 mg/kg. This soil sample (S-484) was collected from a depth of 3.5 ft bgs in the southwest corner of the Site. Chlordane was detected at a concentration of 2,000 mg/kg in this area in a previous investigation; however, shallow soil samples collected near the reported location of this sample (S-484, S-485, S-486) contained far lower chlordane concentrations. Trace chlordane concentrations were measured in soil samples collected from as deep as 30 ft bgs in the Southwest Trenches Area. No consistent pattern of vertical attenuation of chlordane in soil was observed; soil at depth appears to be as likely to contain chlordane as shallow soil. However, chlordane in soil in the Southwest Trenches Area does not appear to have affected ground water, as chlordane was not detected in any of the ground water samples collected from this area during 1996 (WA, 1997c).

Based on the LFI data, neither the southwest chemical storage area nor the washdown pad could be confirmed as source areas for chlordane. While chlordane was detected in shallow soil surrounding both of these locations, the observed concentrations are no higher than measured at other locations in the Southwest Trenches Area.

Nitrate

Nitrate concentrations significantly above background (10 mg/kg) were measured in 24 of 70 soil and solid waste samples collected from the Southwest Trenches Area during the LFI. Nitrate levels as high as 390 mg/kg were measured and nitrate levels in excess of twice the background concentration were observed in 19 of the 24 samples. However, the extent of elevated nitrate appears to be confined within and beneath disposal trenches and pits. No significant nitrate concentrations were measured in shallow soil samples collected outside the waste disposal areas. However, nitrates do not appear to be vertically confined to soil immediately beneath the waste trenches. Nitrate concentrations exceeding background were measured in soil samples collected from as deep as 15 ft bgs beneath the waste trenches. However, nitrate was not detected above background in any of the ground water samples collected from the Southwest Trenches Area during 1996 (WA, 1997c).

6.1.3 Waste Disposal Characteristics

The potential exists that some wastes removed during field activities (Investigative Derived Waste) or wastes which may be excavated during a removal activity may be classified as mixed waste. WA compared total contaminant levels in the waste removed and soil samples collected during the LFI with the Toxicity Characteristic (TC) levels for leachate derived from the TC Leaching Procedure (TCLP) defined under the Resources Conservation and Recovery Act (RCRA). As a general rule of thumb, soil which exhibits total contaminant concentrations which are less than 20 times the TC levels (see Table 6-1) will produce TCLP leachate concentrations less than the TC levels and are unlikely to be classified as hazardous waste based on toxicity.

Chlordane was the only contaminant detected in any of the samples collected during the LFI that exceeded twenty times the TC limit. The maximum reported concentration of chlordane (3.6 mg/kg) is above twenty times the TC limit (0.6 mg/l). Additionally, chlordane levels far in excess of those reported in the LFI have been detected in previous sampling events. Thus, there is some potential for soil leachate to exceed the TC limit for chlordane and require classification as a hazardous waste.

Excavated trench soil and waste from previous investigations was disposed as low level radioactive waste, therefore, the potential for characterization of soil from the Southwest Trenches Area as mixed waste is relatively low. Radionuclide levels and other constituents, which might render the waste as toxic, were both quite low in soil samples collected during the LFI. However, characterization of wastes will likely be required prior to disposal.

Table 6-1. Background Levels and TC Limits x 20 for Selected Analytes in Soil

Analyte	Background 80% LCL	TC Limit x 20
Radionuclides		
Carbon-14	0.87 pCi/g	NE
Cesium-137	0.053 pCi/g	NE
Radium-226	0.77 pCi/g	NE
Strontium-90	0.36 pCi/g	NE
Tritium	105 pCi/L	NE
Gross Alpha	11.8 pCi/g	NE
Gross Beta	17.4 pCi/g	NE
Organic Compounds		
Total Chlordane	NA	0.6 mg/L
Endosulfan sulfate	NA	0.4 mg/L
Heptachlor	NA	0.16 mg/L
Metals		
Arsenic	9.46 mg/kg	100 mg/L
Cadmium	NE	20 mg/L
Chromium	178 mg/kg	100 mg/L
Lead	10.1 mg/kg	100 mg/L
Mercury	0.49 mg/kg	4 mg/L

Table 6-1. Background Levels and TC Limits x 20 for Selected Analytes in Soil (continued)

Analyte	Background 80% LCL	TC Limit x 20
Selenium	1.0 mg/kg	20 mg/L
Silver	NE	100 mg/L
Chrom VI	0.099 mg/kg	NE
Nitrate	10 mg/kg	NE
Sulfate	36 mg/kg	NE

Notes:

Background 80% LCL = 80% lower confidence level for 24 background samples collected at 0, 4, 20, and 40 ft below ground surface at six locations within one-half mile of the LEHR Facility
NE = none established
NA = not applicable

6.1.4 Plans for Additional Work

Data collected to date from the Southwest Trenches are sufficient for making decisions approximately removal actions. Therefore, an Engineering Evaluation/Cost Analysis (EE/CA) for the Southwest Trenches (OU-1), Ra-226 and Sr-90 Treatment Systems (OU-2), and Domestic Septic System areas (OU-4) is currently being prepared by Weiss Associates for the DOE. This EE/CA evaluates and recommends removal actions. The removal action in this area is scheduled for 1998, pending RPM approval.

6.2 Radium and Strontium Treatment Systems (OU-2)

6.2.1 Constituents of Concern above Background Levels

Chemical compounds and radionuclides detected above background in soil samples from these investigations are:

Radionuclides:

Ra-226, Sr-90, gross alpha, gross beta, tritium, bismuth-214, potassium-40, cobalt-60, actinium-228, lead-212, lead-214, Cs-137, thorium-232, carbon-14, thallium-208, thorium-228, thorium-234, uranium-235

Metals:

Beryllium, cobalt, chromium, hexavalent chromium, copper, manganese, thallium, lead, zinc and vanadium

VOCs:

Methylene chloride

SVOCs:

PAHs including phenanthrene, fluoranthrene, pyrene, benzoanthracene, benzopyrene, chrysene, benzofluoranthene, and others

Pesticides:

DDD, DDT

Other compounds:

Nitrate, sulfate

While all of these compounds were detected in samples collected from the Ra/Sr treatment area, the majority were detected in only one or two samples. Many of the organic compounds were detected in only trace concentrations and many of the metals and radionuclides were detected in concentrations that only slightly exceeded the background concentrations for the Site. Compounds which were either present at significant concentrations or which were laterally persistent throughout the Ra/Sr area include:

- Ra-226;
- Sr-90;
- Gross Alpha;
- Gross Beta;
- Nitrate; and,
- Sulfate

The following section describes the extent of each of these chemical compounds and radionuclides in the soil in the Ra/Sr area.

6.2.2 Extent of Contamination

Radium-226

Radium-226 was detected at concentrations exceeding the 0.77 pCi/g background level in 34 of the 62 samples collected from the Ra/Sr area during the LFI. The maximum reported activity for Ra-226 was 106.2 pCi/g in the distribution box sediment sample, S-427. The highest Ra-226 activity in soil, however, was only 14.7 pCi/g in sample S-422 collected at 9.5 ft bgs in Trench 4. The other 32 samples above background had activities ranging from 0.79 to 8.2 pCi/g. Ra-226 was not detected above background in previous soil investigations in the Ra/Sr area.

Ra-226 activities were detected above background in each of the five soil borings, SB-1 through SB-5. Ra-226 activities in each boring decreased with depth. In addition, Ra-226 is not detected above background in nearby downgradient well, UCD1-22. Laterally, Ra-226 appears to be confined to the vicinity of the Ra-226 dry wells, associated piping, and the leach line, based on the absence of Ra-226 above background in all samples from the Sr-90 system trenches.

Strontium-90

Sr-90 was detected above background (0.36 pCi/g) in 26 of 52 samples from the Ra/Sr area during the LFI. However, as noted in Section 5, some of these Sr-90 results may be erroneously high due to laboratory analytical problems. The highest reported Sr-90 activity of 2.18 pCi/g was measured in S-427, the distribution box sediment sample. The next highest Sr-90 activities were detected in samples S-426 (1.82 pCi/g) from Trench 5 at 11 ft and in S-384 (1.61 pCi/g) from approximately 5 ft bgs adjacent to a Sr-90 system leach line. Sr-90 was only detected above background in one sample from the previous investigations, at 0.61 pCi/g from soil boring SB-28 at 10 ft. Sr-90 activities generally appear to attenuate with depth. Laterally, Sr-90 does not appear to be confined to any particular area. Sr-90 levels above background were reported in samples in both the Ra-226 area and the Sr-90 area.

Gross Alpha and Gross Beta

Gross alpha and gross beta were detected above their background levels of 11.8 pCi/g and 17.4 pCi/g in 13 and 16 LFI samples, respectively, from the Ra/Sr area. The maximum reported gross alpha activity in LFI samples was 46 pCi/g in soil and 185 pCi/g in the distribution box sample. The maximum reported gross beta activity in LFI samples was 39.7 pCi/g in soil and 156 pCi/g in the distribution box sample. The highest activities of both gross alpha and gross beta in soil were detected in S-437 at a depth of 18-20 ft in soil boring SB-1. For the most part, gross alpha and beta activity above background appears to be confined to soils between 10 and 20 ft. Both are detected in all areas associated with the Ra-226 Treatment System. In general, gross beta activities are similar to the total activities of the individual beta emitters (including Sr-90, tritium and K-40) analyzed for each sample. However, gross alpha activities are significantly higher than those for Ra-226, the only individual alpha emitter analyzed, suggesting that other alpha emitters are present.

Nitrate

Nitrate concentrations above background (10 mg/kg) were measured in 28 of 62 soil samples collected from the Ra/Sr area during the LFI. Nitrate levels as high as 110 mg/kg were measured, and nitrate levels in excess of twice the background concentration were observed in 16 of the 28 samples. Nitrate was detected above background in previous investigations in eighteen of forty nine samples. Eleven of the samples were in excess of twice the background level. In previous investigations, nitrate was detected to a depth of 30 ft in the leach field in the Sr-90 area and to 15 ft bgs in the Ra-226 area. However in LFI samples, nitrate was detected in only four samples from the Sr-90 area at depths of 10.8 ft or less in Trench 1. In the Ra-226 area, nitrate was detected above background at depths up to 31 ft bgs.

Sulfate

Sulfate concentrations above background (36 mg/kg) were measured in 22 of 62 soil samples collected during the LFI from the Ra/Sr area. The highest sulfate detected was 400 mg/kg in sample S-427 from the Ra-226 system distribution box. Sulfate levels as high as 270 mg/kg were measured in sample S-462, and sulfate levels exceeding twice the background concentration were observed in two other samples. Sulfate was not detected in previous investigations above background concentrations.

6.2.3 Waste Disposal Characteristics

Some wastes uncovered during field activities (IDW) or wastes that may be excavated during a removal activity may be classified as mixed waste. WA compared total contaminant levels in soil samples collected during the LFI with 20 times the TC limits. None of the contaminants detected in any of the samples collected from the Ra/Sr Area during the LFI exceeded twenty times the TC limits.

Based on all investigations to date, the potential for characterization of soil from the Ra/Sr area as mixed waste is quite low. However, characterization of wastes will likely be required prior to disposal.

6.2.4 Plans for Additional Work

Data collected to date from the Ra/Sr Area are sufficient for making decisions approximately removal actions. Therefore, an EE/CA for the Southwest Trenches (OU-1), Ra-226 and Sr-90 Treatment Systems (OU-2), and Domestic Septic System areas (OU-4) is currently being prepared by Weiss Associates for the DOE. This EE/CA evaluates and recommends removal actions. The removal action in this area is planned for 1999.

6.3 Dog Pens Area (OU-3)

6.3.1 Constituents of Concern Above Background Levels

The following chemical compounds and radionuclides have been detected above background during the LFI and previous investigations in soils samples collected from the Dog Pens Area:

Radionuclides:

Radium-226, strontium-90, gross beta, cesium-137, potassium-40, cobalt-60, actinium-228, thorium-232, thorium-234, carbon-14, thallium-208, bismuth-214, lead-212, lead-214, tritium, and uranium-235

Metals:

Beryllium, cobalt, copper, hexavalent chromium, iron, lead, manganese, mercury, vandadium, and zinc

VOCs:

Methylene chloride

Pesticides:

4, 4-DDE, alpha BHC, delta BHC, gamma BHC, chlordane and heptachlor

Other compound:

Nitrate

While all of these compounds were detected in samples collected from the Dog Pens Area, the majority were detected in only one or two samples. Many of the organic compounds were detected in only trace concentrations and many of the metals and radionuclides were detected in concentrations which only slightly exceed the background concentrations for the LEHR Site. Compounds which were either present at significant concentrations or which were laterally persistent throughout the Dog Pens Area include:

- Radium-226
- Strontium-90
- Carbon-14
- Hexavalent chromium
- Chlordane
- Nitrate

The following section describes the extent of each of these chemical compounds/ radionuclides in the soil in the Dog Pens Area.

6.3.2 Extent of Contamination

Radium-226

Eleven of the 30 samples analyzed for Ra-226 in 1994 had activities above background. Only two of these samples showed activities significantly above background (1.82 and 5.11 pCi/g): both from near the center of the Western Dog Pens, one from approximately 6 ft bgs and one from approximately 20 ft bgs. The 1996 surface samples showed two samples with Ra-226 activities approximately two times background; both were perimeter pens. Nine of the remaining 22 samples had Ra-226 activities slightly above background. None of the 1990 dog pen samples had Ra-226 activities above background. Ra-226 in soil in the Dog Pens Area does not appear to have affected ground water, as Ra-226 was not detected above background in ground water samples collected from this area during 1995 and 1996 (WA, 1997c).

Strontium-90

Sr-90 was detected above background (0.52 pCi/g) in 11 of 24 samples collected from the Dog Pens Area during the summer 1996 investigation. The highest reported Sr-90 activity of 5.66 pCi/g was measured in S-371(dog pen J-32). The next highest Sr-90 activity was detected in sample S-364 (dog pen D-15) at 4.4 pCi/g. However, as described in Section 5.1.2, these Sr-90 activities may be erroneously high due to a laboratory problem. Given that these Sr-90 activities are significantly higher than those detected in previous Dog Pens Investigations, it seems likely that they are erroneous. Sr-90 was only detected above background in two samples from the previous investigations, at 0.54 and 0.56 pCi/g in soil from borings SBL-18 at 2.5 ft bgs and SBL-16 at 5 ft bgs, respectively. Sr-90 in soil in the Dog Pens Area does not appear to have affected ground water, as Sr-90 was not detected above background in ground water samples collected from this area during 1995 and 1996 (WA, 1997c).

Carbon-14

C-14 was not analyzed in the Dog Pens Area during the summer 1996 investigation. However, C-14 was detected above its background of 1.82 pCi/g in 13 out of 44 samples in the December 1994 investigation in the Western Dog Pens and North Chemical Dispensing Area. The maximum reported C-14 activity during the 1994 investigation was 16.4 pCi/g in SBL-8 at 10.75 ft bgs. Carbon-14 detected above background appears to be confined to soil no deeper than 11 ft and typically is only detected to a depth of 6-ft bgs. Laterally, C-14 is not confined to one area in the Dog Pens Area. However carbon-14 was not detected above background south of Dog Pen Row H. C-14 in soil in the Dog Pens Area does not appear to have affected ground water, as C-14 was not detected above background in ground water samples collected from this area during 1995 and 1996 (WA, 1997c).

Hexavalent Chromium

Hexavalent chromium was not analyzed in the Dog Pens Area during the summer 1996 investigation. However, hexavalent chromium was detected above the 0.15 mg/kg background in

nine out of 44 samples in the December 1994 investigation, and in 3 samples in the Phase II Investigation. The maximum reported level of hexavalent chromium was 2.3 mg/kg in SB-16 at 0.8 ft bgs in Phase II and 0.29 mg/kg in SBL-8 at 5.75 ft bgs in the December 1994 investigation. Hexavalent chromium above background does not appear to be confined to any particular depth and is present at least down to 20.75 ft. Similarly, hexavalent chromium above background does not appear to be confined laterally to any particular area in the Dog Pens Area. Based upon 1995 and 1996 ground water data (WA, 1997c), hexavalent chromium in soil in the Dog Pens Area does not appear to have impacted ground water.

Chlordane

Chlordane was only analyzed in 15 of 24 samples collected in the Dog Pens Area during the summer 1996 Investigation. Chlordane was detected above 1 mg/kg in two samples and ranged from 0.014 to 0.67 mg/kg in the other 13 samples. Chlordane was detected above the 0.15 mg/kg background in 19 out of 89 samples in the Phase II Investigation and five samples out of 44 in the December 1994 Investigation. The highest concentration detected in Phase II was 0.48 mg/kg chlordane in sample M-17. The highest concentration detected in December 1994 was 0.194 mg/kg chlordane in a surface sample from SBL-13. Vertically, chlordane attenuates sharply with depth and is not detected below 2.5 ft. Laterally, chlordane was detected throughout the dog pens in the Phase II Investigation and the 1996 Investigation. In December 1994, chlordane was only detected near the Cellular Biology Lab, where 64 dog pens had been previously located. In 1996, the highest chlordane concentration detected (15 ppm) in sample S-363 was just southeast of the Cellular Biology Lab (Figure 3-9).

Nitrate

Nitrate was not analyzed in the Dog Pens Area during the summer 1996 Investigation. Nitrate was detected above background (29.11 mg/kg) in 10 of 89 surface soil samples collected from the Dog Pens and North Chemical Dispensing Area during the Phase II Investigation. Nitrate was not detected in the December 1994 Investigation above background levels. Nitrate levels as high as 168 mg/kg were measured, and nitrate levels in excess of twice the background concentration were observed in three of the ten Phase II samples with nitrate above background. Vertically, nitrate appears to be confined to the surface based on the absence of nitrate in the subsurface December 1994 samples. Horizontally, nitrate appears to be confined to Dog Pen Row E and the North Chemical Dispensing Area. The highest concentrations of nitrate were detected in two samples collected from Dog Pen E-6 and in soil boring SB-16 at 0.8 inches bgs.

6.3.3 Waste Disposal Characteristics

Some IDW or wastes which may be excavated during a removal activity may be classified as mixed waste. WA compared total contaminant levels in soil samples collected from the Dog Pen Area with 20 times the TC limits.

None of the contaminants detected in any of the samples collected from the Dog Pen Area exceeded 20 times the TC limit. However, the maximum reported concentration of chlordane (0.49 mg/kg) from the December 1994 Investigation is just below 20 times the TC limit (0.6 mg/L). Thus, there is some potential for soil leachate to exceed the TC limit for chlordane and require classification as hazardous and/or mixed waste.

Based on all results to date, the potential for characterization of soil from the Dog Pens Area as mixed waste is fairly low. However, characterization of wastes will likely be required prior to disposal.

6.3.4 Plans for Additional Work

Data collected to date from the Dog Pens area (OU-3) are not sufficient for making cost effective remedial decisions. The costs for complete removal of the gravels and first foot or two of soil beneath the dog pens are prohibitive, and complete removal is probably not warranted. Likewise, capping the entire pen area may present an unwarranted expense. Information collected to date suggests that there may be isolated areas of elevated radionuclides, chlordane, and/or nitrate that could be easily removed at much lower costs. Therefore, additional investigations in the Dog Pens have been proposed to provide the information needed to make remedial decisions. These investigations, which are described in a detailed work plan (WA, 1997d), address only the Western Dog Pens and include surface radiation surveying and gravel/soil sampling and analysis for potential constituents of concern. Additional investigations and remedial actions in the Eastern Dog Pens will be addressed later.

6.4 Domestic Septic Systems (OU-4)

6.4.1 Constituents of Concern above Background Levels

Chemical compounds and radionuclides detected above background in the soil samples from the LFI and Data Gaps Investigation at the domestic septic tanks are:

Radionuclides:

Bismuth-214, carbon-14, cesium-137, gross alpha, gross beta, radium-226, strontium-90, thallium-208, tritium, uranium-235

Metals:

Arsenic, cadmium, chromium, copper, hexavalent chromium, iron, lead, manganese, mercury, nickel, vanadium, zinc

VOCs:

TCE, 1,2-DCE

Pesticides:

Arochlor-1254

Other Compounds:

Nitrate, chloride, formaldehyde

While all of these compounds were detected in one or more samples taken from the seven domestic tanks, the majority were detected in only one or two samples. Compounds which were present at significant concentrations or which were consistently present in different tank areas include the following:

Radionuclides:

Radium-226, tritium

Metals:

Mercury

Other Compounds:

Nitrate, chloride

6.4.2 Extent of Contamination

Tritium, mercury, nitrate and chloride were each detected significantly above (at least seen times) background at one location. Tritium was detected at 1.270 pCi/L at 8 ft bgs near Septic Tank No 4; mercury was detected at 49.4 mg/kg at 5.5 ft bgs near Septic Tank No. 6; nitrate was detected at 120 mg/kg at 9.5 ft bgs near Tank No. 7; and chloride was detected at 100 mg/kg at 12 ft bgs near Tank No. 7. Ra-226 was detected at 1.45 pCi/g (approximately two times background) at 15.5 ft bgs near Septic Tank No. 3.

6.4.3 Waste Disposal Characteristics

Some IDW produced during field activities or wastes that may be excavated during a removal activity may be classified as mixed waste. WA compared total contaminant levels in soil samples collected during the LFI with 20 times the TC limits (see Table 6-1). None of the contaminants

detected in any of the samples collected from the septic tank systems during the LFI exceeded these levels.

6.4.4 Plans for Additional Work

Data collected to date from the Domestic Septic Tanks are sufficient for making decisions approximately removal actions. Therefore, an EE/CA for the Southwest Trenches (OU-1), Ra-226 and Sr-90 Treatment Systems (OU-2), and Domestic Septic System areas (OU-4) is currently being prepared by Weiss Associates for the DOE. This EE/CA evaluates and recommends removal actions. The removal action in this area, if necessary, is planned for sometime after 1999.

7. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the LFI and previous investigations, the following conclusions are drawn:

Southwest Trenches Area:

- The most prevalent contaminants detected are Ra-226, Sr-90, Cs-137, SVOCs, chlordane, and nitrate.
- Significant contamination is apparently confined within, or immediately adjacent to, the disposal areas.
- Ground water has not been significantly impacted by disposal in this area.
- Contaminant nature and extent are defined sufficiently to evaluate and select removal actions.

Ra/Sr Treatment System Area:

- The most prevalent contaminants detected are Ra-226, Sr-90, nitrate, and sulfate.
- Strontium (Imhoff) Treatment System operations did not significantly impact surrounding soil.
- Significant Ra/Sr contamination associated with the Ra treatment system is generally confined to, or immediately adjacent to, the leach lines and dry wells.
- Contaminant nature and extent are defined sufficiently to evaluate and select removal actions.

Dog Pens Area:

- The most prevalent contaminants detected are Ra-226, C-14, Sr-90, chlordane, hexavalent chromium, and nitrate.
- Chlordane, nitrate and C-14 appear to attenuate with depth.
- Ra-226, Sr-90, and hexavalent chromium do not clearly attenuate with depth.
- Contaminant nature and extent need to be better defined for evaluation and selection of removal actions.

Domestic Septic Systems:

- No significant contamination was detected near Septic Tank No. 1.

- Ra-226 was detected at approximately two times background in one sample near Septic Tank No. 3.
- Tritium was detected at approximately ten times background in one sample collected near Septic Tank No. 4.
- The exact location of Tank No. 5 and its associated leach line have not been determined.
- Mercury was detected at approximately ten times background in the sample near Tank No. 6.
- Nitrate was detected at approximately ten times background in one sample near Tank No. 7.
- Contaminant nature and extent are defined sufficiently for evaluation and selection of removal actions.

An EE/CA for the Southwest Trenches, Ra/Sr Treatment Systems, and Domestic Septic Systems is currently being prepared. Additional investigations will be conducted in the Dog Pens so that remedial decisions can be made. Investigations in the Western Dog Pens will be performed from October 1997 through January 1998 according to a recently submitted work plan (WA, 1997d). An EE/CA for the Western Dog Pens will be prepared in 1998. The Eastern Dog Pens will be further investigated and remediated in coordination with UC Davis' work on the underlying Landfill No. 2.

8. REFERENCES CITED

California Air Resources Board, 1984, California Surface Wind Climatology, June 1984.

Chemical Waste Management, Inc., 1992, Final Report for the Liquid and Sludge Removal Project at the LEHR Facility at the University of California at Davis.

Dames & Moore, 1991, CEQA Preliminary Environmental Study for Site Characterization Work at the Inactive UC Davis Landfill for the University of California, Davis.

Dames & Moore, 1993, Phase II Site Characterization Report, LEHR Environmental Restoration, University of California, Davis.

Dames & Moore, 1994a, Remedial Investigation, Feasibility Study and Environmental Assessment (RI/FS-EA) Work Plan, LEHR Environmental Restoration, University of California, Davis.

Dames & Moore, 1994b, Waste Management Plan, LEHR Environmental Restoration, University of California, Davis.

Dames & Moore, 1996, Assessment of Remedial Options - Ground Water Extraction and Treatment, LEHR, University of California, Davis, 30 p., February 1996.

Dames & Moore, 1997, Draft Revised Field Sampling Plan, UC Davis Additional Field Investigations LEHR/SCDS Environmental Restoration, Davis, California.

Department of Water Resources, 1978, Evaluation of ground water resources: Sacramento Valley, Bulletin 118-6, 136 p., February 1996.

Division of Oil and Gas (DOG), 1982, California Oil and Gas Fields, Northern California.

Environmental Management Operations, 1992, Environmental Monitoring and Surveillance Plan for the Laboratory for Energy-Related Health Research Environmental Restoration Project.

Gilbert, R.O., 1987, Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York.

Goldman, M., R.P. Anderson, E. Edgerley, Jr., and A.D. Ray, 1963, The Removal of Strontium-90 from Organic Waste, Health Physics, Pergamon Press, Vol. 9, p. 847-55.

Holzworth, G.C., 1972, Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States.

Hubbard, J.A., 1989, Texture Distribution of the Younger Alluvial Sediments and Parts of the Tehama Formation in Portions of Yolo, Solano, Colusa, and Sacramento Counties, California, Master's Thesis, University of California, Davis, 83 p.

IT Corporation, 1996, Limited Field Investigation Work Plan, LEHR, University of California, Davis.

IT Corporation, 1997, Final Work Plan for Data Gaps Investigation at the Laboratory for Energy-Related Health Research, June 1997.

Milton, J.S., and J.C. Arnold, 1990, Introduction to Probability and Statistics, Second Edition.

National Oceanic and Atmospheric Administration (NOAA), 1985, Local Climatological Data, 1985, Sacramento, California, ISSN 0198-0963, National Climatic Data Centers, Asheville, North Carolina.

National Climatic Data Centers (NCDC), 1992, National Oceanic and Atmospheric Administration Database, information obtained through the University of Nevada Desert Research Institute, Western Regional Climate Data Center (Davis 2 WSW station).

Norcal, 1994, Geophysical Investigation, LEHR, Davis, California, December 1994.

Pacific Northwest National Laboratory (PNNL), 1995a, Data Needs for Detailed Evaluation of Presumptive Remedial Actions at the Laboratory for Energy Related Health Research, University of California, Davis 141 pages, 25 figures, 28 tables, references.

PNNL, 1995b, Field Activity Plan, Laboratory for Energy Related Health Research, Davis, CA.

PNNL, 1996a, 1995 Annual Water Monitoring Report LEHR Environmental Restoration, University of California, Davis, 312 p.

PNNL, 1996b, Annual Environmental Monitoring Report for the LEHR Facility, Davis, California.

PNNL, 1996c, Ground Water Characterization, Field Activities for 1995-1996.

PNNL, 1996d, Baseline Investigation of Radionuclide and Non-Radionuclide contaminants in Ambient Air at LEHR in Davis, California, August 1995 – August 1996.

Rockwell International, 1984, Initial Assessment Survey of the DOE LEHR Site of University of California, Davis, Contract No. DE-AT03-845F15160.

Shacklette, H.T., and J.G. Boerngen, 1984, Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States.

United States. Department of Agriculture, Soil Conservation Service, 1977, Soil Survey of Solano County, California, 112 p.

United States Department of Energy (DOE), 1988, Environmental Survey Preliminary Report Laboratory for Energy - Related Health Research, Davis, California.

DOE, 1992, Environmental Assessment for the Decommissioning and Decontamination of Contaminated Facilities at the Laboratory for Energy-Related Health Research, University of California, Davis, September 1992.

DOE, 1997, Memorandum of Agreements Between the United States Department of Energy and the Regents of the University of California Regarding the Investigation and Remediation of the Laboratory for Energy-Related Health Research at The University of California, Davis.

United States Environmental Protection Agency (EPA), 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, Office of Emergency and Remedial Response, OSWER Directive 9355.3-01.

EPA, 1989, Risk Assessment Guidance for Superfund, Volumes I and II, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive 9285.701.

EPA, 1990, Guidance for Data Useability in Risk Assessment, October 1990, Office of Solid Waste and Emergency Response, EPA/540/G-90/008.

EPA, 1994a, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-94/012.

EPA, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA-540/R-94/013.

University of California, Davis (UC Davis), 1997, Comments on Draft Site Characterization Summary Report, letter from Brian Oatman to Robert Devany, January 21, 1997.

Wahler Associates, 1988, Ground water and Soils Investigation, U.C. Davis Research Facility, Davis, California.

Wahler Associates, 1989, Ground water and Soils Investigation, U.C. Davis LEHR Facility, Davis, California.

Weiss Associates (WA), 1997a, Draft Final Determination of Risk-Based Action Standards for DOE Areas, Volumes 1 and 2, August 1997.

WA, 1997b, Draft Final Site Characterization Report for DOE Areas, January 1997.

WA, 1997c, Final 1996 Annual Water Monitoring Report, Laboratory for Energy-Related Health Research, July 1997.

WA, 1997d, Final Work Plan for Western Dog Pens, Background, and Off-Site Investigations at the Laboratory for Energy-Related Health Research, October 3, 1997.

9. ACKNOWLEDGMENTS

The following LEHR Project personnel worked on the Final Site Characterization Summary Report for the LEHR Facility:

Name and Position	Responsibility
Michael Dresen LEHR Program Manager, WA	Senior guidance and review, and quality assurance
Robert Devany LEHR Project Manager, WA	Project management, guidance and review.
Salem Attiga, EMS	Report review
Bill Schaal, EMS	Report review
Mary Stallard Site Characterization Task Leader, WA	Technical guidance and review, and quality assurance
Joyce Adams Project Geologist, WA	Data interpretation, report writing
Steve Long Project Engineer, WA	Data interpretation, report writing
Jim Ponton Project Geologist, WA	Data interpretation, report writing
Delphine Prevost Staff Geologist, WA	Data interpretation, report writing
Malieka Bundy Database Technician, WA	Database management
Keith Commiskey Graphics, WA	Graphics
Elizabeth Carrier Administrative Assistant, WA	Word processing and report coordination
Angela L. Ledesma Administrative Assistant, WA	Word processing and report coordination
Craig Adams Graphics, WA	Graphics and report production
John Devine Production Personnel, WA	Graphics and report production

APPENDIX A

PREVIOUS HYDROGEOLOGIC DATA

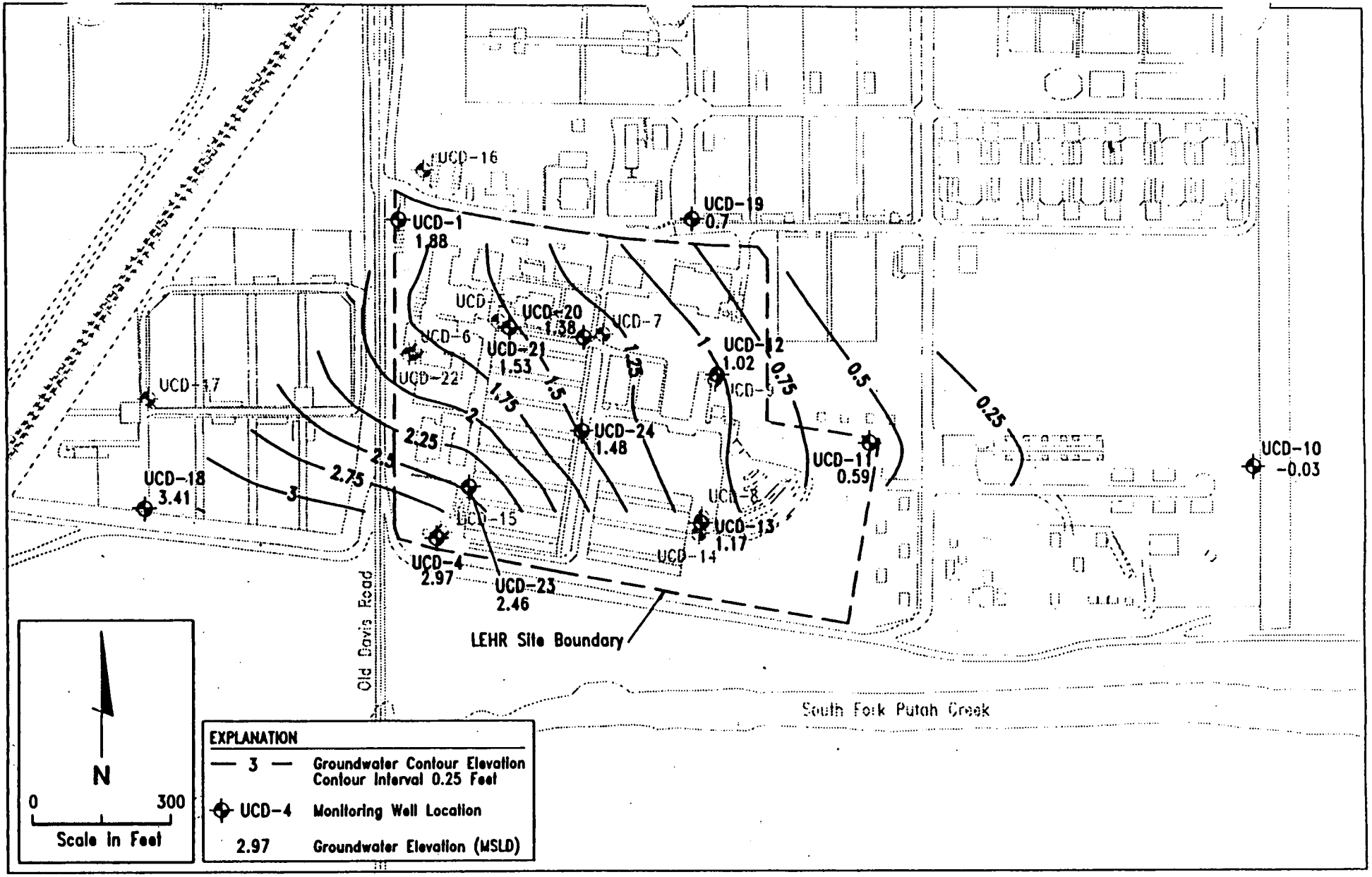
APPENDIX A – TABLES AND FIGURES

Select Tables and Figures from the RI/FS Work Plan for the LEHR Environmental Restoration (Dames & Moore, 1994a) and the 1996 Annual Ground Water Monitoring Report (WA, 1997c).

TABLE 2.1 SLUG TEST RESULTS — PHASE II CHARACTERIZATION

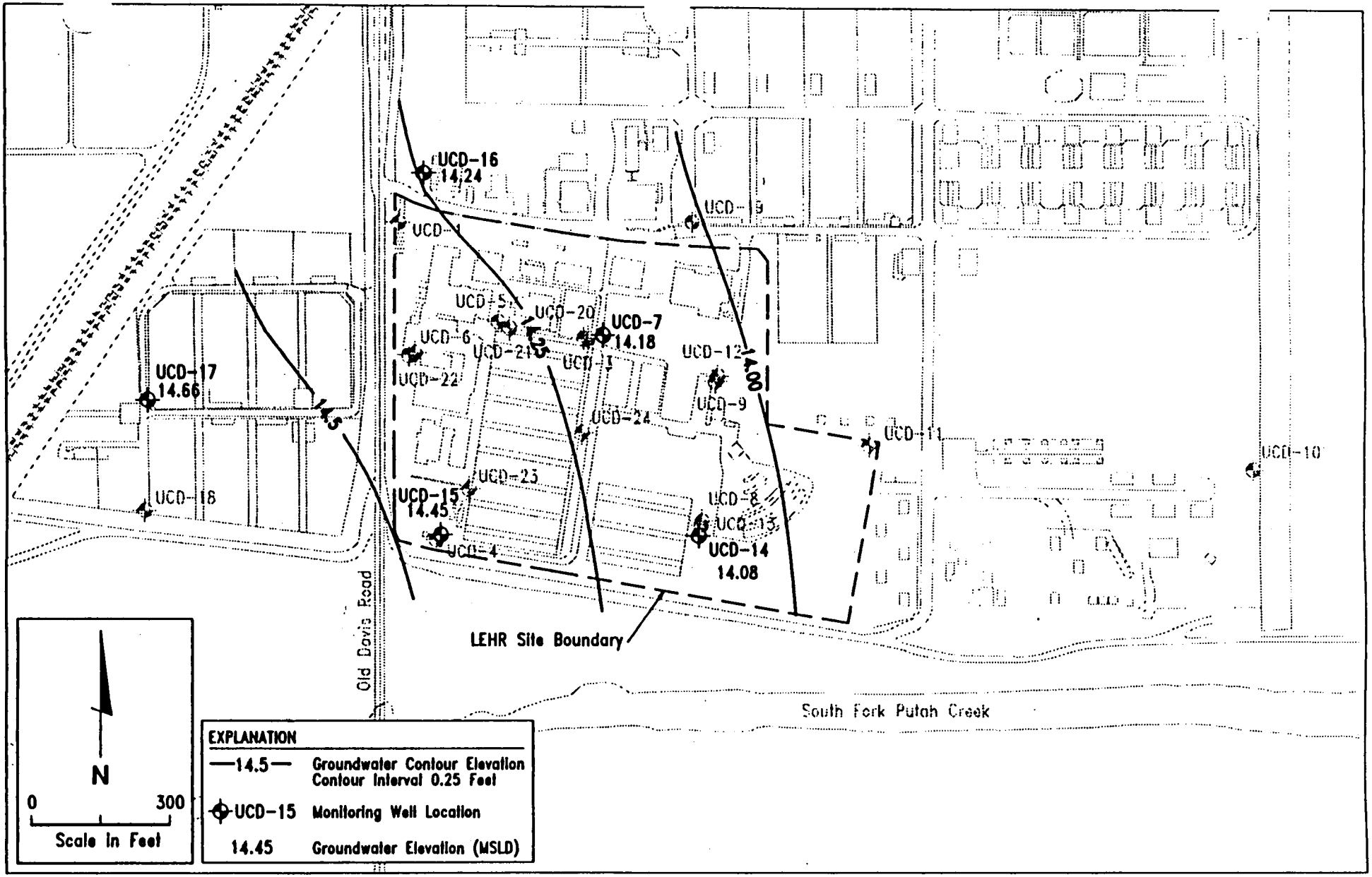
	Well	Hydraulic Conductivity (ft/sec)	Hydraulic Conductivity (cm/sec)
Phase II Site Characterization (Dames & Moore, 1993a)	UCD-10	1.8×10^{-5}	5.5×10^{-4}
	UCD-11	4.3×10^{-5}	1.3×10^{-3}
	UCD-17*	2.4×10^{-4}	7.3×10^{-3}
	UCD-18	8.3×10^{-5}	2.5×10^{-3}
	UCD-19	2.3×10^{-5}	7.0×10^{-4}
	UCD-20	1.8×10^{-5}	5.5×10^{-4}
	UCD-21	3.8×10^{-5}	1.2×10^{-3}
	UCD-22	3.0×10^{-5}	9.1×10^{-3}
	UCD-23	6.1×10^{-5}	1.9×10^{-5}
	UCD-24	3.6×10^{-5}	1.1×10^{-3}
Contaminant Pathway Analysis (Dames & Moore, 1990c)	UCD-4	2.1×10^{-5}	6.4×10^{-4}
	UCD-12	7.1×10^{-6}	2.2×10^{-4}
	UCD-13	1.2×10^{-5}	2.8×10^{-4}
	UCD-14*	3.3×10^{-4}	1.0×10^{-2}
	UCD-15*	3.4×10^{-4}	1.1×10^{-2}
	UCD-16*	2.7×10^{-4}	8.2×10^{-3}
	UCD-16*	2.7×10^{-4}	8.1×10^{-3}
	UCD-14CON	5.9×10^{-4}	1.8×10^{-2}
	UCD-15CON	6.7×10^{-4}	2.1×10^{-2}
	UCD-16CON	4.9×10^{-4}	1.5×10^{-2}
	UCD-16CON2	5.3×10^{-4}	1.6×10^{-2}

* Second HSU wells.



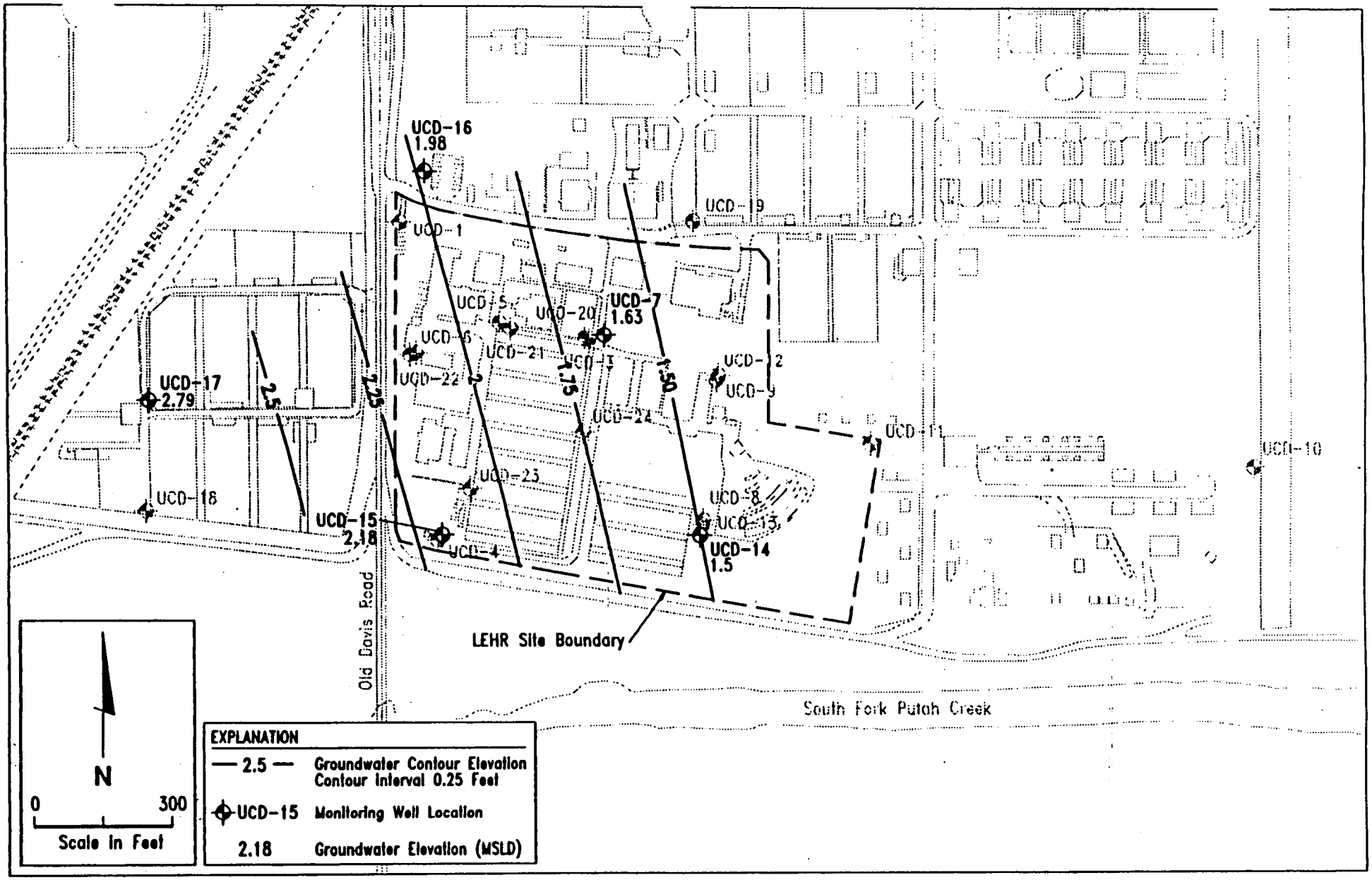
FIRST HSU GROUNDWATER CONTOUR ELEVATIONS AUGUST 27, 1993

RI/FS Work Plan
LEHR Environmental Restoration
Davis, California



SECOND HSU GROUNDWATER CONTOUR ELEVATIONS FEBRUARY 26, 1993

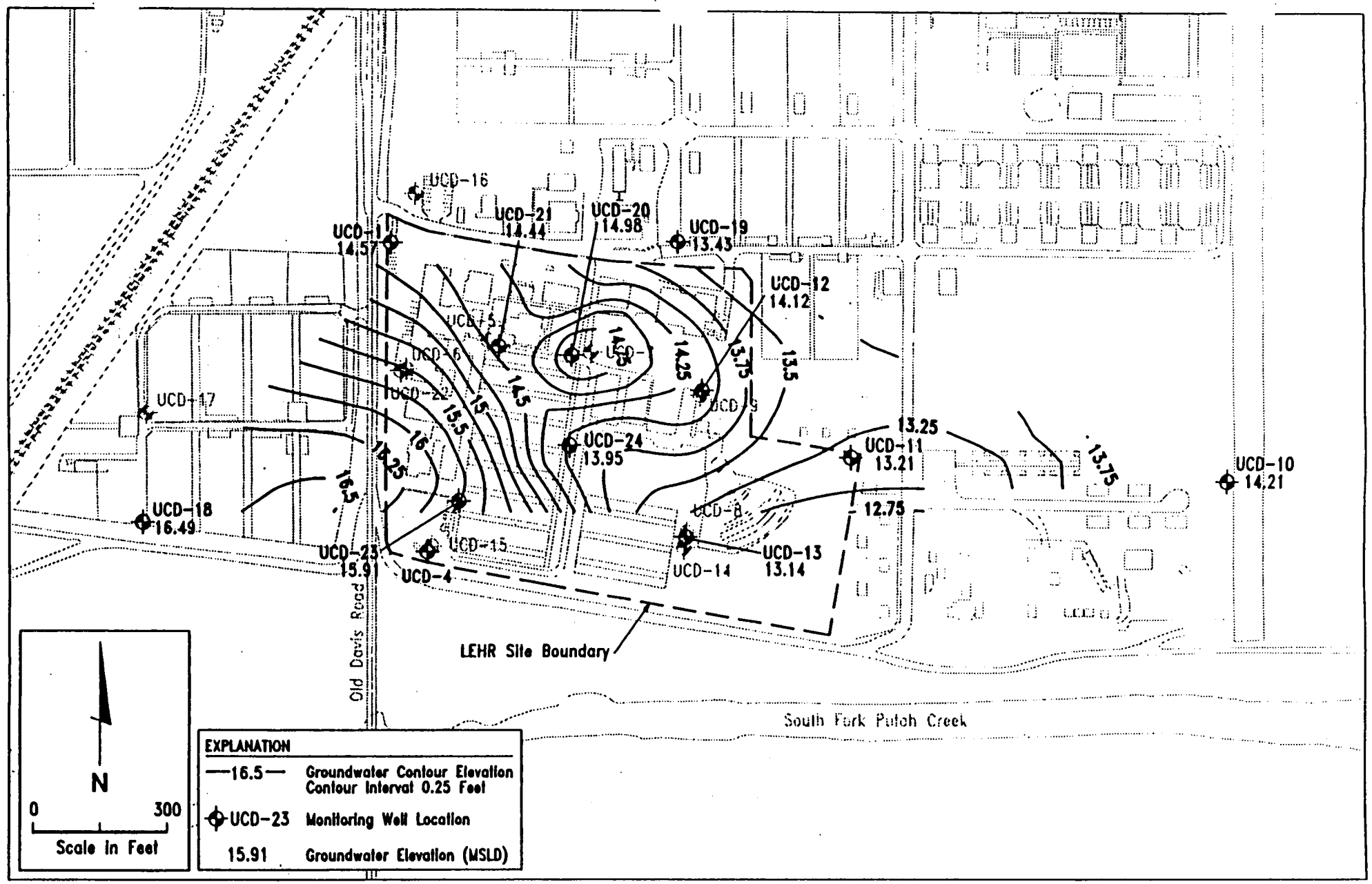
RI/FS Work Plan
LEHR Environmental Restoration
Davis, California



SECOND HSU GROUNDWATER CONTOUR ELEVATIONS AUGUST 27, 1993

RI/FS Work Plan
LEHR Environmental Restoration
Davis, California

FIGURE 2.9D

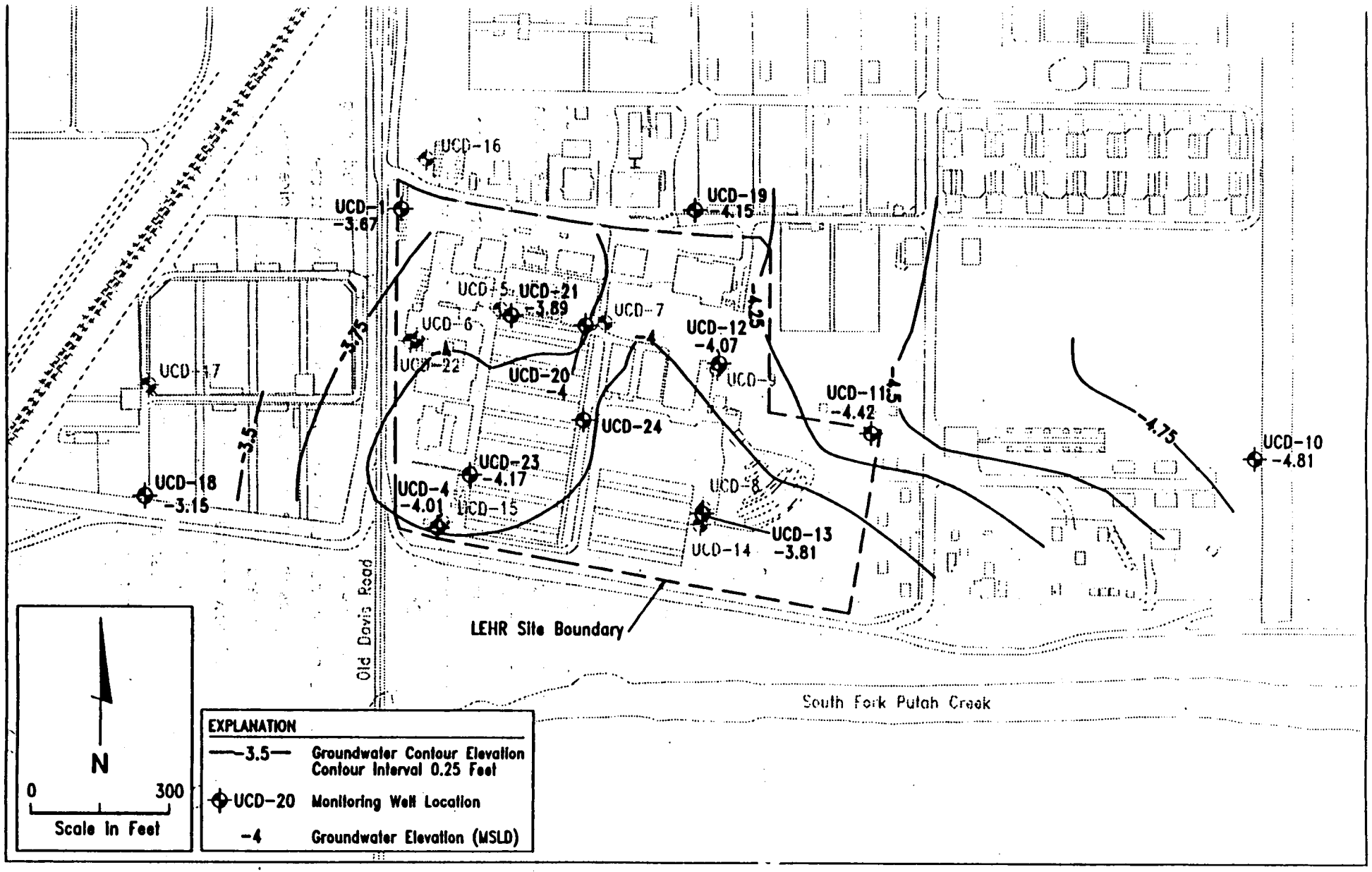


FIRST HSU GROUNDWATER CONTOUR ELEVATIONS FEBRUARY 26, 1993

RI/FS Work Plan
LEHR Environmental Restoration
Davis, California

10805-720-044 lxl 3/24/94 022693H1

FIGURE 2.8B

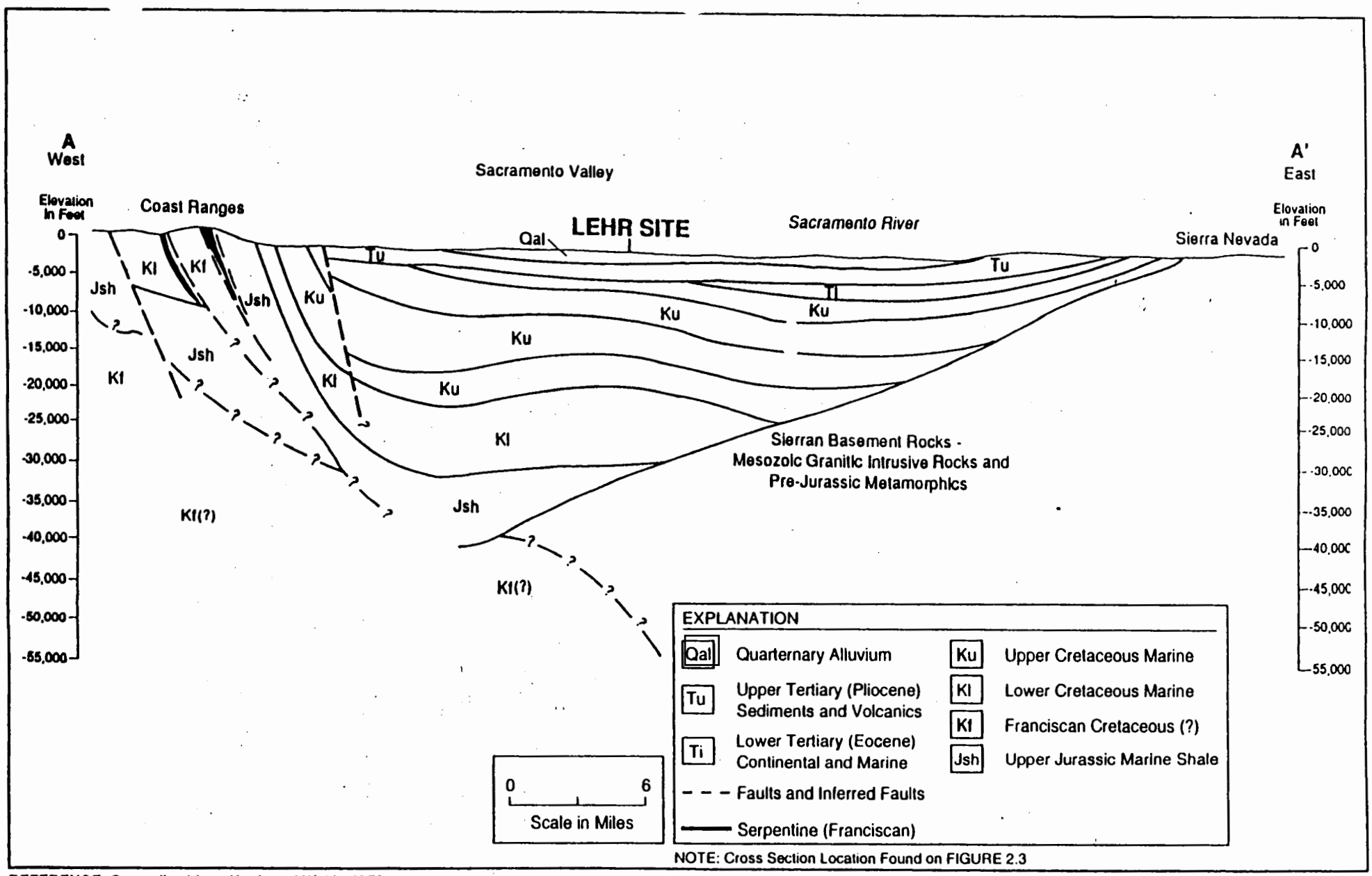


FIRST HSU GROUNDWATER CONTOUR ELEVATIONS NOVEMBER 11, 1992

RI/FS Work Plan
LEHR Environmental Restoration
Davis, California

FIGURE 2.8A

10805-720-0/ lxl 3/24/94 111792h1

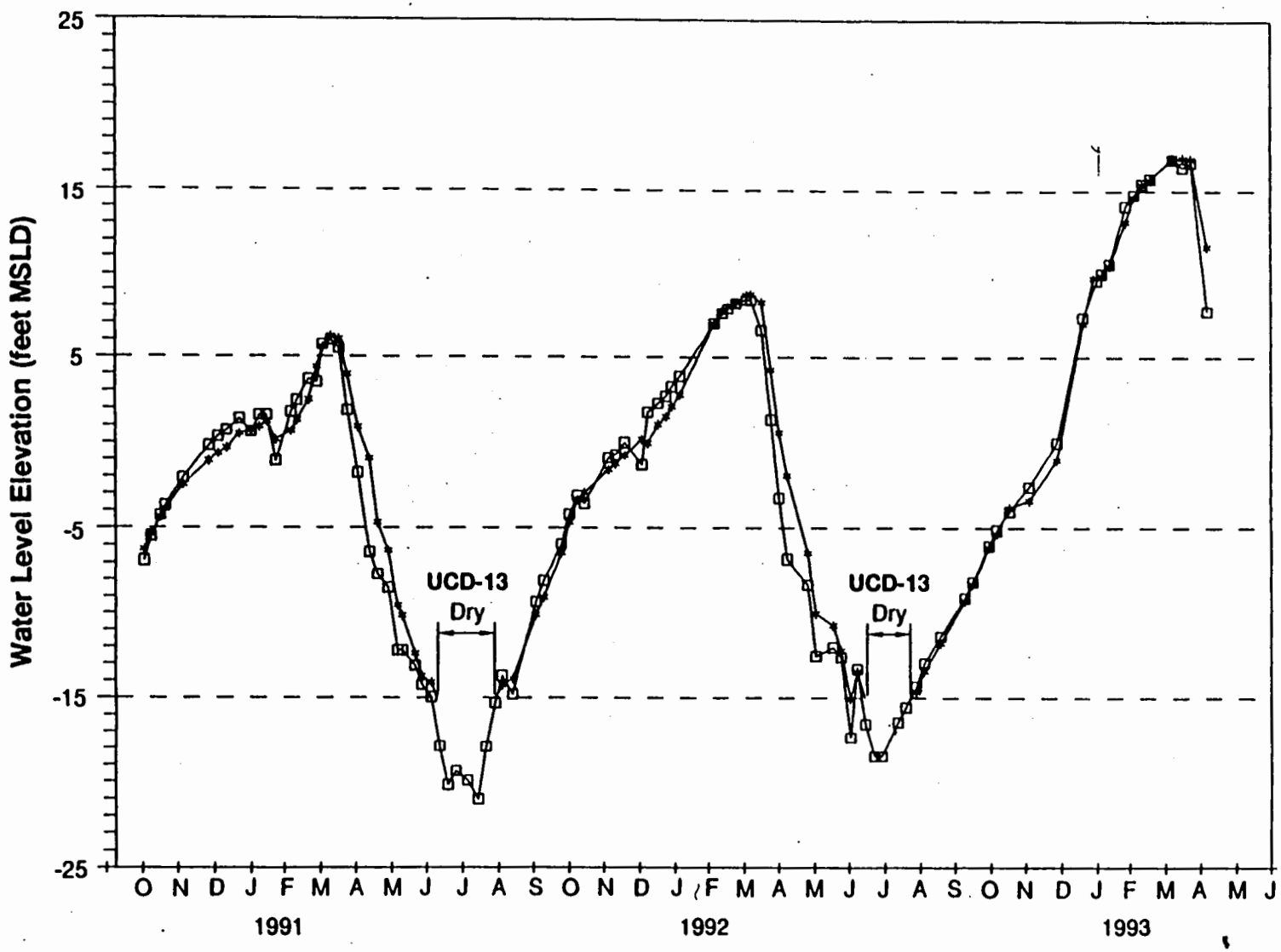


NOTE: Cross Section Location Found on FIGURE 2.3

REFERENCE: Generalized from Norris and Webb, 1976

REGIONAL GEOLOGIC CROSS SECTION A-A'

RI/FS Work Plan
LEHR Environmental Restoration
Davis, California



EXPLANATION

UCD-13 (First Hydrostratigraphic Unit)

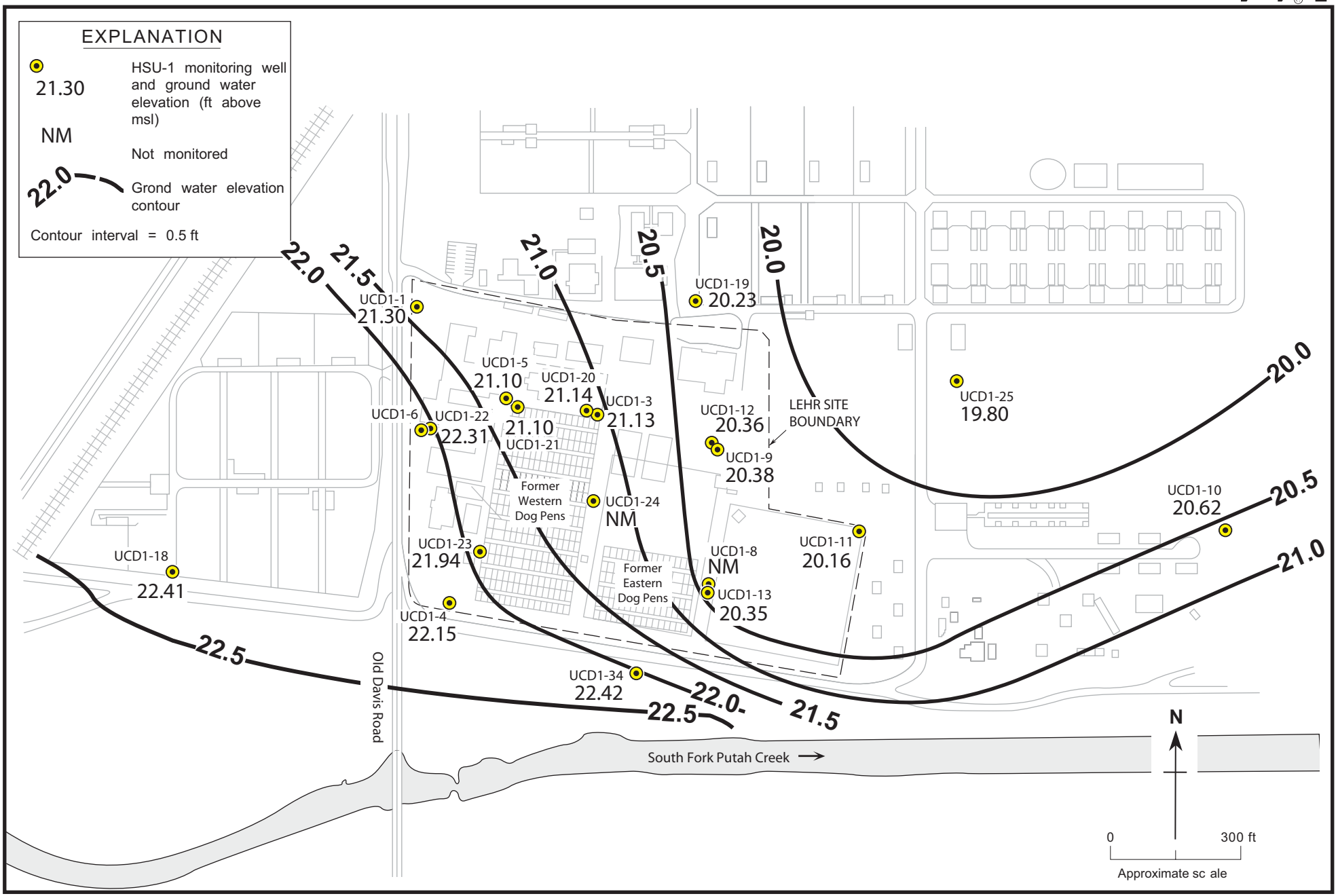
UCD-14 (Second Hydrostratigraphic Unit)

HYDROGRAPHS FOR UCD-13 AND UCD-14

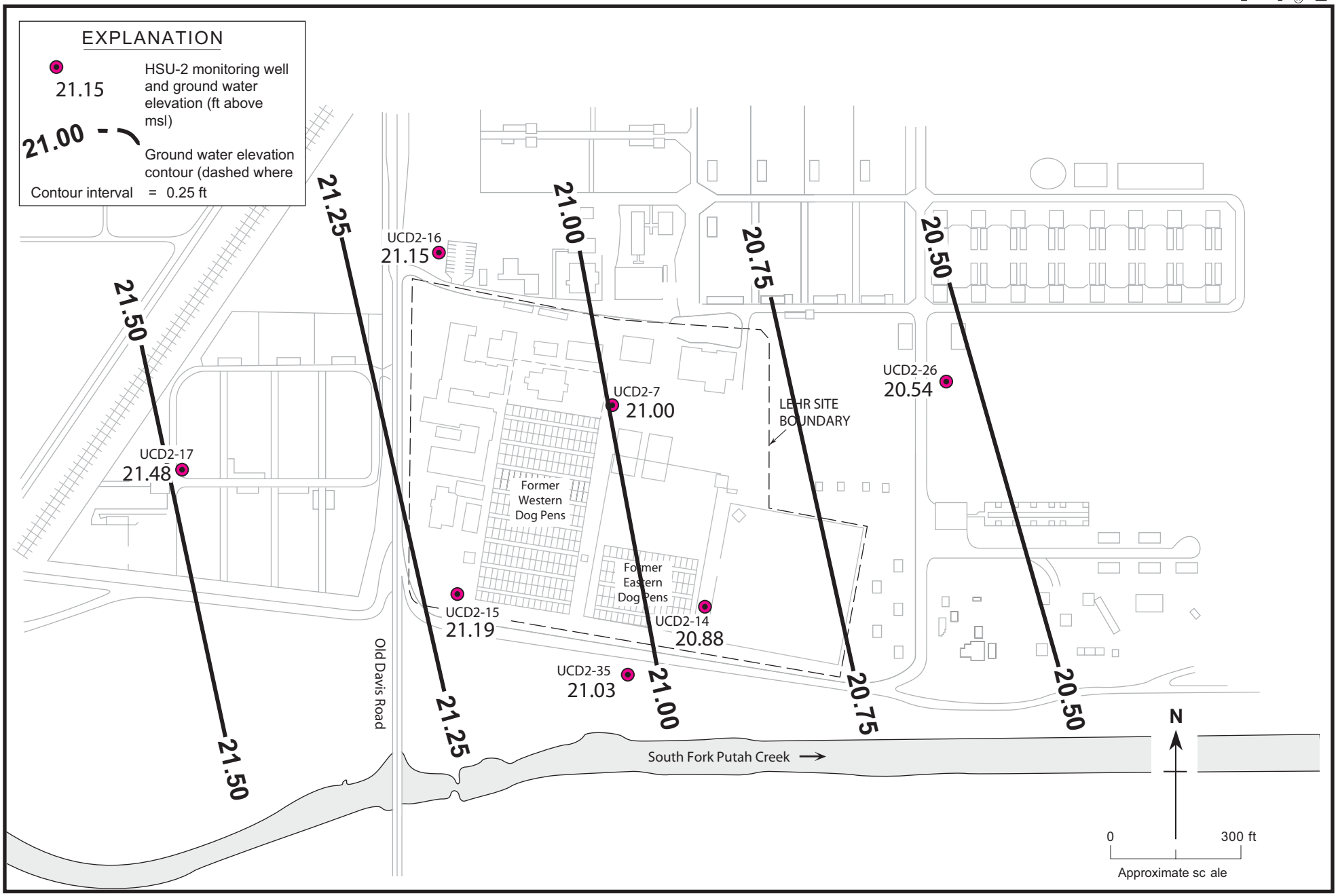
RI/FS Work Plan
LEHR Environmental Restoration
Davis, California

10805-720-044 sjr 2/23/94 5705W

FIGURE 2.7

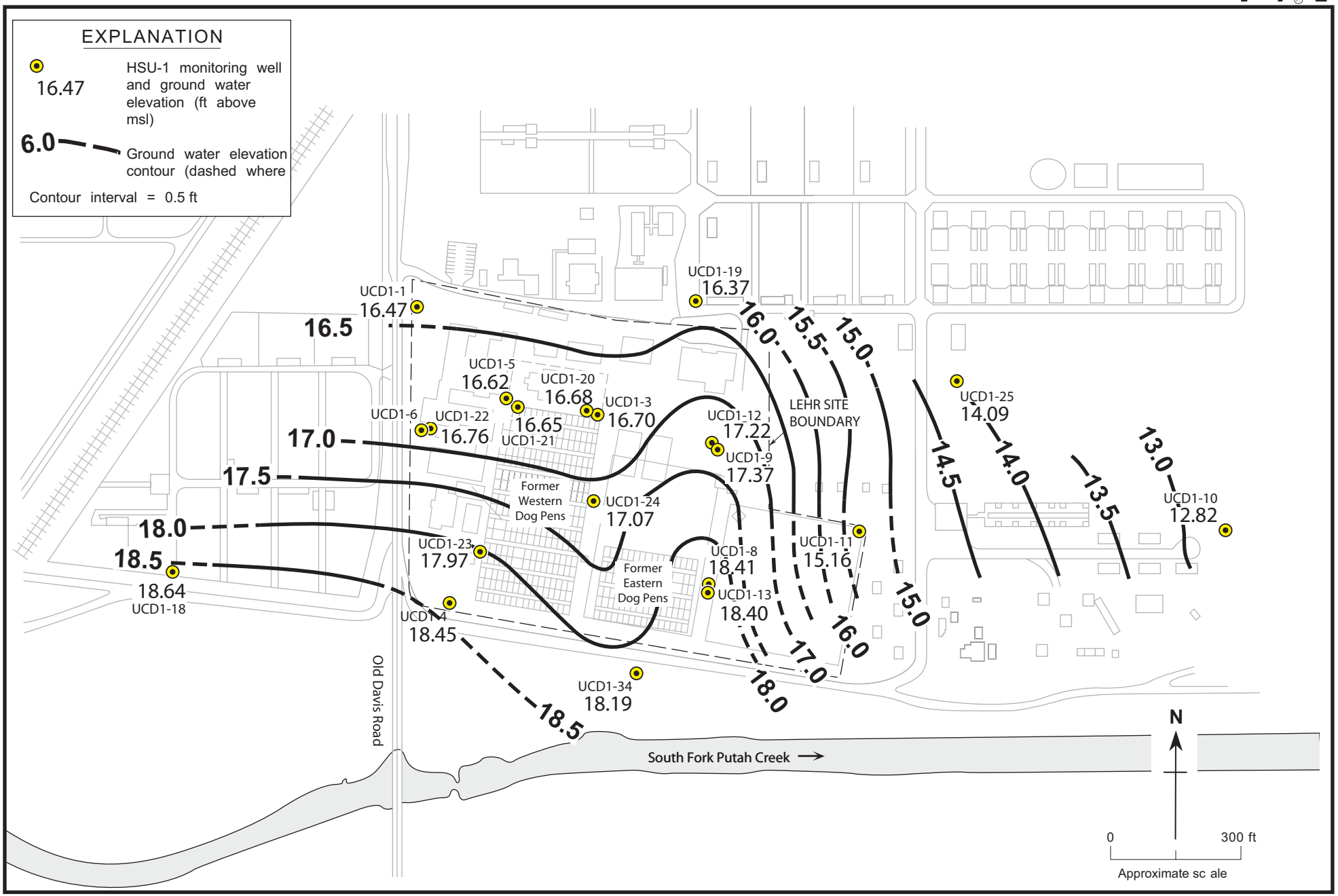


Ground Water Elevation Contours for HSU-1, February 12, 1996. (Data and contours from Pacific Northwest National Laboratory, May 1996).



Ground Water Elevation Contours for HSU-2, February 12, 1996. (Data and contours from Pacific Northwest National Laboratory, May 1996).

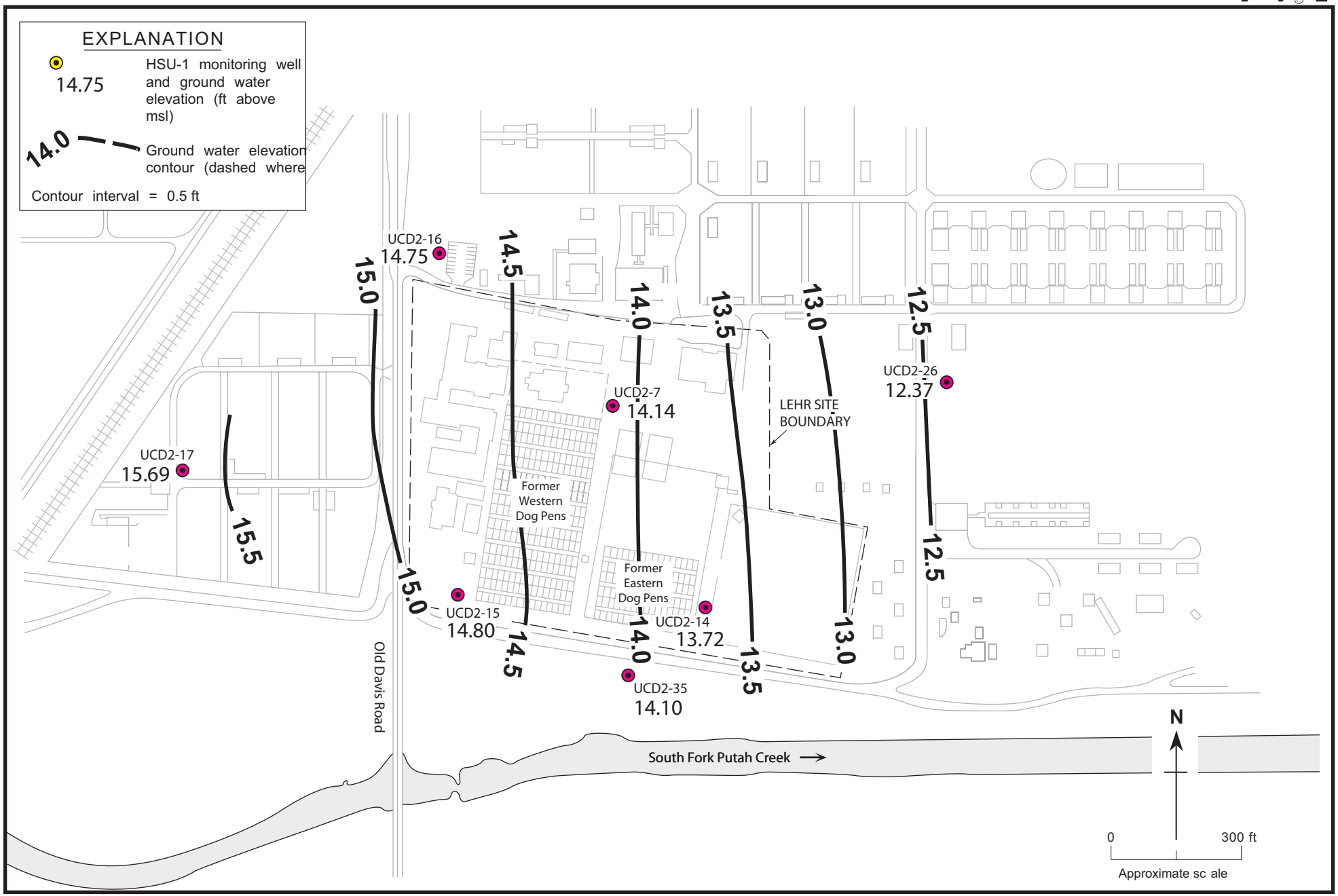
Weiss Associates



Ground Water Elevation Contours for HSU-1, May 13, 1996. (Data and contours from Pacific Northwest National Laboratory, August 1996).

LA1K-002.ai

03/12/97



Ground Water Elevation Contours for HSU-2, May 13, 1996. (Data and contours from Pacific Northwest National Laboratory, August 1996).

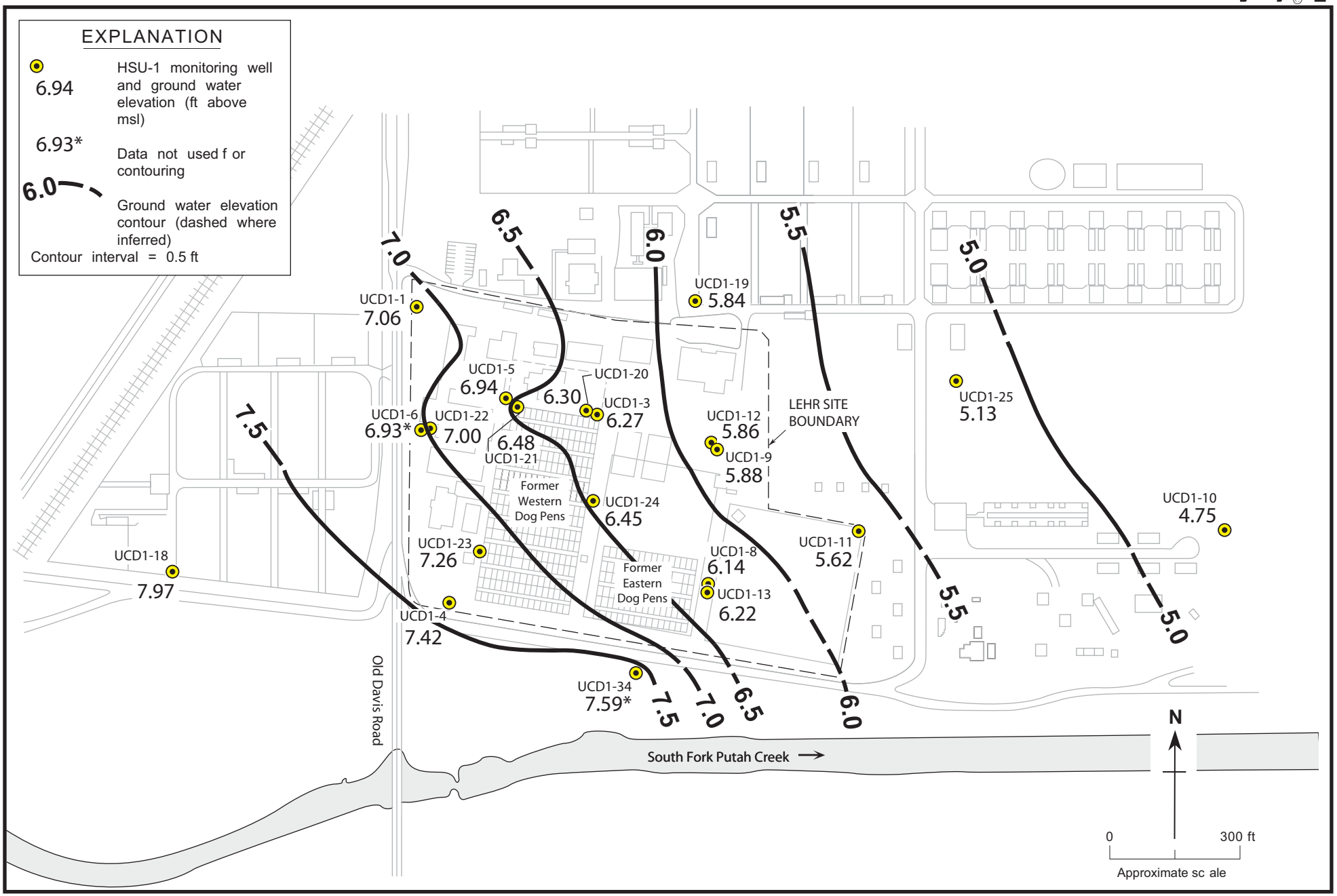


Figure 4-5. Ground Water Elevation Contours for HSU-1, August 27, 1996.

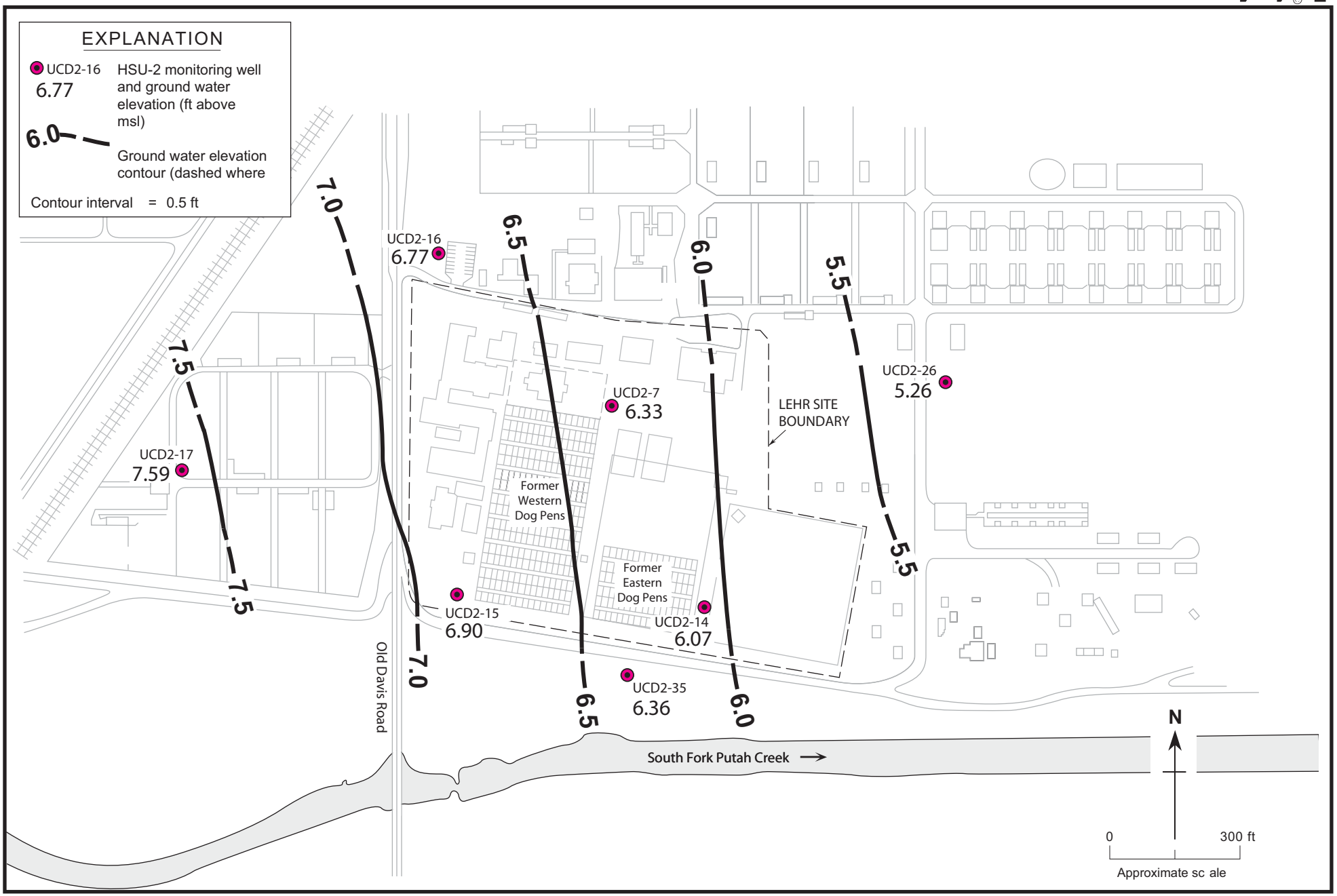
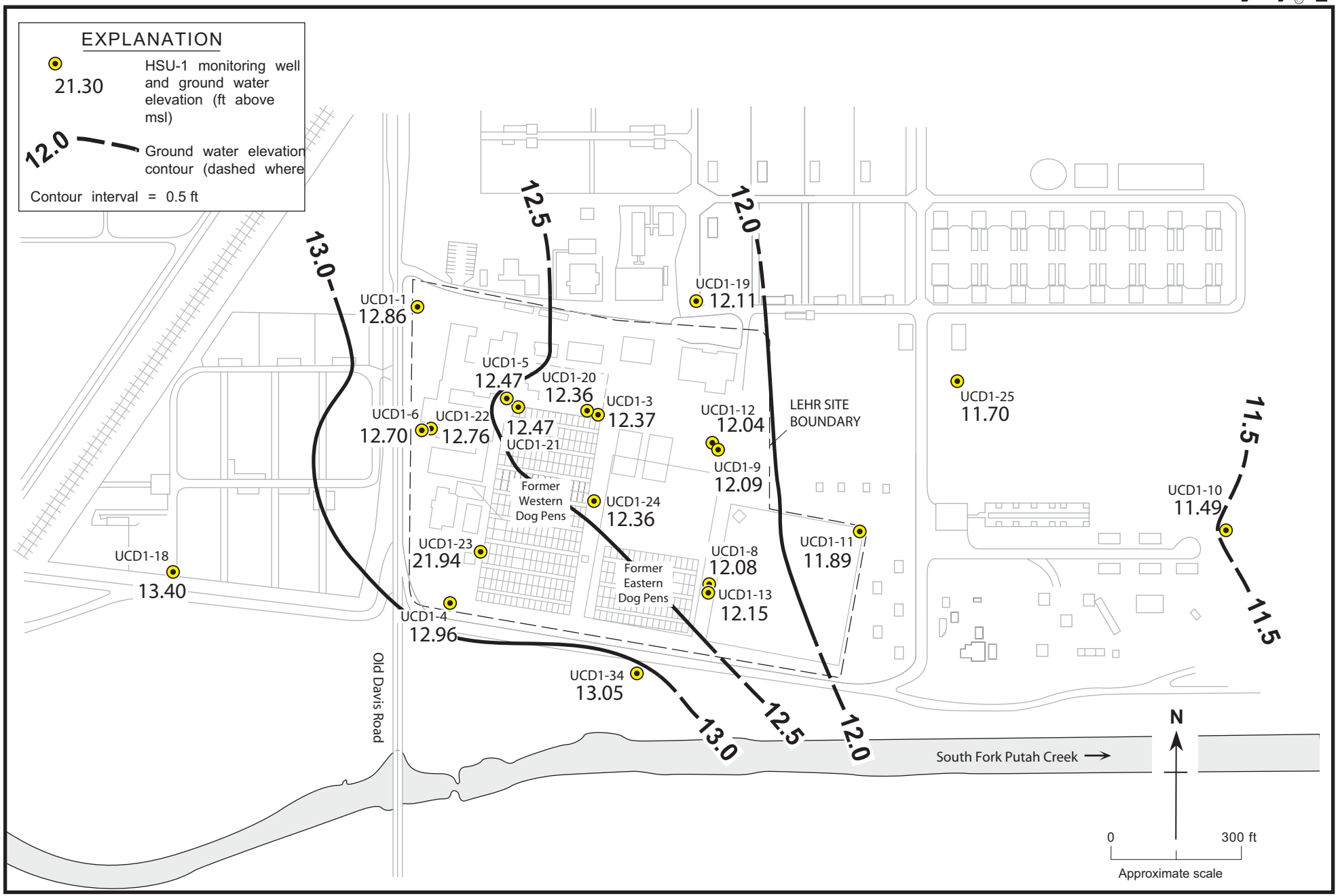
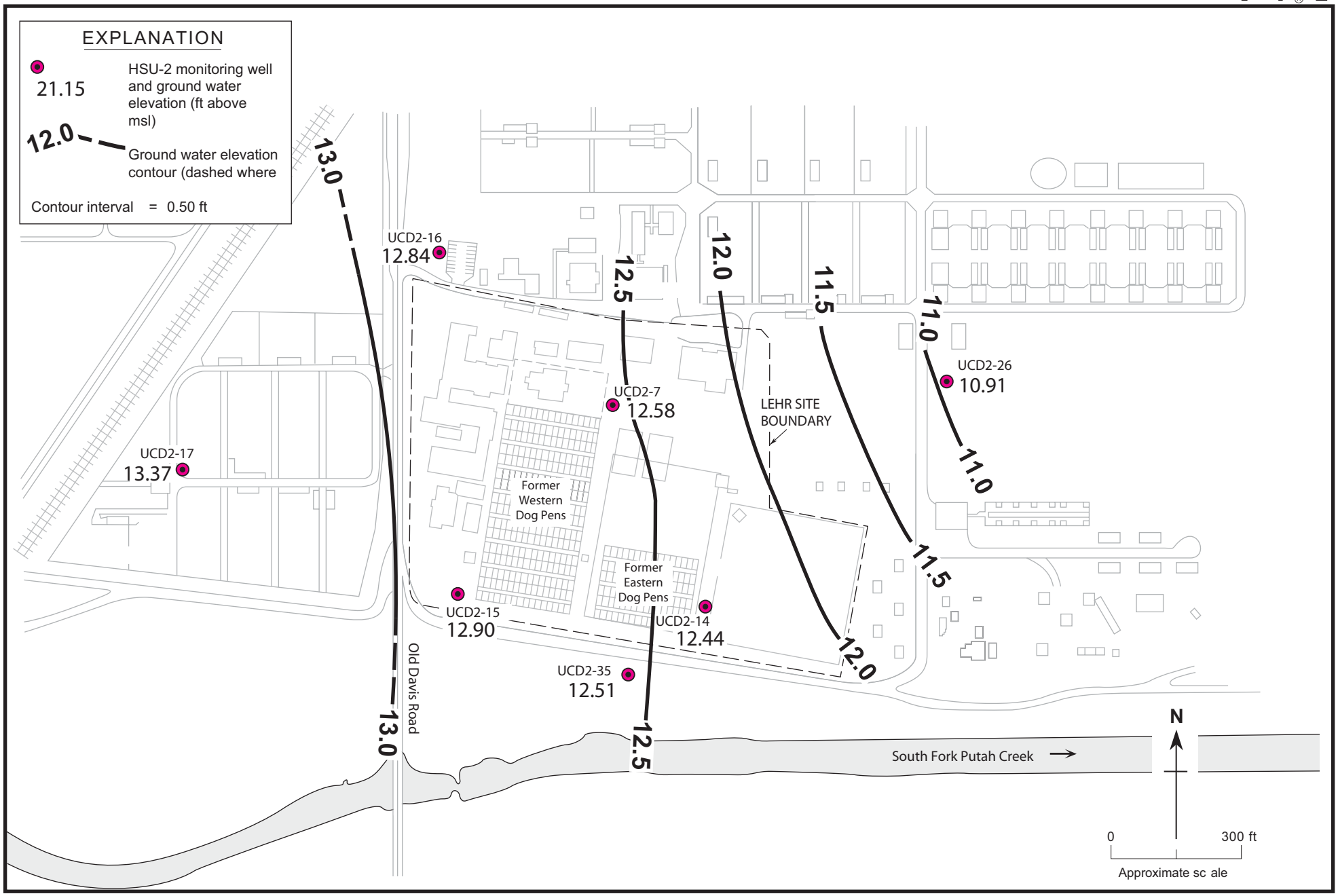


Figure 4-6. Ground Water Elevation Contours for HSU-2, August 27, 1996.



Groundwater Elevation Contours for HSU-1, November 12, 1996.



Groundwater Elevation Contours for HSU-2, November 12, 1996.

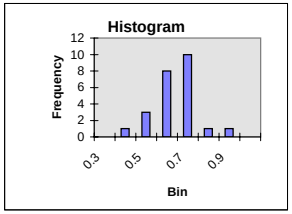
APPENDIX B

BACKGROUND SOIL DATA

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Actinium-228	BGL00001	SSBG0001	0.00	pCi/g	0.58	0.31
Actinium-228	BGL00001	SSBG0002	4.00	pCi/g	0.58	0.47
Actinium-228	BGL00001	SSBG0005	19.00	pCi/g	0.61	0.49
Actinium-228	BGL00001	SSBG0009	39.00	pCi/g	17.1	0.49
Actinium-228	BGL00002	SSBG0010	0.00	pCi/g	0.64	0.51
Actinium-228	BGL00002	SSBG0011	4.00	pCi/g	0.55	0.53
Actinium-228	BGL00002	SSBG0014	19.00	pCi/g	0.61	0.55
Actinium-228	BGL00002	SSBG0018	39.00	pCi/g	0.61	0.57
Actinium-228	BGL00003	SSBG0019	0.00	pCi/g	0.49	0.58
Actinium-228	BGL00003	SSBG0020	4.00	pCi/g	0.62	0.58
Actinium-228	BGL00003	SSBG0023	19.00	pCi/g	0.74	0.6
Actinium-228	BGL00003	SSBG0027	39.00	pCi/g	0.84	0.6
Actinium-228	BGL00004	SSBG0028	0.00	pCi/g	0.51	0.61
Actinium-228	BGL00004	SSBG0029	0.00	pCi/g	0.6	0.61
Actinium-228	BGL00004	SSBG0030	4.00	pCi/g	0.6	0.61
Actinium-228	BGL00004	SSBG0033	19.00	pCi/g	0.67	0.62
Actinium-228	BGL00004	SSBG0037	39.00	pCi/g	0.49	0.64
Actinium-228	BGL00005	SSBG0038	0.00	pCi/g	0.53	0.64
Actinium-228	BGL00005	SSBG0039	4.00	pCi/g	0.31	0.66
Actinium-228	BGL00005	SSBG0042	19.00	pCi/g	76.7	0.67
Actinium-228	BGL00005	SSBG0046	39.00	pCi/g	0.64	0.67
Actinium-228	BGL00006	SSBG0047	0.00	pCi/g	0.47	0.68
Actinium-228	BGL00006	SSBG0048	0.00	pCi/g	0.57	0.74
Actinium-228	BGL00006	SSBG0049	4.00	pCi/g	0.66	0.84
Actinium-228	BGL00006	SSBG0052	19.00	pCi/g	0.67	
Actinium-228	BGL00006	SSBG0056	39.00	pCi/g	0.68	

Bin	*Frequency*
0.3	0
0.4	1
0.5	3
0.6	8
0.7	10
0.8	1
0.9	1
More	0



SAMP_ID	CONC	
SSBG0009	17.1	Removed from calculation
SSBG0042	76.7	Data points are above 99% quantile

Mean (conc)	0.595
Std Dev (conc)	0.102702
Z	2.33
99th Quantile (pCi/g)	**0.83**

Mean (conc)	0.59458333
Std Dev (conc)	0.10270173
Z	1.645
95 th Quantile (pCi/g)	**0.76**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.69**
95% UL (pCi/g)=	**0.84**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.71**
80% UL (pCi/g)=	**0.81**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

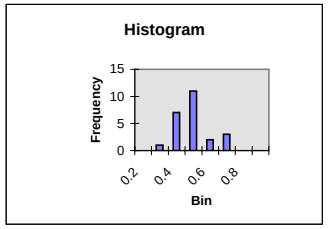
i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	0.31	0.096	0.31	0.4493	0.238129	**0.952753**
2	0.47	0.221	0.47	0.3098	0.083646	
3	0.49	0.240	0.49	0.2554	0.048526	**d**
4	0.49	0.240	0.49	0.2145	0.03861	**0.242596**
5	0.51	0.260	0.51	0.1807	0.028912	
6	0.53	0.281	0.53	0.1512	0.019656	
7	0.55	0.303	0.55	0.1245	0.011205	
8	0.57	0.325	0.57	0.0997	0.006979	
9	0.58	0.336	0.58	0.0764	0.003056	
10	0.58	0.336	0.58	0.0539	0.001617	
11	0.6	0.360	0.6	0.0321	0.000321	
12	0.6	0.360	0.6	0.0107	0.000107	
13	0.61	0.372	0.61			
14	0.61	0.372	0.61			
15	0.61	0.372	0.61			
16	0.62	0.384	0.62			
17	0.64	0.410	0.64			
18	0.64	0.410	0.64			
19	0.66	0.436	0.66			
20	0.67	0.449	0.67			
21	0.67	0.449	0.67			
22	0.68	0.462	0.68			
23	0.74	0.548	0.74			
24	0.84	0.706	0.84			
	$[SUM (x_i)]^2$	SUM (x_i^2)				
	203.633	8.727				

W is greater than 0.916.
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Bismuth-214	BGL00001	SSBG0001	0.00	pCi/g	0.426	0.28
Bismuth-214	BGL00001	SSBG0002	4.00	pCi/g	0.32	0.32
Bismuth-214	BGL00001	SSBG0005	19.00	pCi/g	0.44	0.351
Bismuth-214	BGL00001	SSBG0009	39.00	pCi/g	2.06	0.37
Bismuth-214	BGL00002	SSBG0010	0.00	pCi/g	0.49	0.37
Bismuth-214	BGL00002	SSBG0011	4.00	pCi/g	0.28	0.378
Bismuth-214	BGL00002	SSBG0014	19.00	pCi/g	0.61	0.378
Bismuth-214	BGL00002	SSBG0018	39.00	pCi/g	0.351	0.399
Bismuth-214	BGL00003	SSBG0019	0.00	pCi/g	0.445	0.413
Bismuth-214	BGL00003	SSBG0020	4.00	pCi/g	0.54	0.416
Bismuth-214	BGL00003	SSBG0023	19.00	pCi/g	0.67	0.426
Bismuth-214	BGL00003	SSBG0027	39.00	pCi/g	0.489	0.433
Bismuth-214	BGL00004	SSBG0028	0.00	pCi/g	0.49	0.44
Bismuth-214	BGL00004	SSBG0029	0.00	pCi/g	0.46	0.445
Bismuth-214	BGL00004	SSBG0030	4.00	pCi/g	0.446	0.446
Bismuth-214	BGL00004	SSBG0033	19.00	pCi/g	0.65	0.46
Bismuth-214	BGL00004	SSBG0037	39.00	pCi/g	0.433	0.489
Bismuth-214	BGL00005	SSBG0038	0.00	pCi/g	0.416	0.49
Bismuth-214	BGL00005	SSBG0039	4.00	pCi/g	0.413	0.49
Bismuth-214	BGL00005	SSBG0042	19.00	pCi/g	6.8	0.54
Bismuth-214	BGL00005	SSBG0046	39.00	pCi/g	0.378	0.58
Bismuth-214	BGL00006	SSBG0047	0.00	pCi/g	0.37	0.61
Bismuth-214	BGL00006	SSBG0048	0.00	pCi/g	0.37	0.65
Bismuth-214	BGL00006	SSBG0049	4.00	pCi/g	0.58	0.67
Bismuth-214	BGL00006	SSBG0052	19.00	pCi/g	0.378	
Bismuth-214	BGL00006	SSBG0056	39.00	pCi/g	0.399	

Bin	*Frequency*
0.2	0
0.3	1
0.4	7
0.5	11
0.6	2
0.7	3
0.8	0
More	0



SAMP_ID	CONC
SSBG0009	2.06
SSBG0042	6.8

Removed from calculation
Data points are above 99% quantile

Mean (conc)	0.452
Std Dev (conc)	0.099704
Z	2.33
99th Quantile (pCi/g)	**0.68**

Mean (conc)	0.45183333
Std Dev (conc)	0.0997042
Z	1.645
95 th Quantile (pCi/g)	**0.62**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.54**
95% UL (pCi/g)=	**0.69**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.57**
80% UL (pCi/g)=	**0.67**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

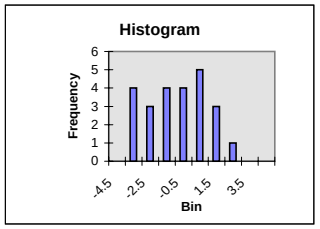
i	x_i	$(x_i)^2$	x_i		$a*(x_{n-i+1} - x_i)$	
(# Samples	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**
1	0.28	0.078	0.28	0.4493	0.175227	**0.946174**
2	0.32	0.102	0.32	0.3098	0.102234	
3	0.351	0.123	0.351	0.2554	0.066149	**d**
4	0.37	0.137	0.37	0.2145	0.045045	**0.228641**
5	0.37	0.137	0.37	0.1807	0.030719	
6	0.378	0.143	0.378	0.1512	0.016934	
7	0.378	0.143	0.378	0.1245	0.013944	
8	0.399	0.159	0.399	0.0997	0.008973	
9	0.413	0.171	0.413	0.0764	0.003591	
10	0.416	0.173	0.416	0.0539	0.001617	
11	0.426	0.181	0.426	0.0321	0.00061	
12	0.433	0.187	0.433	0.0107	7.49E-05	
13	0.44	0.194	0.44			
14	0.445	0.198	0.445			
15	0.446	0.199	0.446			
16	0.46	0.212	0.46			
17	0.489	0.239	0.489			
18	0.49	0.240	0.49			
19	0.49	0.240	0.49			
20	0.54	0.292	0.54			
21	0.58	0.336	0.58			
22	0.61	0.372	0.61			
23	0.65	0.423	0.65			
24	0.67	0.449	0.67			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	117.592	5.128				

W is greater than 0.91
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Carbon-14	BGL00001	SSBG0001	0.00	pCi/g	0.7	-4.2
Carbon-14	BGL00001	SSBG0002	4.00	pCi/g	-1	-4
Carbon-14	BGL00001	SSBG0005	19.00	pCi/g	0	-3.8
Carbon-14	BGL00001	SSBG0009	39.00	pCi/g	-0.9	-3.5
Carbon-14	BGL00002	SSBG0010	0.00	pCi/g	-4	-3.4
Carbon-14	BGL00002	SSBG0011	4.00	pCi/g	-3.4	-3.4
Carbon-14	BGL00002	SSBG0014	19.00	pCi/g	0	-3.3
Carbon-14	BGL00002	SSBG0018	39.00	pCi/g	0.4	-2.3
Carbon-14	BGL00003	SSBG0019	0.00	pCi/g	-1.6	-2.1
Carbon-14	BGL00003	SSBG0020	4.00	pCi/g	-3.5	-1.8
Carbon-14	BGL00003	SSBG0023	19.00	pCi/g	-3.3	-1.6
Carbon-14	BGL00003	SSBG0027	39.00	pCi/g	-2.3	-1.2
Carbon-14	BGL00004	SSBG0028	0.00	pCi/g	-1.8	-1
Carbon-14	BGL00004	SSBG0029	0.00	pCi/g	0.4	-0.9
Carbon-14	BGL00004	SSBG0030	4.00	pCi/g	0.4	-0.9
Carbon-14	BGL00004	SSBG0033	19.00	pCi/g	-4.2	0
Carbon-14	BGL00004	SSBG0037	39.00	pCi/g	-0.9	0
Carbon-14	BGL00005	SSBG0038	0.00	pCi/g	1.5	0.4
Carbon-14	BGL00005	SSBG0039	4.00	pCi/g	-3.8	0.4
Carbon-14	BGL00005	SSBG0042	19.00	pCi/g	0.7	0.4
Carbon-14	BGL00005	SSBG0046	39.00	pCi/g	-3.4	0.7
Carbon-14	BGL00006	SSBG0047	0.00	pCi/g	51.2	0.7
Carbon-14	BGL00006	SSBG0048	0.00	pCi/g	-2.1	1.5
Carbon-14	BGL00006	SSBG0049	4.00	pCi/g	2.2	2.2
Carbon-14	BGL00006	SSBG0052	19.00	pCi/g	-1.2	
Carbon-14	BGL00006	SSBG0056	39.00	pCi/g	39.7	

Bin	*Frequency*
-4.5	0
-3.5	4
-2.5	3
-1.5	4
-0.5	4
0.5	5
1.5	3
2.5	1
3.5	0
More	0



SAMP_ID	CONC
SSBG0047	51.2
SSBG0056	39.7

Removed from calculation
Data points are above 99% quant

Mean (conc)	-1.296
Std Dev (conc)	1.8899
Z	2.33
99th Quantile (pCi/g)	**3.11**

Mean (conc)	-1.29583333
Std Dev (conc)	1.88989974
Z	1.645
95 th Quantile (pCi/g)	**1.81**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.40**
95% UL (pCi/g)=	**3.22**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.87**
80% UL (pCi/g)=	**2.76**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

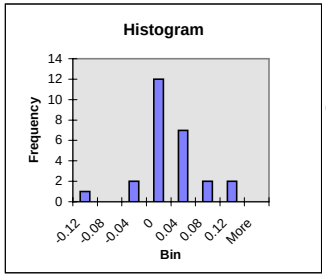
i	x_i	$(x_i)^2$	x_i		$a*(x_{n-i+1} - x_i)$	
(# Samples	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**
1	-4.2	17.640	-4.2	0.4493	2.87552	**0.94575**
2	-4	16.000	-4	0.3098	1.7039	
3	-3.8	14.440	-3.8	0.2554	1.1493	**d**
4	-3.5	12.250	-3.5	0.2145	0.9009	**82.14958**
5	-3.4	11.560	-3.4	0.1807	0.68666	
6	-3.4	11.560	-3.4	0.1512	0.57456	
7	-3.3	10.890	-3.3	0.1245	0.46065	
8	-2.3	5.290	-2.3	0.0997	0.22931	
9	-2.1	4.410	-2.1	0.0764	0.16044	
10	-1.8	3.240	-1.8	0.0539	0.04851	
11	-1.6	2.560	-1.6	0.0321	0.02247	
12	-1.2	1.440	-1.2	0.0107	0.00214	
13	-1	1.000	-1			
14	-0.9	0.810	-0.9			
15	-0.9	0.810	-0.9			
16	0	0.000	0			
17	0	0.000	0			
18	0.4	0.160	0.4			
19	0.4	0.160	0.4			
20	0.4	0.160	0.4			
21	0.7	0.490	0.7			
22	0.7	0.490	0.7			
23	1.5	2.250	1.5			
24	2.2	4.840	2.2			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	967.210	122.450				

W is greater than 0.91
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Cesium-137	BGL00001	SSBG0001	0.00	pCi/g	0.013	-0.12
Cesium-137	BGL00001	SSBG0002	4.00	pCi/g	0.007	-0.063
Cesium-137	BGL00001	SSBG0005	19.00	pCi/g	-0.019	-0.045
Cesium-137	BGL00001	SSBG0009	39.00	pCi/g	-0.063	-0.036
Cesium-137	BGL00002	SSBG0010	0.00	pCi/g	0.084	-0.026
Cesium-137	BGL00002	SSBG0011	4.00	pCi/g	-0.036	-0.021
Cesium-137	BGL00002	SSBG0014	19.00	pCi/g	0.012	-0.02
Cesium-137	BGL00002	SSBG0018	39.00	pCi/g	0.013	-0.019
Cesium-137	BGL00003	SSBG0019	0.00	pCi/g	0.039	-0.017
Cesium-137	BGL00003	SSBG0020	4.00	pCi/g	0.023	-0.015
Cesium-137	BGL00003	SSBG0023	19.00	pCi/g	-0.009	-0.015
Cesium-137	BGL00003	SSBG0027	39.00	pCi/g	-0.021	-0.011
Cesium-137	BGL00004	SSBG0028	0.00	pCi/g	-0.026	-0.009
Cesium-137	BGL00004	SSBG0029	0.00	pCi/g	-0.017	-0.003
Cesium-137	BGL00004	SSBG0030	4.00	pCi/g	-0.011	-0.001
Cesium-137	BGL00004	SSBG0033	19.00	pCi/g	-0.045	0.005
Cesium-137	BGL00004	SSBG0037	39.00	pCi/g	-0.02	0.007
Cesium-137	BGL00005	SSBG0038	0.00	pCi/g	0.106	0.012
Cesium-137	BGL00005	SSBG0039	4.00	pCi/g	-0.001	0.013
Cesium-137	BGL00005	SSBG0042	19.00	pCi/g	-0.12	0.013
Cesium-137	BGL00005	SSBG0046	39.00	pCi/g	-0.015	0.023
Cesium-137	BGL00006	SSBG0047	0.00	pCi/g	0.062	0.039
Cesium-137	BGL00006	SSBG0048	0.00	pCi/g	0.056	0.056
Cesium-137	BGL00006	SSBG0049	4.00	pCi/g	-0.003	0.062
Cesium-137	BGL00006	SSBG0052	19.00	pCi/g	0.005	0.084
Cesium-137	BGL00006	SSBG0056	39.00	pCi/g	-0.015	0.106

Bin	*Frequency*
-0.12	1
-0.08	0
-0.04	2
0	12
0.04	7
0.08	2
0.12	2
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	-0.12	0.014	-0.12	0.4407	0.099598	**0.950551**
2	-0.063	0.004	-0.063	0.3043	0.044732	
3	-0.045	0.002	-0.045	0.2533	0.027103	**d**
4	-0.036	0.001	-0.036	0.2151	0.019789	**0.052397**
5	-0.026	0.001	-0.026	0.1836	0.011934	
6	-0.021	0.000	-0.021	0.1563	0.006877	
7	-0.02	0.000	-0.02	0.1316	0.004343	
8	-0.019	0.000	-0.019	0.1089	0.003485	
9	-0.017	0.000	-0.017	0.0876	0.00254	
10	-0.015	0.000	-0.015	0.0672	0.001478	
11	-0.015	0.000	-0.015	0.0476	0.000952	
12	-0.011	0.000	-0.011	0.0284	0.000284	
13	-0.009	0.000	-0.009	0.0094	5.64E-05	
14	-0.003	0.000	-0.003			
15	-0.001	0.000	-0.001			
16	0.005	0.000	0.005			
17	0.007	0.000	0.007			
18	0.012	0.000	0.012			
19	0.013	0.000	0.013			
20	0.013	0.000	0.013			
21	0.023	0.001	0.023			
22	0.039	0.002	0.039			
23	0.056	0.003	0.056			
24	0.062	0.004	0.062			
25	0.084	0.007	0.084			
26	0.106	0.011	0.106			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	0.000	0.052				

W is greater than 0.92
Cannot rule out
normal distribution.

Mean (conc)	-3.84615E-05
Std Dev (conc)	0.045780765
Z	1.645
95 th Quantile (pCi/g)	**0.075**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.043**
95% UL (pCi/g)=	**0.11**

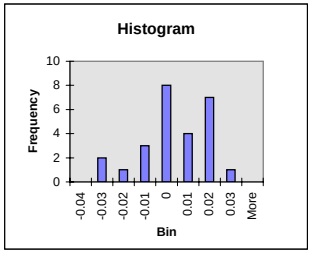
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.053**
80% UL (pCi/g)=	**0.10**

Cobalt-60

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Cobalt-60	BGL00001	SSBG0001	0.00	pCi/g	-0.002	-0.034
Cobalt-60	BGL00001	SSBG0002	4.00	pCi/g	0.005	-0.031
Cobalt-60	BGL00001	SSBG0005	19.00	pCi/g	0.011	-0.021
Cobalt-60	BGL00001	SSBG0009	39.00	pCi/g	-0.031	-0.014
Cobalt-60	BGL00002	SSBG0010	0.00	pCi/g	-0.021	-0.011
Cobalt-60	BGL00002	SSBG0011	4.00	pCi/g	0.011	-0.01
Cobalt-60	BGL00002	SSBG0014	19.00	pCi/g	-0.008	-0.009
Cobalt-60	BGL00002	SSBG0018	39.00	pCi/g	-0.014	-0.008
Cobalt-60	BGL00003	SSBG0019	0.00	pCi/g	-0.01	-0.007
Cobalt-60	BGL00003	SSBG0020	4.00	pCi/g	0.002	-0.006
Cobalt-60	BGL00003	SSBG0023	19.00	pCi/g	-0.01	-0.002
Cobalt-60	BGL00003	SSBG0027	39.00	pCi/g	0.013	-0.0019
Cobalt-60	BGL00004	SSBG0028	0.00	pCi/g	-0.009	-0.0018
Cobalt-60	BGL00004	SSBG0029	0.00	pCi/g	0.007	0
Cobalt-60	BGL00004	SSBG0030	4.00	pCi/g	-0.007	0.0016
Cobalt-60	BGL00004	SSBG0033	19.00	pCi/g	-0.011	0.002
Cobalt-60	BGL00004	SSBG0037	39.00	pCi/g	0.0016	0.005
Cobalt-60	BGL00005	SSBG0038	0.00	pCi/g	0	0.007
Cobalt-60	BGL00005	SSBG0039	4.00	pCi/g	0.0265	0.011
Cobalt-60	BGL00005	SSBG0042	19.00	pCi/g	-0.034	0.011
Cobalt-60	BGL00005	SSBG0046	39.00	pCi/g	-0.0018	0.012
Cobalt-60	BGL00006	SSBG0047	0.00	pCi/g	0.019	0.012
Cobalt-60	BGL00006	SSBG0048	0.00	pCi/g	0.016	0.013
Cobalt-60	BGL00006	SSBG0049	4.00	pCi/g	0.012	0.016
Cobalt-60	BGL00006	SSBG0052	19.00	pCi/g	0.012	0.019
Cobalt-60	BGL00006	SSBG0056	39.00	pCi/g	-0.0019	0.0265

Bin	*Frequency*
-0.04	0
-0.03	2
-0.02	1
-0.01	3
0	8
0.01	4
0.02	7
0.03	1
More	0



Mean (conc)	-0.0007923
Std Dev (conc)	0.01455794
Z	1.645
95 th Quantile (pCi/g)	**0.023**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.013**
95% UL (pCi/g)=	**0.034**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.016**
80% UL (pCi/g)=	**0.030**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

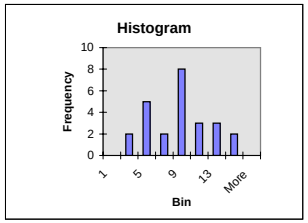
i (# Samples)	x_i CONC	$(x_i)^2$ $(Conc)^2$	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	-0.034	0.001	-0.034	0.4407	0.026662	**0.970066**
2	-0.031	0.001	-0.031	0.3043	0.015215	
3	-0.021	0.000	-0.021	0.2533	0.009372	**d**
4	-0.014	0.000	-0.014	0.2151	0.005808	**0.005298**
5	-0.011	0.000	-0.011	0.1836	0.004223	
6	-0.01	0.000	-0.01	0.1563	0.003439	
7	-0.009	0.000	-0.009	0.1316	0.002632	
8	-0.008	0.000	-0.008	0.1089	0.002069	
9	-0.007	0.000	-0.007	0.0876	0.001226	
10	-0.006	0.000	-0.006	0.0672	0.000739	
11	-0.002	0.000	-0.002	0.0476	0.00019	
12	-0.0019	0.000	-0.0019	0.0284	9.94E-05	
13	-0.0018	0.000	-0.0018	0.0094	1.69E-05	
14	0	0.000	0			
15	0.0016	0.000	0.0016			
16	0.002	0.000	0.002			
17	0.005	0.000	0.005			
18	0.007	0.000	0.007			
19	0.011	0.000	0.011			
20	0.011	0.000	0.011			
21	0.012	0.000	0.012			
22	0.012	0.000	0.012			
23	0.013	0.000	0.013			
24	0.016	0.000	0.016			
25	0.019	0.000	0.019			
26	0.0265	0.001	0.0265			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	0.000	0.005				

W is greater than 0.920.
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Gross Alpha	BGL00001	SSBG0001	0.00	pCi/g	4.3	2.7
Gross Alpha	BGL00001	SSBG0002	4.00	pCi/g	24.5	2.9
Gross Alpha	BGL00001	SSBG0005	19.00	pCi/g	13.7	3.4
Gross Alpha	BGL00001	SSBG0009	39.00	pCi/g	9.5	4.3
Gross Alpha	BGL00002	SSBG0010	0.00	pCi/g	4.7	4.5
Gross Alpha	BGL00002	SSBG0011	4.00	pCi/g	6.9	4.7
Gross Alpha	BGL00002	SSBG0014	19.00	pCi/g	11.6	5
Gross Alpha	BGL00002	SSBG0018	39.00	pCi/g	8.1	5.3
Gross Alpha	BGL00003	SSBG0019	0.00	pCi/g	2.9	6.9
Gross Alpha	BGL00003	SSBG0020	4.00	pCi/g	8.6	7.9
Gross Alpha	BGL00003	SSBG0023	19.00	pCi/g	8.3	7.9
Gross Alpha	BGL00003	SSBG0027	39.00	pCi/g	13.3	8.1
Gross Alpha	BGL00004	SSBG0028	0.00	pCi/g	7.9	8.2
Gross Alpha	BGL00004	SSBG0029	0.00	pCi/g	5	8.3
Gross Alpha	BGL00004	SSBG0030	4.00	pCi/g	9.9	8.6
Gross Alpha	BGL00004	SSBG0033	19.00	pCi/g	5.3	9
Gross Alpha	BGL00004	SSBG0037	39.00	pCi/g	13	9
Gross Alpha	BGL00005	SSBG0038	0.00	pCi/g	9	9.5
Gross Alpha	BGL00005	SSBG0039	4.00	pCi/g	3.4	9.5
Gross Alpha	BGL00005	SSBG0042	19.00	pCi/g	4.5	9.9
Gross Alpha	BGL00005	SSBG0046	39.00	pCi/g	9.5	11.6
Gross Alpha	BGL00006	SSBG0047	0.00	pCi/g	7.9	12.2
Gross Alpha	BGL00006	SSBG0048	0.00	pCi/g	2.7	13
Gross Alpha	BGL00006	SSBG0049	4.00	pCi/g	12.2	13.3
Gross Alpha	BGL00006	SSBG0052	19.00	pCi/g	9	13.7
Gross Alpha	BGL00006	SSBG0056	39.00	pCi/g	8.2	

Bin	*Frequency*
1	0
3	2
5	5
7	2
9	8
11	3
13	3
15	2
More	0



Samp ID	CONC	
SSBG0002	24.5	Removed from calculation Data point is above 99th quantile

Mean (conc)	7.976
Std Dev (conc)	3.268445
Z	2.33
99th Quantile (pCi/g)	**15.6**

Mean (conc)	7.976
Std Dev (conc)	3.26844509
Z	1.645
95 th Quantile (pCi/g)	**13.4**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.372
95% LL (pCi/g) =	**10.98**
95% UL (pCi/g)=	**15.73**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.132
80% LL (pCi/g) =	**11.76**
80% UL (pCi/g)=	**14.94**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	2.7	7.290	2.7	0.4450	4.895	**0.950129**
2	2.9	8.410	2.9	0.3069	3.19176	
3	3.4	11.560	3.4	0.2543	2.44128	**d**
4	4.3	18.490	4.3	0.2148	1.69692	**256.3856**
5	4.5	20.250	4.5	0.1822	1.29362	
6	4.7	22.090	4.7	0.1539	0.80028	
7	5	25.000	5	0.1283	0.57735	
8	5.3	28.090	5.3	0.1046	0.43932	
9	6.9	47.610	6.9	0.0823	0.17283	
10	7.9	62.410	7.9	0.0610	0.0671	
11	7.9	62.410	7.9	0.0403	0.02821	
12	8.1	65.610	8.1	0.0200	0.004	
13	8.2	67.240	8.2	0.0000	0	
14	8.3	68.890	8.3			
15	8.6	73.960	8.6			
16	9	81.000	9			
17	9	81.000	9			
18	9.5	90.250	9.5			
19	9.5	90.250	9.5			
20	9.9	98.010	9.9			
21	11.6	134.560	11.6			
22	12.2	148.840	12.2			
23	13	169.000	13			
24	13.3	176.890	13.3			
25	13.7	187.690	13.7			

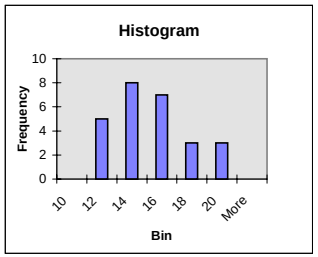
$[SUM (x_i)]^2$	$SUM (x_i^2)$
39,760	1,847

W is greater than 0.918.
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Gross Beta	BGL00001	SSBG0001	0.00	pCi/g	11.5	10.1
Gross Beta	BGL00001	SSBG0002	4.00	pCi/g	13.9	10.8
Gross Beta	BGL00001	SSBG0005	19.00	pCi/g	11.4	10.9
Gross Beta	BGL00001	SSBG0009	39.00	pCi/g	14.8	11.4
Gross Beta	BGL00002	SSBG0010	0.00	pCi/g	13.6	11.5
Gross Beta	BGL00002	SSBG0011	4.00	pCi/g	17.4	12.8
Gross Beta	BGL00002	SSBG0014	19.00	pCi/g	13	12.9
Gross Beta	BGL00002	SSBG0018	39.00	pCi/g	13.7	13
Gross Beta	BGL00003	SSBG0019	0.00	pCi/g	14.3	13.6
Gross Beta	BGL00003	SSBG0020	4.00	pCi/g	10.8	13.7
Gross Beta	BGL00003	SSBG0023	19.00	pCi/g	15.4	13.9
Gross Beta	BGL00003	SSBG0027	39.00	pCi/g	19.6	13.9
Gross Beta	BGL00004	SSBG0028	0.00	pCi/g	14.1	13.9
Gross Beta	BGL00004	SSBG0029	0.00	pCi/g	17.9	14.1
Gross Beta	BGL00004	SSBG0030	4.00	pCi/g	18.3	14.3
Gross Beta	BGL00004	SSBG0033	19.00	pCi/g	15.2	14.8
Gross Beta	BGL00004	SSBG0037	39.00	pCi/g	10.9	15.2
Gross Beta	BGL00005	SSBG0038	0.00	pCi/g	18.4	15.2
Gross Beta	BGL00005	SSBG0039	4.00	pCi/g	10.1	15.4
Gross Beta	BGL00005	SSBG0042	19.00	pCi/g	16.9	15.6
Gross Beta	BGL00005	SSBG0046	39.00	pCi/g	13.9	16.9
Gross Beta	BGL00006	SSBG0047	0.00	pCi/g	13.9	17.4
Gross Beta	BGL00006	SSBG0048	0.00	pCi/g	12.9	17.9
Gross Beta	BGL00006	SSBG0049	4.00	pCi/g	15.6	18.3
Gross Beta	BGL00006	SSBG0052	19.00	pCi/g	15.2	18.4
Gross Beta	BGL00006	SSBG0056	39.00	pCi/g	12.8	19.6

Bin	*Frequency*
10	0
12	5
14	8
16	7
18	3
20	3
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	W
1	11.5	132.250	10.1	0.4407	4.18665	**0.965862**
2	13.9	193.210	10.8	0.3043	2.31268	
3	11.4	129.960	10.9	0.2533	1.87442	**d**
4	14.8	219.040	11.4	0.2151	1.39815	**159.4435**
5	13.6	184.960	11.5	0.1836	1.08324	
6	17.4	302.760	12.8	0.1563	0.64083	
7	13	169.000	12.9	0.1316	0.35532	
8	13.7	187.690	13	0.1089	0.26136	
9	14.3	204.490	13.6	0.0876	0.14016	
10	10.8	116.640	13.7	0.0672	0.1008	
11	15.4	237.160	13.9	0.0476	0.04284	
12	19.6	384.160	13.9	0.0284	0.01136	
13	14.1	198.810	13.9	0.0094	0.00188	
14	17.9	320.410	14.1			
15	18.3	334.890	14.3			
16	15.2	231.040	14.8			
17	10.9	118.810	15.2			
18	18.4	338.560	15.2			
19	10.1	102.010	15.4			
20	16.9	285.610	15.6			
21	13.9	193.210	16.9			
22	13.9	193.210	17.4			
23	12.9	166.410	17.9			
24	15.6	243.360	18.3			
25	15.2	231.040	18.4			
26	12.8	163.840	19.6			
	$[SUM (x_i)]^2$	SUM (x_i^2)				
	########	5582.530				

W is greater than 0.92
Cannot rule out
normal distribution.

Mean (conc)	14.4423077
Std Dev (conc)	2.52541847
Z	1.645
95 th Quantile (pCi/g)	**18.60**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**16.80**
95% UL (pCi/g)=	**20.39**

80 % Confidence Limits on 95 th Quantile

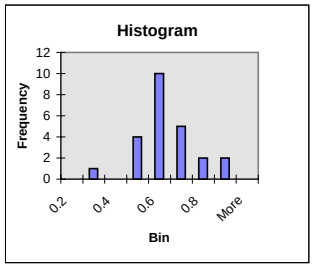
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**17.39**
80% UL (pCi/g)=	**19.80**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Lead-212	BGL00001	SSBG0001	0.00	pCi/g	0.52	0.298
Lead-212	BGL00001	SSBG0002	4.00	pCi/g	0.426	0.413
Lead-212	BGL00001	SSBG0005	19.00	pCi/g	0.65	0.426
Lead-212	BGL00001	SSBG0009	39.00	pCi/g	16.4	0.469
Lead-212	BGL00002	SSBG0010	0.00	pCi/g	0.536	0.496
Lead-212	BGL00002	SSBG0011	4.00	pCi/g	0.469	0.511
Lead-212	BGL00002	SSBG0014	19.00	pCi/g	0.8	0.52
Lead-212	BGL00002	SSBG0018	39.00	pCi/g	0.496	0.536
Lead-212	BGL00003	SSBG0019	0.00	pCi/g	0.568	0.551
Lead-212	BGL00003	SSBG0020	4.00	pCi/g	0.587	0.561
Lead-212	BGL00003	SSBG0023	19.00	pCi/g	0.83	0.568
Lead-212	BGL00003	SSBG0027	39.00	pCi/g	0.74	0.581
Lead-212	BGL00004	SSBG0028	0.00	pCi/g	0.511	0.587
Lead-212	BGL00004	SSBG0029	0.00	pCi/g	0.591	0.591
Lead-212	BGL00004	SSBG0030	4.00	pCi/g	0.667	0.591
Lead-212	BGL00004	SSBG0033	19.00	pCi/g	0.83	0.625
Lead-212	BGL00004	SSBG0037	39.00	pCi/g	0.551	0.65
Lead-212	BGL00005	SSBG0038	0.00	pCi/g	0.561	0.66
Lead-212	BGL00005	SSBG0039	4.00	pCi/g	0.298	0.667
Lead-212	BGL00005	SSBG0042	19.00	pCi/g	77.5	0.7
Lead-212	BGL00005	SSBG0046	39.00	pCi/g	0.591	0.74
Lead-212	BGL00006	SSBG0047	0.00	pCi/g	0.66	0.8
Lead-212	BGL00006	SSBG0048	0.00	pCi/g	0.413	0.83
Lead-212	BGL00006	SSBG0049	4.00	pCi/g	0.7	0.83
Lead-212	BGL00006	SSBG0052	19.00	pCi/g	0.581	
Lead-212	BGL00006	SSBG0056	39.00	pCi/g	0.625	

Bin	*Frequency*
0.2	0
0.3	1
0.4	0
0.5	4
0.6	10
0.7	5
0.8	2
0.9	2
More	0



SAMP_ID	CONC
SSBG0009	16.4
SSBG0042	77.5

Removed from calculation
Data points are above 99% quantile

Mean (conc)	0.592
Std Dev (conc)	0.130791
Z	2.33
99th Quantile (pCi/g)	**0.90**

Mean (conc)	0.591708333
Std Dev (conc)	0.130791064
Z	1.645
95 th Quantile (pCi/g)	**0.81**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.71**
95% UL (pCi/g)=	**0.90**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.74**
80% UL (pCi/g)=	**0.87**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

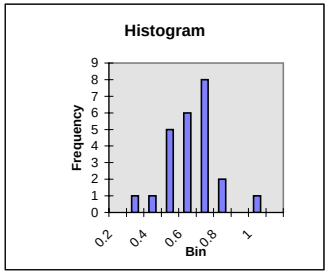
i	x_i	$(x_i)^2$	x_i	$a*(x_{n-i+1} - x_i)$		
(# Samples	CONC	(Conc)^2	Ranked	a stats	(n=26)	**W**
1	0.298	0.089	0.298	0.4493	0.239028	**0.974435**
2	0.413	0.171	0.413	0.3098	0.129187	
3	0.426	0.181	0.426	0.2554	0.09552	**d**
4	0.469	0.220	0.469	0.2145	0.05813	**0.393445**
5	0.496	0.246	0.496	0.1807	0.036863	
6	0.511	0.261	0.511	0.1512	0.023587	
7	0.52	0.270	0.52	0.1245	0.01743	
8	0.536	0.287	0.536	0.0997	0.011366	
9	0.551	0.304	0.551	0.0764	0.005654	
10	0.561	0.315	0.561	0.0539	0.001617	
11	0.568	0.323	0.568	0.0321	0.000738	
12	0.581	0.338	0.581	0.0107	6.42E-05	
13	0.587	0.345	0.587			
14	0.591	0.349	0.591			
15	0.591	0.349	0.591			
16	0.625	0.391	0.625			
17	0.65	0.423	0.65			
18	0.66	0.436	0.66			
19	0.667	0.445	0.667			
20	0.7	0.490	0.7			
21	0.74	0.548	0.74			
22	0.8	0.640	0.8			
23	0.83	0.689	0.83			
24	0.83	0.689	0.83			
	[SUM (x_i)]^2	SUM (x_i^2)				
	201.668	8.796				

W is greater than 0.91
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Lead-214	BGL00001	SSBG0001	0.00	pCi/g	0.514	0.299
Lead-214	BGL00001	SSBG0002	4.00	pCi/g	0.324	0.324
Lead-214	BGL00001	SSBG0005	19.00	pCi/g	0.571	0.415
Lead-214	BGL00001	SSBG0009	39.00	pCi/g	2.32	0.451
Lead-214	BGL00002	SSBG0010	0.00	pCi/g	0.61	0.47
Lead-214	BGL00002	SSBG0011	4.00	pCi/g	0.299	0.471
Lead-214	BGL00002	SSBG0014	19.00	pCi/g	0.7	0.498
Lead-214	BGL00002	SSBG0018	39.00	pCi/g	0.451	0.505
Lead-214	BGL00003	SSBG0019	0.00	pCi/g	0.471	0.514
Lead-214	BGL00003	SSBG0020	4.00	pCi/g	0.605	0.517
Lead-214	BGL00003	SSBG0023	19.00	pCi/g	0.99	0.527
Lead-214	BGL00003	SSBG0027	39.00	pCi/g	0.774	0.571
Lead-214	BGL00004	SSBG0028	0.00	pCi/g	0.595	0.595
Lead-214	BGL00004	SSBG0029	0.00	pCi/g	0.527	0.601
Lead-214	BGL00004	SSBG0030	4.00	pCi/g	0.686	0.605
Lead-214	BGL00004	SSBG0033	19.00	pCi/g	0.8	0.61
Lead-214	BGL00004	SSBG0037	39.00	pCi/g	0.618	0.618
Lead-214	BGL00005	SSBG0038	0.00	pCi/g	0.517	0.635
Lead-214	BGL00005	SSBG0039	4.00	pCi/g	0.47	0.68
Lead-214	BGL00005	SSBG0042	19.00	pCi/g	7.99	0.686
Lead-214	BGL00005	SSBG0046	39.00	pCi/g	0.601	0.7
Lead-214	BGL00006	SSBG0047	0.00	pCi/g	0.505	0.774
Lead-214	BGL00006	SSBG0048	0.00	pCi/g	0.415	0.8
Lead-214	BGL00006	SSBG0049	4.00	pCi/g	0.68	0.99
Lead-214	BGL00006	SSBG0052	19.00	pCi/g	0.498	
Lead-214	BGL00006	SSBG0056	39.00	pCi/g	0.635	

Bin	*Frequency*
0.2	0
0.3	1
0.4	1
0.5	5
0.6	6
0.7	8
0.8	2
0.9	0
1	1
More	0



SAMP_ID	CONC
SSBG0009	2.32
SSBG0042	7.99

Removed from calculation
Data points are above 99% quantile

Mean (conc)	0.577
Std Dev (conc)	0.152111
Z	2.33
99th Quantile (pCi/g)	**0.93**

Mean (conc)	0.57733333
Std Dev (conc)	0.15211113
Z	1.645
95 th Quantile (pCi/g)	**0.83**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.71**
95% UL (pCi/g)=	**0.94**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.75**
80% UL (pCi/g)=	**0.90**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

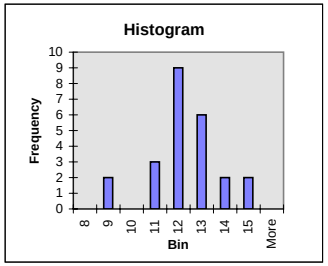
i	x_i	$(x_i)^2$	x_i	$a*(x_{n-i+1} - x_i)$		
(# Samples	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**
1	0.299	0.089	0.299	0.4493	0.310466	**0.965202**
2	0.324	0.105	0.324	0.3098	0.147465	
3	0.415	0.172	0.415	0.2554	0.091689	**d**
4	0.451	0.203	0.451	0.2145	0.053411	**0.532169**
5	0.47	0.221	0.47	0.1807	0.039031	
6	0.471	0.222	0.471	0.1512	0.031601	
7	0.498	0.248	0.498	0.1245	0.017057	
8	0.505	0.255	0.505	0.0997	0.011266	
9	0.514	0.264	0.514	0.0764	0.007334	
10	0.517	0.267	0.517	0.0539	0.004743	
11	0.527	0.278	0.527	0.0321	0.002375	
12	0.571	0.326	0.571	0.0107	0.000257	
13	0.595	0.354	0.595			
14	0.601	0.361	0.601			
15	0.605	0.366	0.605			
16	0.61	0.372	0.61			
17	0.618	0.382	0.618			
18	0.635	0.403	0.635			
19	0.68	0.462	0.68			
20	0.686	0.471	0.686			
21	0.7	0.490	0.7			
22	0.774	0.599	0.774			
23	0.8	0.640	0.8			
24	0.99	0.980	0.99			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	191.989	8.532				

W is greater than 0.91
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Potassium-40	BGL00001	SSBG0001	0.00	pCi/g	10.6	8.3
Potassium-40	BGL00001	SSBG0002	4.00	pCi/g	8.3	8.4
Potassium-40	BGL00001	SSBG0005	19.00	pCi/g	12.6	10.2
Potassium-40	BGL00001	SSBG0009	39.00	pCi/g	0.26	10.3
Potassium-40	BGL00002	SSBG0010	0.00	pCi/g	12.7	10.6
Potassium-40	BGL00002	SSBG0011	4.00	pCi/g	10.3	11.1
Potassium-40	BGL00002	SSBG0014	19.00	pCi/g	13.4	11.3
Potassium-40	BGL00002	SSBG0018	39.00	pCi/g	11.4	11.3
Potassium-40	BGL00003	SSBG0019	0.00	pCi/g	11.4	11.4
Potassium-40	BGL00003	SSBG0020	4.00	pCi/g	11.8	11.4
Potassium-40	BGL00003	SSBG0023	19.00	pCi/g	14.3	11.6
Potassium-40	BGL00003	SSBG0027	39.00	pCi/g	14.9	11.8
Potassium-40	BGL00004	SSBG0028	0.00	pCi/g	11.6	12
Potassium-40	BGL00004	SSBG0029	0.00	pCi/g	13.6	12
Potassium-40	BGL00004	SSBG0030	4.00	pCi/g	12.6	12.6
Potassium-40	BGL00004	SSBG0033	19.00	pCi/g	11.3	12.6
Potassium-40	BGL00004	SSBG0037	39.00	pCi/g	10.2	12.6
Potassium-40	BGL00005	SSBG0038	0.00	pCi/g	11.3	12.7
Potassium-40	BGL00005	SSBG0039	4.00	pCi/g	8.4	12.7
Potassium-40	BGL00005	SSBG0042	19.00	pCi/g	39.1	12.8
Potassium-40	BGL00005	SSBG0046	39.00	pCi/g	12	13.4
Potassium-40	BGL00006	SSBG0047	0.00	pCi/g	12	13.6
Potassium-40	BGL00006	SSBG0048	0.00	pCi/g	11.1	14.3
Potassium-40	BGL00006	SSBG0049	4.00	pCi/g	12.6	14.9
Potassium-40	BGL00006	SSBG0052	19.00	pCi/g	12.8	
Potassium-40	BGL00006	SSBG0056	39.00	pCi/g	12.7	

Bin	*Frequency*
8	0
9	2
10	0
11	3
12	9
13	6
14	2
15	2
More	0



SAMP_ID	CONC	
SSBG0042	39.1	Removed from calculation Data point above 99% quantile
SSBG0009	0.26	Data point below 1% quantile

Mean (conc)	11.829
Std Dev (conc)	1.583469
Z	2.33
99th Quantile (pCi/g)	**15.52**
1st Quantile (pCi/g)	**8.14**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i	x_i	$(x_i)^2$	x_i		$a*(x_{n-i+1} - x_i)$	
(# Samples	CONC	(Conc)^2	Ranked	a stats	(n=26)	**W**
1	8.3	68.890	8.3	0.4493	2.96538	**0.960155**
2	8.4	70.560	8.4	0.3098	1.82782	
3	10.2	104.040	10.2	0.2554	0.86836	**d**
4	10.3	106.090	10.3	0.2145	0.66495	**57.66958**
5	10.6	112.360	10.6	0.1807	0.39754	
6	11.1	123.210	11.1	0.1512	0.24192	
7	11.3	127.690	11.3	0.1245	0.1743	
8	11.3	127.690	11.3	0.0997	0.12961	
9	11.4	129.960	11.4	0.0764	0.09168	
10	11.4	129.960	11.4	0.0539	0.06468	
11	11.6	134.560	11.6	0.0321	0.01284	
12	11.8	139.240	11.8	0.0107	0.00214	
13	12	144.000	12			
14	12	144.000	12			
15	12.6	158.760	12.6			
16	12.6	158.760	12.6			
17	12.6	158.760	12.6			
18	12.7	161.290	12.7			
19	12.7	161.290	12.7			
20	12.8	163.840	12.8			
21	13.4	179.560	13.4			
22	13.6	184.960	13.6			
23	14.3	204.490	14.3			
24	14.9	222.010	14.9			
	[SUM $(x_i)]^2$	SUM (x_i^2)				
	80599.210	3415.970				

W is greater than 0.91
Cannot rule out
normal distribution.

Mean (conc)	11.8291667
Std Dev (conc)	1.58346872
Z	1.645
95 th Quantile (pCi/g)	**14.43**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.391
95% LL (pCi/g) =	**13.25**
95% UL (pCi/g)=	**15.62**

80 % Confidence Limits on 95 th Quantile

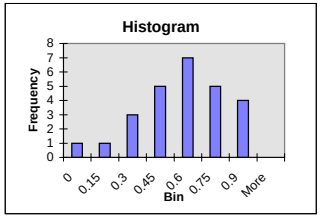
a = 20%
p = 95%

K (estimating factor) =	2.145
80% LL (pCi/g) =	**13.64**
80% UL (pCi/g)=	**15.23**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Radium-226	BGL00001	SSBG0001	0.00	pCi/g	0.26	0
Radium-226	BGL00001	SSBG0002	4.00	pCi/g	0.51	0.046
Radium-226	BGL00001	SSBG0005	19.00	pCi/g	0.41	0.19
Radium-226	BGL00001	SSBG0009	39.00	pCi/g	0.35	0.26
Radium-226	BGL00002	SSBG0010	0.00	pCi/g	0.62	0.3
Radium-226	BGL00002	SSBG0011	4.00	pCi/g	0.72	0.35
Radium-226	BGL00002	SSBG0014	19.00	pCi/g	0.59	0.36
Radium-226	BGL00002	SSBG0018	39.00	pCi/g	0.65	0.39
Radium-226	BGL00003	SSBG0019	0.00	pCi/g	0.4	0.4
Radium-226	BGL00003	SSBG0020	4.00	pCi/g	0.56	0.41
Radium-226	BGL00003	SSBG0023	19.00	pCi/g	0.77	0.46
Radium-226	BGL00003	SSBG0027	39.00	pCi/g	0.75	0.51
Radium-226	BGL00004	SSBG0028	0.00	pCi/g	0.19	0.54
Radium-226	BGL00004	SSBG0029	0.00	pCi/g	0.39	0.56
Radium-226	BGL00004	SSBG0030	4.00	pCi/g	0.3	0.57
Radium-226	BGL00004	SSBG0033	19.00	pCi/g	0.54	0.59
Radium-226	BGL00004	SSBG0037	39.00	pCi/g	0.46	0.6
Radium-226	BGL00005	SSBG0038	0.00	pCi/g	0.57	0.62
Radium-226	BGL00005	SSBG0039	4.00	pCi/g	0	0.63
Radium-226	BGL00005	SSBG0042	19.00	pCi/g	0.046	0.65
Radium-226	BGL00005	SSBG0046	39.00	pCi/g	0.84	0.72
Radium-226	BGL00006	SSBG0047	0.00	pCi/g	0.83	0.75
Radium-226	BGL00006	SSBG0048	0.00	pCi/g	0.63	0.76
Radium-226	BGL00006	SSBG0049	4.00	pCi/g	0.76	0.77
Radium-226	BGL00006	SSBG0052	19.00	pCi/g	0.36	0.83
Radium-226	BGL00006	SSBG0056	39.00	pCi/g	0.6	0.84

Bin	*Frequency*
0	1
0.15	1
0.3	3
0.45	5
0.6	7
0.75	5
0.9	4
More	0



Mean (conc)	0.50407692
Std Dev (conc)	0.22638762
Z	1.645
95 th Quantile (pCi/g)	**0.88**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.72**
95% UL (pCi/g)=	**1.04**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.77**
80% UL (pCi/g)=	**0.98**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

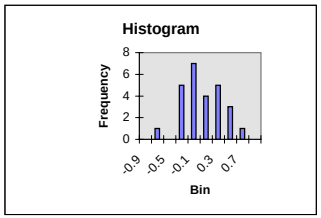
i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	0	0.000	0	0.4407	0.370188	**0.958314**
2	0.046	0.002	0.046	0.3043	0.238571	
3	0.19	0.036	0.19	0.2533	0.146914	**d**
4	0.26	0.068	0.26	0.2151	0.10755	**1.281284**
5	0.3	0.090	0.3	0.1836	0.08262	
6	0.35	0.123	0.35	0.1563	0.057831	
7	0.36	0.130	0.36	0.1316	0.038164	
8	0.39	0.152	0.39	0.1089	0.026136	
9	0.4	0.160	0.4	0.0876	0.019272	
10	0.41	0.168	0.41	0.0672	0.012768	
11	0.46	0.212	0.46	0.0476	0.006188	
12	0.51	0.260	0.51	0.0284	0.001704	
13	0.54	0.292	0.54	0.0094	0.000188	
14	0.56	0.314	0.56			
15	0.57	0.325	0.57			
16	0.59	0.348	0.59			
17	0.6	0.360	0.6			
18	0.62	0.384	0.62			
19	0.63	0.397	0.63			
20	0.65	0.423	0.65			
21	0.72	0.518	0.72			
22	0.75	0.563	0.75			
23	0.76	0.578	0.76			
24	0.77	0.593	0.77			
25	0.83	0.689	0.83			
26	0.84	0.706	0.84			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	171.767	7.888				

W is greater than 0.92
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Strontium-90	BGL00001	SSBG0001	0.00	pCi/g	0.24	-0.86
Strontium-90	BGL00001	SSBG0002	4.00	pCi/g	-0.11	-0.43
Strontium-90	BGL00001	SSBG0005	19.00	pCi/g	0.57	-0.39
Strontium-90	BGL00001	SSBG0009	39.00	pCi/g	0.06	-0.32
Strontium-90	BGL00002	SSBG0010	0.00	pCi/g	-0.1	-0.32
Strontium-90	BGL00002	SSBG0011	4.00	pCi/g	0.09	-0.3
Strontium-90	BGL00002	SSBG0014	19.00	pCi/g	0.11	-0.28
Strontium-90	BGL00002	SSBG0018	39.00	pCi/g	-0.16	-0.27
Strontium-90	BGL00003	SSBG0019	0.00	pCi/g	0.41	-0.16
Strontium-90	BGL00003	SSBG0020	4.00	pCi/g	0.29	-0.14
Strontium-90	BGL00003	SSBG0023	19.00	pCi/g	-0.27	-0.11
Strontium-90	BGL00003	SSBG0027	39.00	pCi/g	0.25	-0.11
Strontium-90	BGL00004	SSBG0028	0.00	pCi/g	0.06	-0.1
Strontium-90	BGL00004	SSBG0029	0.00	pCi/g	0.04	0.04
Strontium-90	BGL00004	SSBG0030	4.00	pCi/g	-0.28	0.06
Strontium-90	BGL00004	SSBG0033	19.00	pCi/g	0.43	0.06
Strontium-90	BGL00004	SSBG0037	39.00	pCi/g	0.3	0.09
Strontium-90	BGL00005	SSBG0038	0.00	pCi/g	-0.11	0.11
Strontium-90	BGL00005	SSBG0039	4.00	pCi/g	0.32	0.24
Strontium-90	BGL00005	SSBG0042	19.00	pCi/g	-0.14	0.25
Strontium-90	BGL00005	SSBG0046	39.00	pCi/g	-0.32	0.29
Strontium-90	BGL00006	SSBG0047	0.00	pCi/g	-0.86	0.3
Strontium-90	BGL00006	SSBG0048	0.00	pCi/g	-0.43	0.32
Strontium-90	BGL00006	SSBG0049	4.00	pCi/g	-0.39	0.41
Strontium-90	BGL00006	SSBG0052	19.00	pCi/g	-0.32	0.43
Strontium-90	BGL00006	SSBG0056	39.00	pCi/g	-0.3	0.57

Bin	*Frequency*
-0.9	0
-0.7	1
-0.5	0
-0.3	5
-0.1	7
0.1	4
0.3	5
0.5	3
0.7	1
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	-0.86	0.740	-0.86	0.4407	0.630201	**0.971568**
2	-0.43	0.185	-0.43	0.3043	0.261698	
3	-0.39	0.152	-0.39	0.2533	0.20264	**d**
4	-0.32	0.102	-0.32	0.2151	0.137664	**2.690815**
5	-0.32	0.102	-0.32	0.1836	0.113832	
6	-0.3	0.090	-0.3	0.1563	0.092217	
7	-0.28	0.078	-0.28	0.1316	0.069748	
8	-0.27	0.073	-0.27	0.1089	0.055539	
9	-0.16	0.026	-0.16	0.0876	0.023652	
10	-0.14	0.020	-0.14	0.0672	0.015456	
11	-0.11	0.012	-0.11	0.0476	0.008092	
12	-0.11	0.012	-0.11	0.0284	0.004828	
13	-0.1	0.010	-0.1	0.0094	0.001316	
14	0.04	0.002	0.04			
15	0.06	0.004	0.06			
16	0.06	0.004	0.06			
17	0.09	0.008	0.09			
18	0.11	0.012	0.11			
19	0.24	0.058	0.24			
20	0.25	0.063	0.25			
21	0.29	0.084	0.29			
22	0.3	0.090	0.3			
23	0.32	0.102	0.32			
24	0.41	0.168	0.41			
25	0.43	0.185	0.43			
26	0.57	0.325	0.57			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	0.384	2.706				

W is greater than 0.92(
Cannot rule out
normal distribution.

Mean (conc)	-0.02384615
Std Dev (conc)	0.3280741
Z	1.645
95 th Quantile (pCi/g)	**0.52**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.28**
95% UL (pCi/g)=	**0.75**

80 % Confidence Limits on 95 th Quantile

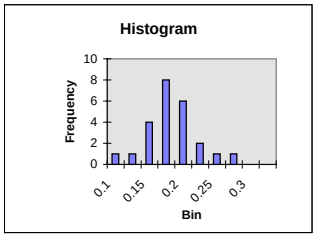
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.36**
80% UL (pCi/g)=	**0.67**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Thallium-208	BGL00001	SSBG0001	0.00	pCi/g	0.141	0.095
Thallium-208	BGL00001	SSBG0002	4.00	pCi/g	0.184	0.125
Thallium-208	BGL00001	SSBG0005	19.00	pCi/g	0.182	0.128
Thallium-208	BGL00001	SSBG0009	39.00	pCi/g	5.39	0.136
Thallium-208	BGL00002	SSBG0010	0.00	pCi/g	0.185	0.141
Thallium-208	BGL00002	SSBG0011	4.00	pCi/g	0.125	0.149
Thallium-208	BGL00002	SSBG0014	19.00	pCi/g	0.211	0.154
Thallium-208	BGL00002	SSBG0018	39.00	pCi/g	0.172	0.166
Thallium-208	BGL00003	SSBG0019	0.00	pCi/g	0.149	0.167
Thallium-208	BGL00003	SSBG0020	4.00	pCi/g	0.136	0.169
Thallium-208	BGL00003	SSBG0023	19.00	pCi/g	0.27	0.171
Thallium-208	BGL00003	SSBG0027	39.00	pCi/g	0.229	0.172
Thallium-208	BGL00004	SSBG0028	0.00	pCi/g	0.201	0.172
Thallium-208	BGL00004	SSBG0029	0.00	pCi/g	0.169	0.175
Thallium-208	BGL00004	SSBG0030	4.00	pCi/g	0.167	0.182
Thallium-208	BGL00004	SSBG0033	19.00	pCi/g	0.188	0.184
Thallium-208	BGL00004	SSBG0037	39.00	pCi/g	0.154	0.185
Thallium-208	BGL00005	SSBG0038	0.00	pCi/g	0.185	0.185
Thallium-208	BGL00005	SSBG0039	4.00	pCi/g	0.095	0.188
Thallium-208	BGL00005	SSBG0042	19.00	pCi/g	24.3	0.188
Thallium-208	BGL00005	SSBG0046	39.00	pCi/g	0.166	0.201
Thallium-208	BGL00006	SSBG0047	0.00	pCi/g	0.172	0.211
Thallium-208	BGL00006	SSBG0048	0.00	pCi/g	0.128	0.229
Thallium-208	BGL00006	SSBG0049	4.00	pCi/g	0.188	0.27
Thallium-208	BGL00006	SSBG0052	19.00	pCi/g	0.171	
Thallium-208	BGL00006	SSBG0056	39.00	pCi/g	0.175	

Bin	*Frequency*
0.1	1
0.125	1
0.15	4
0.175	8
0.2	6
0.225	2
0.25	1
0.275	1
0.3	0
More	0



SAMP_ID	CONC	
SSBG0009	5.39	Removed from calculation
SSBG0042	24.3	Data points are above 99% quantile

Mean (conc)	0.173
Std Dev (conc)	0.035852
Z	2.33
99th Quantile (pCi/g)	**0.26**

Mean (conc)	0.172625
Std Dev (conc)	0.03585213
Z	1.645
95 th Quantile (pCi/g)	**0.23**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.20**
95% UL (pCi/g)=	**0.26**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.21**
80% UL (pCi/g)=	**0.25**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

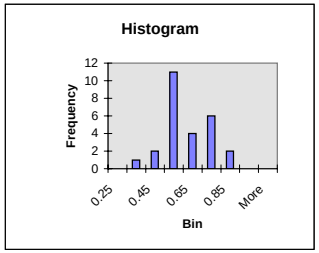
i	x_i	$(x_i)^2$	x_i		$a*(x_{n-i+1} - x_i)$	
(# Samples)	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**
1	0.095	0.009	0.095	0.4493	0.078628	**0.95763**
2	0.125	0.016	0.125	0.3098	0.032219	
3	0.128	0.016	0.128	0.2554	0.021198	**d**
4	0.136	0.018	0.136	0.2145	0.013943	**0.029564**
5	0.141	0.020	0.141	0.1807	0.008493	
6	0.149	0.022	0.149	0.1512	0.005897	
7	0.154	0.024	0.154	0.1245	0.00386	
8	0.166	0.028	0.166	0.0997	0.001894	
9	0.167	0.028	0.167	0.0764	0.001299	
10	0.169	0.029	0.169	0.0539	0.000701	
11	0.171	0.029	0.171	0.0321	0.000128	
12	0.172	0.030	0.172	0.0107	0	
13	0.172	0.030	0.172			
14	0.175	0.031	0.175			
15	0.182	0.033	0.182			
16	0.184	0.034	0.184			
17	0.185	0.034	0.185			
18	0.185	0.034	0.185			
19	0.188	0.035	0.188			
20	0.188	0.035	0.188			
21	0.201	0.040	0.201			
22	0.211	0.045	0.211			
23	0.229	0.052	0.229			
24	0.27	0.073	0.27			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	17.164	0.745				

W is greater than 0.91
Cannot rule out
normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Thorium-228	BGL00001	BGL00001	0.00	pCi/g	0.484	0.315
Thorium-228	BGL00001	BGL00001	4.00	pCi/g	0.489	0.427
Thorium-228	BGL00001	BGL00001	19.00	pCi/g	0.66	0.442
Thorium-228	BGL00002	BGL00001	39.00	pCi/g	0.6	0.48
Thorium-228	BGL00002	BGL00002	0.00	pCi/g	0.5	0.484
Thorium-228	BGL00002	BGL00002	4.00	pCi/g	0.63	0.487
Thorium-228	BGL00002	BGL00002	19.00	pCi/g	0.7	0.489
Thorium-228	BGL00003	BGL00002	39.00	pCi/g	0.524	0.494
Thorium-228	BGL00003	BGL00003	0.00	pCi/g	0.518	0.5
Thorium-228	BGL00003	BGL00003	4.00	pCi/g	0.427	0.518
Thorium-228	BGL00003	BGL00003	19.00	pCi/g	0.78	0.524
Thorium-228	BGL00004	BGL00003	39.00	pCi/g	0.72	0.536
Thorium-228	BGL00004	BGL00004	0.00	pCi/g	0.487	0.543
Thorium-228	BGL00004	BGL00004	0.00	pCi/g	0.536	0.55
Thorium-228	BGL00004	BGL00004	4.00	pCi/g	0.66	0.57
Thorium-228	BGL00004	BGL00004	19.00	pCi/g	0.669	0.6
Thorium-228	BGL00005	BGL00004	39.00	pCi/g	0.543	0.601
Thorium-228	BGL00005	BGL00005	0.00	pCi/g	0.494	0.63
Thorium-228	BGL00005	BGL00005	4.00	pCi/g	0.315	0.66
Thorium-228	BGL00005	BGL00005	19.00	pCi/g	0.82	0.66
Thorium-228	BGL00006	BGL00005	39.00	pCi/g	0.57	0.669
Thorium-228	BGL00006	BGL00006	0.00	pCi/g	0.48	0.7
Thorium-228	BGL00006	BGL00006	0.00	pCi/g	0.442	0.72
Thorium-228	BGL00006	BGL00006	4.00	pCi/g	0.601	0.72
Thorium-228	BGL00006	BGL00006	19.00	pCi/g	0.55	0.78
Thorium-228	BGL00001	BGL00006	39.00	pCi/g	0.72	0.82

Bin	*Frequency*
0.25	0
0.35	1
0.45	2
0.55	11
0.65	4
0.75	6
0.85	2
0.95	0
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	W
1	0.484	0.234	0.315	0.4407	0.222554	**0.973915**
2	0.489	0.239	0.427	0.3043	0.107418	
3	0.66	0.436	0.442	0.2533	0.070417	**d**
4	0.6	0.360	0.48	0.2151	0.051624	**0.34817**
5	0.5	0.250	0.484	0.1836	0.039658	
6	0.63	0.397	0.487	0.1563	0.028447	
7	0.7	0.490	0.489	0.1316	0.022504	
8	0.524	0.275	0.494	0.1089	0.018077	
9	0.518	0.268	0.5	0.0876	0.011388	
10	0.427	0.182	0.518	0.0672	0.005578	
11	0.78	0.608	0.524	0.0476	0.003618	
12	0.72	0.518	0.536	0.0284	0.000966	
13	0.487	0.237	0.543	0.0094	6.58E-05	
14	0.536	0.287	0.55			
15	0.66	0.436	0.57			
16	0.669	0.448	0.6			
17	0.543	0.295	0.601			
18	0.494	0.244	0.63			
19	0.315	0.099	0.66			
20	0.82	0.672	0.66			
21	0.57	0.325	0.669			
22	0.48	0.230	0.7			
23	0.442	0.195	0.72			
24	0.601	0.361	0.72			
25	0.55	0.303	0.78			
26	0.72	0.518	0.82			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	222.577	8.909				

W is greater than 0.92
Cannot rule out
normal distribution.

Mean (conc)	0.573808
Std Dev (conc)	0.118012
Z	1.645
95 th Quantile (pCi/g)	**0.77**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.68**
95% UL (pCi/g)=	**0.85**

80 % Confidence Limits on 95 th Quantile

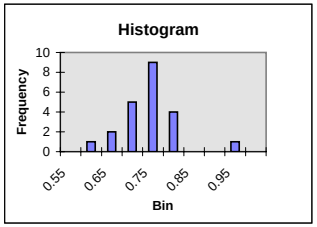
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.71**
80% UL (pCi/g)=	**0.82**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Thorium-230	BGL00001	SSBG0001	0.00	pCi/g	0.74	0.57
Thorium-230	BGL00001	SSBG0002	4.00	pCi/g	0.688	0.626
Thorium-230	BGL00001	SSBG0005	19.00	pCi/g	0.75	0.634
Thorium-230	BGL00001	SSBG0009	39.00	pCi/g	1.26	0.667
Thorium-230	BGL00002	SSBG0010	0.00	pCi/g	0.74	0.67
Thorium-230	BGL00002	SSBG0011	4.00	pCi/g	0.75	0.687
Thorium-230	BGL00002	SSBG0014	19.00	pCi/g	0.67	0.688
Thorium-230	BGL00002	SSBG0018	39.00	pCi/g	0.634	0.689
Thorium-230	BGL00003	SSBG0019	0.00	pCi/g	0.76	0.702
Thorium-230	BGL00003	SSBG0020	4.00	pCi/g	0.76	0.708
Thorium-230	BGL00003	SSBG0023	19.00	pCi/g	1.26	0.71
Thorium-230	BGL00003	SSBG0027	39.00	pCi/g	0.71	0.73
Thorium-230	BGL00004	SSBG0028	0.00	pCi/g	0.689	0.733
Thorium-230	BGL00004	SSBG0029	0.00	pCi/g	0.733	0.74
Thorium-230	BGL00004	SSBG0030	4.00	pCi/g	1.25	0.74
Thorium-230	BGL00004	SSBG0033	19.00	pCi/g	0.708	0.75
Thorium-230	BGL00004	SSBG0037	39.00	pCi/g	0.702	0.75
Thorium-230	BGL00005	SSBG0038	0.00	pCi/g	0.626	0.76
Thorium-230	BGL00005	SSBG0039	4.00	pCi/g	0.73	0.76
Thorium-230	BGL00005	SSBG0042	19.00	pCi/g	1.32	0.79
Thorium-230	BGL00005	SSBG0046	39.00	pCi/g	0.57	0.8
Thorium-230	BGL00006	SSBG0047	0.00	pCi/g	0.92	0.92
Thorium-230	BGL00006	SSBG0048	0.00	pCi/g	0.687	
Thorium-230	BGL00006	SSBG0049	4.00	pCi/g	0.667	
Thorium-230	BGL00006	SSBG0052	19.00	pCi/g	0.79	
Thorium-230	BGL00006	SSBG0056	39.00	pCi/g	0.8	

Bin	*Frequency*
0.55	0
0.6	1
0.65	2
0.7	5
0.75	9
0.8	4
0.85	0
0.9	0
0.95	1
More	0



SAMP_ID	CONC
SSBG0030	1.25
SSBG0023	1.26
SSBG0009	1.26
SSBG0042	1.32

Removed from calculation
Data points are above 99% quantile

Mean (conc)	0.719
Std Dev (conc)	0.070724
Z	2.33
99th Quantile (pCi/g)	**0.88**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i	x_i	$(x_i)^2$	x_i	$a*(x_{n-i+1} - x_i)$			
(# Samples	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**	
1	0.57	0.325	0.57	0.4590	0.16065	**0.948103**	W is greater than 0.91
2	0.626	0.392	0.626	0.3156	0.054914		Cannot rule out
3	0.634	0.402	0.634	0.2571	0.040108	**d**	normal distribution.
4	0.667	0.445	0.667	0.2131	0.019818	**0.10504**	
5	0.67	0.449	0.67	0.1764	0.015876		
6	0.687	0.472	0.687	0.1443	0.009091		
7	0.688	0.473	0.688	0.1150	0.00713		
8	0.689	0.475	0.689	0.0878	0.004478		
9	0.702	0.493	0.702	0.0618	0.002348		
10	0.708	0.501	0.708	0.0368	0.00092		
11	0.71	0.504	0.71	0.0122	0.000244		
12	0.73	0.533	0.73				
13	0.733	0.537	0.733				
14	0.74	0.548	0.74				
15	0.74	0.548	0.74				
16	0.75	0.563	0.75				
17	0.75	0.563	0.75				
18	0.76	0.578	0.76				
19	0.76	0.578	0.76				
20	0.79	0.624	0.79				
21	0.8	0.640	0.8				
22	0.92	0.846	0.92				
	$[SUM (x_i)]^2$	$SUM (x_i^2)$					
	250.399	11.487					

Mean (conc)	0.71927273
Std Dev (conc)	0.07072427
Z	1.645
95 th Quantile (pCi/g)	**0.84**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.438
95% LL (pCi/g) =	**0.78**
95% UL (pCi/g)=	**0.89**

80 % Confidence Limits on 95 th Quantile

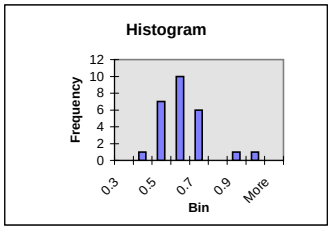
a = 20%
p = 95%

K (estimating factor) =	2.174
80% LL (pCi/g) =	**0.80**
80% UL (pCi/g)=	**0.87**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Thorium-232	BGL00001	SSBG0001	0.00	pCi/g	0.394	0.394
Thorium-232	BGL00001	SSBG0002	4.00	pCi/g	0.53	0.431
Thorium-232	BGL00001	SSBG0005	19.00	pCi/g	0.501	0.449
Thorium-232	BGL00001	SSBG0009	39.00	pCi/g	0.6	0.456
Thorium-232	BGL00002	SSBG0010	0.00	pCi/g	0.469	0.469
Thorium-232	BGL00002	SSBG0011	4.00	pCi/g	0.567	0.48
Thorium-232	BGL00002	SSBG0014	19.00	pCi/g	0.58	0.491
Thorium-232	BGL00002	SSBG0018	39.00	pCi/g	0.431	0.497
Thorium-232	BGL00003	SSBG0019	0.00	pCi/g	0.517	0.501
Thorium-232	BGL00003	SSBG0020	4.00	pCi/g	0.456	0.517
Thorium-232	BGL00003	SSBG0023	19.00	pCi/g	0.88	0.526
Thorium-232	BGL00003	SSBG0027	39.00	pCi/g	0.689	0.528
Thorium-232	BGL00004	SSBG0028	0.00	pCi/g	0.491	0.53
Thorium-232	BGL00004	SSBG0029	0.00	pCi/g	0.528	0.55
Thorium-232	BGL00004	SSBG0030	4.00	pCi/g	0.67	0.56
Thorium-232	BGL00004	SSBG0033	19.00	pCi/g	0.646	0.567
Thorium-232	BGL00004	SSBG0037	39.00	pCi/g	0.676	0.58
Thorium-232	BGL00005	SSBG0038	0.00	pCi/g	0.526	0.6
Thorium-232	BGL00005	SSBG0039	4.00	pCi/g	0.449	0.603
Thorium-232	BGL00005	SSBG0042	19.00	pCi/g	0.92	0.646
Thorium-232	BGL00005	SSBG0046	39.00	pCi/g	0.55	0.67
Thorium-232	BGL00006	SSBG0047	0.00	pCi/g	0.497	0.67
Thorium-232	BGL00006	SSBG0048	0.00	pCi/g	0.48	0.676
Thorium-232	BGL00006	SSBG0049	4.00	pCi/g	0.603	0.689
Thorium-232	BGL00006	SSBG0052	19.00	pCi/g	0.56	
Thorium-232	BGL00006	SSBG0056	39.00	pCi/g	0.67	

Bin	*Frequency*
0.3	0
0.4	1
0.5	7
0.6	10
0.7	6
0.8	0
0.9	1
1	1
More	0



SAMP_ID	CONC	
SSBG0023	0.88	Removed from calculation
SSBG0042	0.92	Data points are above 99% quantile

Mean (conc)	0.545
Std Dev (conc)	0.083261
Z	2.33
99th Quantile (pCi/g)	**0.74**

Mean (conc)	0.545
Std Dev (conc)	0.083261244
Z	1.645
95 th Quantile (pCi/g)	**0.68**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.62**
95% UL (pCi/g)=	**0.74**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.64**
80% UL (pCi/g)=	**0.72**

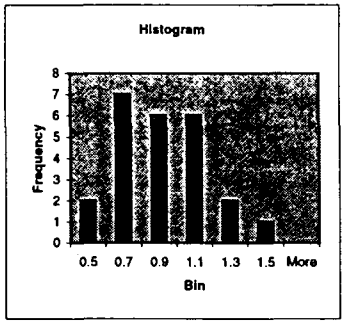
Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i	x_i	$(x_i)^2$	x_i	$a*(x_{n-i+1} - x_i)$			
(# Samples	CONC	$(Conc)^2$	Ranked	a stats	(n=26)	**W**	
1	0.394	0.155	0.394	0.4493	0.132544	**0.960641**	W is greater than 0.91
2	0.431	0.186	0.431	0.3098	0.075901		Cannot rule out
3	0.449	0.202	0.449	0.2554	0.056443	**d**	normal distribution.
4	0.456	0.208	0.456	0.2145	0.045903	**0.159446**	
5	0.469	0.220	0.469	0.1807	0.031984		
6	0.48	0.230	0.48	0.1512	0.018598		
7	0.491	0.241	0.491	0.1245	0.013571		
8	0.497	0.247	0.497	0.0997	0.008275		
9	0.501	0.251	0.501	0.0764	0.005042		
10	0.517	0.267	0.517	0.0539	0.002318		
11	0.526	0.277	0.526	0.0321	0.00077		
12	0.528	0.279	0.528	0.0107	2.14E-05		
13	0.53	0.281	0.53				
14	0.55	0.303	0.55				
15	0.56	0.314	0.56				
16	0.567	0.321	0.567				
17	0.58	0.336	0.58				
18	0.6	0.360	0.6				
19	0.603	0.364	0.603				
20	0.646	0.417	0.646				
21	0.67	0.449	0.67				
22	0.67	0.449	0.67				
23	0.676	0.457	0.676				
24	0.689	0.475	0.689				
	$[SUM (x_i)]^2$	$SUM (x_i^2)$					
	171.086	7.288					

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Thorium-234	BGL00001	SSBG0001	0.00	pCi/g	0.78	0.41
Thorium-234	BGL00001	SSBG0002	4.00	pCi/g	0.41	0.44
Thorium-234	BGL00001	SSBG0005	19.00	pCi/g	1.2	0.55
Thorium-234	BGL00001	SSBG0009	39.00	pCi/g	2.8	0.61
Thorium-234	BGL00002	SSBG0010	0.00	pCi/g	0.96	0.64
Thorium-234	BGL00002	SSBG0011	4.00	pCi/g	0.69	0.67
Thorium-234	BGL00002	SSBG0014	19.00	pCi/g	0.79	0.68
Thorium-234	BGL00002	SSBG0018	39.00	pCi/g	0.55	0.69
Thorium-234	BGL00003	SSBG0019	0.00	pCi/g	0.64	0.7
Thorium-234	BGL00003	SSBG0020	4.00	pCi/g	0.68	0.75
Thorium-234	BGL00003	SSBG0023	19.00	pCi/g	0.94	0.78
Thorium-234	BGL00003	SSBG0027	39.00	pCi/g	0.85	0.79
Thorium-234	BGL00004	SSBG0028	0.00	pCi/g	1.03	0.84
Thorium-234	BGL00004	SSBG0029	0.00	pCi/g	0.7	0.84
Thorium-234	BGL00004	SSBG0030	4.00	pCi/g	0.91	0.85
Thorium-234	BGL00004	SSBG0033	19.00	pCi/g	0.67	0.91
Thorium-234	BGL00004	SSBG0037	39.00	pCi/g	0.84	0.91
Thorium-234	BGL00005	SSBG0038	0.00	pCi/g	0.84	0.93
Thorium-234	BGL00005	SSBG0039	4.00	pCi/g	0.44	0.94
Thorium-234	BGL00005	SSBG0042	19.00	pCi/g	9.3	0.96
Thorium-234	BGL00005	SSBG0046	39.00	pCi/g	1.26	1.03
Thorium-234	BGL00006	SSBG0047	0.00	pCi/g	0.75	1.2
Thorium-234	BGL00006	SSBG0048	0.00	pCi/g	0.61	1.26
Thorium-234	BGL00006	SSBG0049	4.00	pCi/g	0.93	1.33
Thorium-234	BGL00006	SSBG0052	19.00	pCi/g	0.91	
Thorium-234	BGL00006	SSBG0056	39.00	pCi/g	1.33	

Bin	Frequency
0.5	2
0.7	7
0.9	6
1.1	6
1.3	2
1.5	1
More	0



SAMP_ID	CONC	
SSBG0009	2.8	Removed from calculation
SSBG0042	9.3	Data points are above 99% quant

Mean (co	0.82125
Std Dev (c	0.23302
Z	2.33
99th Quar	1.364187

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples,	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W	
1	0.41	0.1681	0.41	0.4493	0.413356	0.96729	W is greater than 0.91
2	0.44	0.1936	0.44	0.3098	0.254036		Cannot rule out
3	0.55	0.3025	0.55	0.2554	0.16601	d	normal distribution.
4	0.61	0.3721	0.61	0.2145	0.09009	1.24886	
5	0.64	0.4096	0.64	0.1807	0.057824		
6	0.67	0.4489	0.67	0.1512	0.040824		
7	0.68	0.4624	0.68	0.1245	0.031125		
8	0.69	0.4761	0.69	0.0997	0.021934		
9	0.7	0.49	0.7	0.0764	0.016044		
10	0.75	0.5625	0.75	0.0539	0.00539		
11	0.78	0.6084	0.78	0.0321	0.001926		
12	0.79	0.6241	0.79	0.0107	0.000535		
13	0.84	0.7056	0.84				
14	0.84	0.7056	0.84				
15	0.85	0.7225	0.85				
16	0.91	0.8281	0.91				
17	0.91	0.8281	0.91				
18	0.93	0.8649	0.93				
19	0.94	0.8836	0.94				
20	0.96	0.9216	0.96				
21	1.03	1.0609	1.03				
22	1.2	1.44	1.2				
23	1.26	1.5876	1.26				
24	1.33	1.769	1.33				
	[SUM (x_i)]	SUM (x_i^2)					
	388.484	17.436					

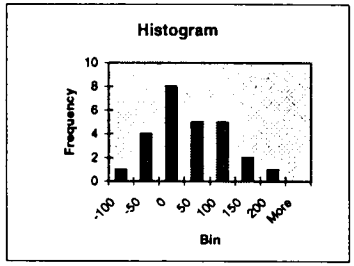
Mean (conc)	0.82125
Std Dev (conc)	0.233020105
Z	1.645
95 th Quantile (pCi/g)	**1.20**

95 % Confidence Limits on 95 th Quantile		*80 % Confidence Limits on 95 th Quantile*	
a = 5%		a = 20%	
p = 95%		p = 95%	
K (estimating factor) =	2.391	K (estimating factor) =	2.145
95% LL (pCi/g) =	**1.03**	**80% LL (pCi/g) =**	**1.09**
95% UL (pCi/g)=	**1.38**	**80% UL (pCi/g)=**	**1.32**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Tritium	BGL00001	SSBG0001	0.00	pCi/L	-20	-100
Tritium	BGL00001	SSBG0002	4.00	pCi/L	0	-70
Tritium	BGL00001	SSBG0005	19.00	pCi/L	40	-70
Tritium	BGL00001	SSBG0009	39.00	pCi/L	-70	-60
Tritium	BGL00002	SSBG0010	0.00	pCi/L	-30	-60
Tritium	BGL00002	SSBG0011	4.00	pCi/L	-60	-30
Tritium	BGL00002	SSBG0014	19.00	pCi/L	140	-20
Tritium	BGL00002	SSBG0018	39.00	pCi/L	0	0
Tritium	BGL00003	SSBG0019	0.00	pCi/L	0	0
Tritium	BGL00003	SSBG0020	4.00	pCi/L	0	0
Tritium	BGL00003	SSBG0023	19.00	pCi/L	180	0
Tritium	BGL00003	SSBG0027	39.00	pCi/L	-70	0
Tritium	BGL00004	SSBG0028	0.00	pCi/L	-60	0
Tritium	BGL00004	SSBG0029	0.00	pCi/L	40	30
Tritium	BGL00004	SSBG0030	4.00	pCi/L	80	40
Tritium	BGL00004	SSBG0033	19.00	pCi/L	70	40
Tritium	BGL00004	SSBG0037	39.00	pCi/L	100	40
Tritium	BGL00005	SSBG0038	0.00	pCi/L	30	50
Tritium	BGL00005	SSBG0039	4.00	pCi/L	40	70
Tritium	BGL00005	SSBG0042	19.00	pCi/L	120	70
Tritium	BGL00005	SSBG0046	39.00	pCi/L	70	80
Tritium	BGL00006	SSBG0047	0.00	pCi/L	0	80
Tritium	BGL00006	SSBG0048	0.00	pCi/L	0	100
Tritium	BGL00006	SSBG0049	4.00	pCi/L	-100	120
Tritium	BGL00006	SSBG0052	19.00	pCi/L	50	140
Tritium	BGL00006	SSBG0056	39.00	pCi/L	80	180

Bin	*Frequency*
-100	1
-50	4
0	8
50	5
100	5
150	2
200	1
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a^*(x_{n+1} - x_i)$ (n=26)	W
1	-20	400	-100	0.4407	123.396	0.976192
2	0	0	-70	0.3043	63.903	
3	40	1,600	-70	0.2533	48.127	d
4	-70	4,900	-60	0.2151	34.416	120234.6
5	-30	900	-60	0.1836	25.704	
6	-60	3,600	-30	0.1563	17.193	
7	140	19,600	-20	0.1316	11.844	
8	0	0	0	0.1089	7.623	
9	0	0	0	0.0876	4.38	
10	0	0	0	0.0672	2.688	
11	180	32,400	0	0.0476	1.904	
12	-70	4,900	0	0.0284	1.136	
13	-60	3,600	0	0.0094	0.282	
14	40	1,600	30			
15	80	6,400	40			
16	70	4,900	40			
17	100	10,000	40			
18	30	900	50			
19	40	1,600	70			
20	120	14,400	70			
21	70	4,900	80			
22	0	0	80			
23	0	0	100			
24	-100	10,000	120			
25	50	2,500	140			
26	80	6,400	180			
	$[SUM (x_i)]^2$	SUM (x_i^2)				
	396,900	135,500				

W is greater than 0.92
Cannot rule out normal distribution.

Mean (conc)	24.2307692
Std Dev (conc)	69.3497269
Z	1.645
95 th Quantile (pCi/g)	**138.31**

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (pCi/g) =	**89.03**
95% UL (pCi/g)=	**187.59**

80 % Confidence Limits on 95 th Quantile

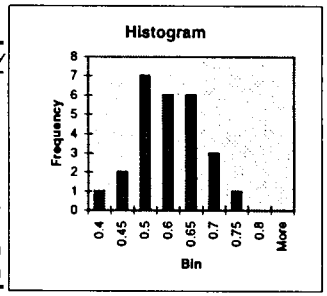
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (pCi/g) =	**105.26**
80% UL (pCi/g)=	**171.36**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Uranium-233/234	BGL00001	SSBG0001	0.00	pCi/g	0.475	0.37
Uranium-233/234	BGL00001	SSBG0002	4.00	pCi/g	0.625	0.43
Uranium-233/234	BGL00001	SSBG0005	19.00	pCi/g	0.724	0.436
Uranium-233/234	BGL00001	SSBG0009	39.00	pCi/g	0.491	0.468
Uranium-233/234	BGL00002	SSBG0010	0.00	pCi/g	0.606	0.468
Uranium-233/234	BGL00002	SSBG0011	4.00	pCi/g	0.496	0.475
Uranium-233/234	BGL00002	SSBG0014	19.00	pCi/g	0.535	0.475
Uranium-233/234	BGL00002	SSBG0018	39.00	pCi/g	0.475	0.491
Uranium-233/234	BGL00003	SSBG0019	0.00	pCi/g	0.527	0.496
Uranium-233/234	BGL00003	SSBG0020	4.00	pCi/g	0.468	0.5
Uranium-233/234	BGL00003	SSBG0023	19.00	pCi/g	0.677	0.507
Uranium-233/234	BGL00003	SSBG0027	39.00	pCi/g	0.605	0.527
Uranium-233/234	BGL00004	SSBG0028	0.00	pCi/g	0.468	0.535
Uranium-233/234	BGL00004	SSBG0029	0.00	pCi/g	0.436	0.544
Uranium-233/234	BGL00004	SSBG0030	4.00	pCi/g	0.571	0.571
Uranium-233/234	BGL00004	SSBG0033	19.00	pCi/g	0.544	0.6
Uranium-233/234	BGL00004	SSBG0037	39.00	pCi/g	0.634	0.604
Uranium-233/234	BGL00005	SSBG0038	0.00	pCi/g	0.507	0.605
Uranium-233/234	BGL00005	SSBG0039	4.00	pCi/g	0.37	0.606
Uranium-233/234	BGL00005	SSBG0042	19.00	pCi/g	0.604	0.625
Uranium-233/234	BGL00005	SSBG0046	39.00	pCi/g	0.7	0.634
Uranium-233/234	BGL00006	SSBG0047	0.00	pCi/g	0.43	0.65
Uranium-233/234	BGL00006	SSBG0048	0.00	pCi/g	0.6	0.677
Uranium-233/234	BGL00006	SSBG0049	4.00	pCi/g	0.5	0.68
Uranium-233/234	BGL00006	SSBG0052	19.00	pCi/g	0.68	0.7
Uranium-233/234	BGL00006	SSBG0056	39.00	pCi/g	0.65	0.724

Bin	Frequency
0.4	1
0.45	2
0.5	7
0.6	6
0.65	6
0.7	3
0.75	1
0.8	0
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i (# Samples)	x_i CONC	$(x_i)^2$ (Conc)^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	0.475	0.226	0.37	0.4407	0.156008	0.969367
2	0.625	0.391	0.43	0.3043	0.082161	
3	0.724	0.524	0.436	0.2533	0.061805	d
4	0.491	0.241	0.468	0.2151	0.044956	0.216165
5	0.606	0.367	0.468	0.1836	0.033415	
6	0.496	0.246	0.475	0.1563	0.024852	
7	0.535	0.286	0.475	0.1316	0.01974	
8	0.475	0.226	0.491	0.1089	0.012524	
9	0.527	0.278	0.496	0.0876	0.009548	
10	0.468	0.219	0.5	0.0672	0.006989	
11	0.677	0.458	0.507	0.0476	0.004427	
12	0.605	0.366	0.527	0.0284	0.00125	
13	0.468	0.219	0.535	0.0094	8.46E-05	
14	0.436	0.190	0.544			
15	0.571	0.326	0.571			
16	0.544	0.296	0.6			
17	0.634	0.402	0.604			
18	0.507	0.257	0.605			
19	0.37	0.137	0.606			
20	0.604	0.365	0.625			
21	0.7	0.490	0.634			
22	0.43	0.185	0.65			
23	0.6	0.360	0.677			
24	0.5	0.250	0.68			
25	0.68	0.462	0.7			
26	0.65	0.423	0.724			
	$[SUM (x_i)]^2$	$SUM (x_i^2)$				
	207.302	8.189				

W is greater than 0.92
Cannot rule out normal distribution.

Mean (conc)	0.55376923
Std Dev (conc)	0.09298701
Z	1.645
95 th Quantile (pCi/g)	**0.71**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.64**
95% UL (pCi/g)=	**0.77**

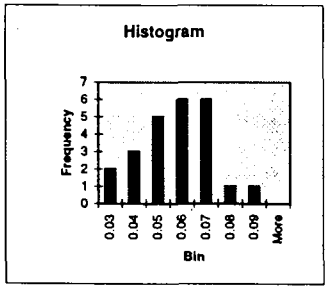
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.66**
80% UL (pCi/g)=	**0.75**

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Uranium-235	BGL00001	SSBG0001	0.00	pCi/g	0.045	0.029
Uranium-235	BGL00001	SSBG0002	4.00	pCi/g	0.088	0.03
Uranium-235	BGL00001	SSBG0005	19.00	pCi/g	0.065	0.032
Uranium-235	BGL00001	SSBG0009	39.00	pCi/g	0.059	0.034
Uranium-235	BGL00002	SSBG0010	0.00	pCi/g	0.055	0.038
Uranium-235	BGL00002	SSBG0011	4.00	pCi/g	0.063	0.043
Uranium-235	BGL00002	SSBG0014	19.00	pCi/g	0.032	0.045
Uranium-235	BGL00002	SSBG0018	39.00	pCi/g	0.043	0.047
Uranium-235	BGL00003	SSBG0019	0.00	pCi/g	0.03	0.05
Uranium-235	BGL00003	SSBG0020	4.00	pCi/g	0.079	0.05
Uranium-235	BGL00003	SSBG0023	19.00	pCi/g	0.029	0.051
Uranium-235	BGL00003	SSBG0027	39.00	pCi/g	0.06	0.055
Uranium-235	BGL00004	SSBG0028	0.00	pCi/g	0.038	0.055
Uranium-235	BGL00004	SSBG0029	0.00	pCi/g	0.055	0.059
Uranium-235	BGL00004	SSBG0030	4.00	pCi/g	0.07	0.06
Uranium-235	BGL00004	SSBG0033	19.00	pCi/g	0.047	0.06
Uranium-235	BGL00004	SSBG0037	39.00	pCi/g	0.051	0.061
Uranium-235	BGL00005	SSBG0038	0.00	pCi/g	0.063	0.063
Uranium-235	BGL00005	SSBG0039	4.00	pCi/g	0.034	0.063
Uranium-235	BGL00005	SSBG0042	19.00	pCi/g	0.068	0.065
Uranium-235	BGL00005	SSBG0046	39.00	pCi/g	0.05	0.068
Uranium-235	BGL00006	SSBG0047	0.00	pCi/g	0.05	0.07
Uranium-235	BGL00006	SSBG0048	0.00	pCi/g	0.06	0.079
Uranium-235	BGL00006	SSBG0049	4.00	pCi/g	0.061	0.088
Uranium-235	BGL00006	SSBG0052	19.00	pCi/g	0.103	
Uranium-235	BGL00006	SSBG0056	39.00	pCi/g	0.13	

Bin	Frequency
0.03	2
0.04	3
0.05	5
0.06	6
0.07	6
0.08	1
0.09	1
More	0



SAMP_ID	CONC	
SSBG0052	0.103	Removed from calculation
SSBG0056	0.13	Data points are above 99% quantile

Mean (conc)	0.054
Std Dev (conc)	0.015176
Z	2.33
99th Quantile (pCi/g)	**0.089**

Mean (conc)	0.05395833
Std Dev (conc)	0.01517572
Z	1.645
95 th Quantile (pCi/g)	**0.079**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (pCi/g) =	**0.068**
95% UL (pCi/g)=	**0.090**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (pCi/g) =	**0.071**
80% UL (pCi/g)=	**0.087**

Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

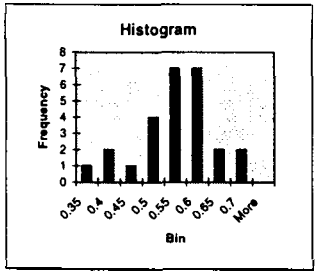
i	x_i	$(x_i)^2$	x_i		$a^*(x_{n+1} - x_i)$	
(# Samples	CONC	(Conc)^2	Ranked	a stats	(n=26)	W
1	0.029	0.001	0.029	0.4493	0.026509	**0.972882**
2	0.03	0.001	0.03	0.3098	0.01518	
3	0.032	0.001	0.032	0.2554	0.009705	d
4	0.034	0.001	0.034	0.2145	0.007293	**0.005297**
5	0.038	0.001	0.038	0.1807	0.004879	
6	0.043	0.002	0.043	0.1512	0.003024	
7	0.045	0.002	0.045	0.1245	0.002241	
8	0.047	0.002	0.047	0.0997	0.001396	
9	0.05	0.003	0.05	0.0764	0.000764	
10	0.05	0.003	0.05	0.0539	0.000539	
11	0.051	0.003	0.051	0.0321	0.000257	
12	0.055	0.003	0.055	0.0107	0	
13	0.055	0.003	0.055			
14	0.059	0.003	0.059			
15	0.06	0.004	0.06			
16	0.06	0.004	0.06			
17	0.061	0.004	0.061			
18	0.063	0.004	0.063			
19	0.063	0.004	0.063			
20	0.065	0.004	0.065			
21	0.068	0.005	0.068			
22	0.07	0.005	0.07			
23	0.079	0.006	0.079			
24	0.088	0.008	0.088			
	$[SUM (x_i)]^2$	SUM (x_i^2)				
	1.677	0.075				

W is greater than 0.91
Cannot rule out normal distribution.

Calculation of Background Radiological Activity in Soil
LEHR Facility, Davis, California

LAB_CHEM	SITE_ID	SAMP_ID	SAMP_DEPTH	UNITS	CONC	CONC Ranked
Uranium-238	BGL00001	SSBG0001	0.00	pCi/g	0.491	0.327
Uranium-238	BGL00001	SSBG0002	4.00	pCi/g	0.562	0.369
Uranium-238	BGL00001	SSBG0005	19.00	pCi/g	0.619	0.4
Uranium-238	BGL00001	SSBG0009	39.00	pCi/g	0.538	0.405
Uranium-238	BGL00002	SSBG0010	0.00	pCi/g	0.598	0.46
Uranium-238	BGL00002	SSBG0011	4.00	pCi/g	0.631	0.491
Uranium-238	BGL00002	SSBG0014	19.00	pCi/g	0.563	0.491
Uranium-238	BGL00002	SSBG0018	39.00	pCi/g	0.491	0.497
Uranium-238	BGL00003	SSBG0019	0.00	pCi/g	0.497	0.507
Uranium-238	BGL00003	SSBG0020	4.00	pCi/g	0.552	0.518
Uranium-238	BGL00003	SSBG0023	19.00	pCi/g	0.533	0.52
Uranium-238	BGL00003	SSBG0027	39.00	pCi/g	0.583	0.523
Uranium-238	BGL00004	SSBG0028	0.00	pCi/g	0.405	0.53
Uranium-238	BGL00004	SSBG0029	0.00	pCi/g	0.369	0.533
Uranium-238	BGL00004	SSBG0030	4.00	pCi/g	0.58	0.538
Uranium-238	BGL00004	SSBG0033	19.00	pCi/g	0.507	0.552
Uranium-238	BGL00004	SSBG0037	39.00	pCi/g	0.53	0.562
Uranium-238	BGL00005	SSBG0038	0.00	pCi/g	0.518	0.563
Uranium-238	BGL00005	SSBG0039	4.00	pCi/g	0.327	0.58
Uranium-238	BGL00005	SSBG0042	19.00	pCi/g	0.523	0.583
Uranium-238	BGL00005	SSBG0046	39.00	pCi/g	0.69	0.59
Uranium-238	BGL00006	SSBG0047	0.00	pCi/g	0.4	0.598
Uranium-238	BGL00006	SSBG0048	0.00	pCi/g	0.52	0.619
Uranium-238	BGL00006	SSBG0049	4.00	pCi/g	0.46	0.631
Uranium-238	BGL00006	SSBG0052	19.00	pCi/g	0.67	0.67
Uranium-238	BGL00006	SSBG0056	39.00	pCi/g	0.59	0.69

Bin	Frequency
0.35	1
0.4	2
0.45	1
0.5	4
0.55	7
0.6	7
0.65	2
0.7	2
More	0



Shapiro Wilk Test to Determine Whether Data Fits Normal Distribution

i	x_i	$(x_i)^2$	x_i	$a^*(x_{n-i+1} - x_i)$		
(# Samples	CONC	(Conc)^2	Ranked	a stats	(n=26)	W
1	0.491	0.241	0.327	0.4407	0.159974	0.968858
2	0.562	0.316	0.369	0.3043	0.091594	
3	0.619	0.383	0.4	0.2533	0.058512	d
4	0.538	0.289	0.405	0.2151	0.046031	0.188991
5	0.598	0.358	0.46	0.1836	0.025337	
6	0.631	0.398	0.491	0.1563	0.015474	
7	0.563	0.317	0.491	0.1316	0.012107	
8	0.491	0.241	0.497	0.1089	0.009039	
9	0.497	0.247	0.507	0.0876	0.004906	
10	0.552	0.305	0.518	0.0672	0.002957	
11	0.533	0.284	0.52	0.0476	0.001523	
12	0.583	0.340	0.523	0.0284	0.000426	
13	0.405	0.164	0.53	0.0094	2.82E-05	
14	0.369	0.136	0.533			
15	0.58	0.336	0.538			
16	0.507	0.257	0.552			
17	0.53	0.281	0.562			
18	0.518	0.268	0.563			
19	0.327	0.107	0.58			
20	0.523	0.274	0.583			
21	0.69	0.476	0.59			
22	0.4	0.160	0.598			
23	0.52	0.270	0.619			
24	0.46	0.212	0.631			
25	0.67	0.449	0.67			
26	0.59	0.348	0.69			
	[SUM (x_i)]^2	SUM (x_i^2)				
	188.980	7.457				

W is greater than 0.92
Cannot rule out
normal distribution.

Mean (conc)	0.528730769
Std Dev (conc)	0.086946217
Z	1.645
95 th Quantile (pCi/g)	**0.67**

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (pCi/g) =	**0.61**
95% UL (pCi/g)=	**0.73**

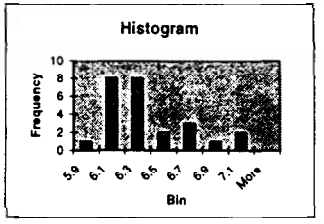
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (pCi/g) =	**0.63**
80% UL (pCi/g)=	**0.71**

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	Units	CONC	CRanked	Ln Conc
BGL00001	SSBG0001	Alkalinity Total(	mg/kg	410	350	5.857933
BGL00002	SSBG0010	Alkalinity Total(	mg/kg	410	370	5.913503
BGL00003	SSBG0019	Alkalinity Total(	mg/kg	490	370	5.913503
BGL00004	SSBG0028	Alkalinity Total(	mg/kg	370	380	5.940171
BGL00004	SSBG0029	Alkalinity Total(	mg/kg	380	380	5.940171
BGL00005	SSBG0038	Alkalinity Total(	mg/kg	520	400	5.991465
BGL00006	SSBG0047	Alkalinity Total(	mg/kg	1000	410	6.016157
BGL00006	SSBG0048	Alkalinity Total(	mg/kg	550	410	6.016157
BGL00001	SSBG0002	Alkalinity Total(	mg/kg	380	410	6.016157
BGL00002	SSBG0011	Alkalinity Total(	mg/kg	480	450	6.109248
BGL00003	SSBG0020	Alkalinity Total(	mg/kg	710	450	6.109248
BGL00004	SSBG0030	Alkalinity Total(	mg/kg	350	470	6.152733
BGL00005	SSBG0039	Alkalinity Total(	mg/kg	370	480	6.173786
BGL00006	SSBG0049	Alkalinity Total(	mg/kg	830	480	6.173786
BGL00001	SSBG0005	Alkalinity Total(	mg/kg	1000	490	6.194405
BGL00002	SSBG0014	Alkalinity Total(	mg/kg	710	500	6.214608
BGL00003	SSBG0023	Alkalinity Total(	mg/kg	710	520	6.253829
BGL00004	SSBG0033	Alkalinity Total(	mg/kg	410	550	6.309918
BGL00005	SSBG0042	Alkalinity Total(	mg/kg	470	550	6.309918
BGL00006	SSBG0052	Alkalinity Total(	mg/kg	480	710	6.565265
BGL00001	SSBG0009	Alkalinity Total(	mg/kg	400	710	6.565265
BGL00003	SSBG0027	Alkalinity Total(	mg/kg	500	710	6.565265
BGL00004	SSBG0037	Alkalinity Total(	mg/kg	550	830	6.721426
BGL00005	SSBG0046	Alkalinity Total(	mg/kg	450	1,000	6.907755
BGL00006	SSBG0056	Alkalinity Total(	mg/kg	450	1,000	6.907755

Bin	Frequency
5.9	1
6.1	8
6.3	8
6.5	2
6.7	3
6.9	1
7.1	2
More	0



Removed from Calc
SSBG001E Alkalinity T mg/kg 11000

Mean [Ln(conc)] 6.233577
Std Dev [Ln(conc)] 0.306475
Z 1.645
95 th Quantile (mg/Kg) 844
Bias % 0.19 (OK, <5%)

80 % Confidence Limits on 95 th Quantile
a = 20%
p = 95%
K (estimating factor) = 2.132
80% LL (mg/kg) = 708
80% UL (mg/kg)= 979

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

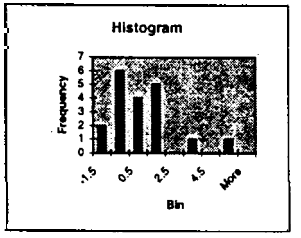
i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=25)	W
1	350	5.858	34.315	5.857933	0.4450	0.467171	**0.885050121**
2	370	5.914	34.970	5.913503	0.3069	0.305136	
3	370	5.914	34.970	5.913503	0.2543	0.205455	**d**
4	380	5.940	35.286	5.940171	0.2148	0.13427	**2.254250939**
5	380	5.940	35.286	5.940171	0.1822	0.113892	
6	400	5.991	35.898	5.991465	0.1539	0.088308	
7	410	6.016	36.194	6.016157	0.1283	0.03769	
8	410	6.016	36.194	6.016157	0.1046	0.030727	
9	410	6.016	36.194	6.016157	0.0823	0.01956	
10	450	6.109	37.323	6.109248	0.0610	0.006427	
11	450	6.109	37.323	6.109248	0.0403	0.003432	
12	470	6.153	37.856	6.152733	0.0200	0.000421	
13	480	6.174	38.116	6.173786	0.0000	0	
14	480	6.174	38.116	6.173786			
15	490	6.194	38.371	6.194405			
16	500	6.215	38.621	6.214608			
17	520	6.254	39.110	6.253829			
18	550	6.310	39.815	6.309918			
19	550	6.310	39.815	6.309918			
20	710	6.565	43.103	6.565265			
21	710	6.565	43.103	6.565265			
22	710	6.565	43.103	6.565265			
23	830	6.721	45.178	6.721426			
24	1,000	6.908	47.717	6.907755			
25	1,000	6.908	47.717	6.907755			
		[SUM (x_i)]^2	SUM (x_i^2)				
		24285.927	973.691				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	LN CONC	LN C Ranked
BGL00002	SSBG0010	Ammonia-Nitrogen	1.1	0.0953102	-1.714798428
BGL00003	SSBG0019	Ammonia-Nitrogen	3.8	1.3350011	-1.560647748
BGL00004	SSBG0028	Ammonia-Nitrogen	0.27	-1.3093333	-1.30933332
BGL00005	SSBG0038	Ammonia-Nitrogen	0.85	-0.1625189	-1.30933332
BGL00006	SSBG0047	Ammonia-Nitrogen	3.7	1.3083328	-1.203972804
BGL00006	SSBG0048	Ammonia-Nitrogen	17.	2.8332133	-1.108662625
BGL00001	SSBG0002	Ammonia-Nitrogen	0.21	-1.5606477	-1.021651248
BGL00002	SSBG0011	Ammonia-Nitrogen	1.5	0.4054651	-0.967584026
BGL00004	SSBG0030	Ammonia-Nitrogen	0.27	-1.3093333	-0.162518929
BGL00005	SSBG0039	Ammonia-Nitrogen	0.33	-1.1086626	0.09531018
BGL00006	SSBG0049	Ammonia-Nitrogen	3.2	1.1631508	0.405465108
BGL00001	SSBG0005	Ammonia-Nitrogen	0.18	-1.7147984	0.470003629
BGL00004	SSBG0033	Ammonia-Nitrogen	0.30	-1.2039728	0.741937345
BGL00005	SSBG0042	Ammonia-Nitrogen	0.38	-0.967584	1.098612289
BGL00006	SSBG0052	Ammonia-Nitrogen	2.1	0.7419373	1.16315081
BGL00001	SSBG0009	Ammonia-Nitrogen	190	5.2470241	1.30833282
BGL00004	SSBG0037	Ammonia-Nitrogen	3.0	1.0986123	1.335001067
BGL00005	SSBG0046	Ammonia-Nitrogen	0.36	-1.0216512	2.833213344
BGL00006	SSBG0056	Ammonia-Nitrogen	1.6	0.4700036	5.247024072

Mean [Ln(conc)]	**0.228397274**
Std Dev [Ln(conc)]	**1.748902174**
Z	1.645
95 th Quantile (mg/Kg)	**22**
Bias %	8.38
80 % Confidence Limits on 95 th Quantile	
a = 20%	
p = 95%	
K (estimating factor) =	2.228
80% LL (mg/kg) =	**-17**
80% UL (mg/kg)=	**62**

Bin	*Frequency*
-1.5	2
-0.5	6
0.5	4
1.5	5
2.5	0
3.5	1
4.5	0
5.5	1
More	0



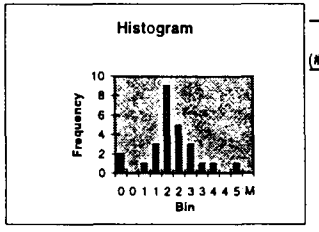
Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	**1.1**	**0.095**	0.009	-1.7148	0.4808	3.347244	**0.870300914**
2	3.8	1.335	1.782	-1.56065	0.3232	1.420096	
3	0.3	-1.309	1.714	-1.30933	0.2561	0.677214	**d**
4	**0.9**	**-0.163**	0.026	-1.30933	0.2059	0.538977	**55.05585866**
5	3.7	1.308	1.712	-1.20397	0.1641	0.388445	
6	17.0	2.833	8.027	-1.10866	0.1271	0.280545	
7	0.2	-1.561	2.436	-1.02165	0.0932	0.164366	
8	1.5	0.405	0.164	-0.96758	0.0612	0.08798	
9	0.3	-1.309	1.714	-0.16252	0.0303	0.01721	
10	0.3	-1.109	1.229	0.09531	0.0000	0	
11	3.2	1.163	1.353	0.405465			
12	0.2	-1.715	2.941	0.470004			
13	0.3	-1.204	1.450	0.741937			
14	**0.4**	**-0.968**	**0.936**	1.098612			
15	2.1	0.742	0.550	1.163151			
16	190.0	5.247	27.531	1.308333			
17	3.0	1.099	1.207	1.335001			
18	0.4	-1.022	1.044	2.833213			
19	1.6	0.470	0.221	5.247024			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		18.832	56.047				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Chloride	5.6	1.722767	-0.12783337
BGL00002	SSBG0010	Chloride	7.6	2.028148	0
BGL00003	SSBG0019	Chloride	1.0	0	0.78845736
BGL00004	SSBG0028	Chloride	19.	2.944439	1.029619417
BGL00004	SSBG0029	Chloride	46.	3.828641	1.223775432
BGL00005	SSBG0038	Chloride	130	4.867534	1.410986974
BGL00006	SSBG0047	Chloride	22.	3.091042	1.589235205
BGL00006	SSBG0048	Chloride	16.	2.772589	1.648658626
BGL00001	SSBG0002	Chloride	0.88	-0.127833	1.686398954
BGL00002	SSBG0011	Chloride	12.	2.484907	1.686398954
BGL00003	SSBG0020	Chloride	15.	2.70805	1.722766598
BGL00004	SSBG0030	Chloride	3.4	1.223775	1.722766598
BGL00005	SSBG0039	Chloride	2.2	0.788457	1.740466175
BGL00006	SSBG0049	Chloride	11.	2.397895	1.774952351
BGL00001	SSBG0005	Chloride	12.	2.484907	1.887069649
BGL00002	SSBG0014	Chloride	5.4	1.686399	2.028148247
BGL00003	SSBG0023	Chloride	2.8	1.029619	2.028148247
BGL00004	SSBG0033	Chloride	6.6	1.88707	2.397895273
BGL00005	SSBG0042	Chloride	5.2	1.648659	2.48490665
BGL00006	SSBG0052	Chloride	5.9	1.774952	2.48490665
BGL00001	SSBG0009	Chloride	5.7	1.740466	2.708050201
BGL00002	SSBG0018	Chloride	5.4	1.686399	2.772588722
BGL00003	SSBG0027	Chloride	4.9	1.589235	2.944438979
BGL00004	SSBG0037	Chloride	7.6	2.028148	3.091042453
BGL00005	SSBG0046	Chloride	4.1	1.410987	3.828641396
BGL00006	SSBG0056	Chloride	5.6	1.722767	4.86753445

Bin	*Frequency*
0	2
0.5	0
1	1
1.5	3
2	9
2.5	5
3	3
3.5	1
4	1
4.5	0
5	1
More	0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	5.6	1.723	2.968	-0.127833	0.4407	2.201459	0.951001
2	7.6	2.028	4.113	0	0.3043	1.165056	
3	1.0	0.000	0.000	0.788457	0.2533	0.583245	d
4	19.0	2.944	8.670	1.029619	0.2151	0.411878	28.02443
5	46.0	3.829	14.658	1.223775	0.1836	0.284362	
6	130.0	4.868	23.693	1.410987	0.1563	0.202731	
7	22.0	3.091	9.555	1.589235	0.1316	0.11787	
8	16.0	2.773	7.687	1.648659	0.1089	0.091067	
9	0.9	-0.128	0.016	1.686399	0.0876	0.062327	
10	12.0	2.485	6.175	1.686399	0.0672	0.022966	
11	15.0	2.708	7.334	1.722767	0.0476	0.014536	
12	3.4	1.224	1.498	1.722767	0.0284	0.004666	
13	2.2	0.788	0.622	1.740466	0.0094	0.000324	
14	11.0	2.398	5.750	1.774952			
15	12.0	2.485	6.175	1.88707			
16	5.4	1.686	2.844	2.028148			
17	2.8	1.030	1.060	2.028148			
18	6.6	1.887	3.561	2.397895			
19	5.2	1.649	2.718	2.484907			
20	5.9	1.775	3.150	2.484907			
21	5.7	1.740	3.029	2.70805			
22	5.4	1.686	2.844	2.772589			
23	4.9	1.589	2.526	2.944439			
24	7.6	2.028	4.113	3.091042			
25	4.1	1.411	1.991	3.828641			
26	5.6	1.723	2.968	4.867534			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		2644.018	129.717				

Mean [Ln(conc)]	1.977693084
Std Dev [Ln(conc)]	1.05876212
Z	1.645
95 th Quantile (mg/Kg)	**41**
Bias %	2.18 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**-5**
95% UL (mg/kg)=	**88**

80 % Confidence Limits on 95 th Quantile

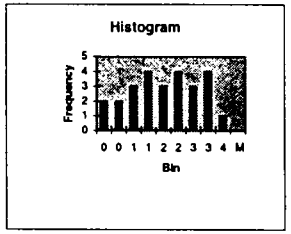
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**14**
80% UL (mg/kg)=	**68**

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Nitrogen, Nitrate (	1	0.09531	-0.891598119
BGL00002	SSBG0010	Nitrogen, Nitrate (	19	2.944439	0
BGL00003	SSBG0019	Nitrogen, Nitrate (	28	3.332205	0.09531018
BGL00004	SSBG0028	Nitrogen, Nitrate (	27	3.295837	0.405465108
BGL00004	SSBG0029	Nitrogen, Nitrate (	45	3.806662	0.741937345
BGL00005	SSBG0038	Nitrogen, Nitrate (	13	2.564949	0.832909123
BGL00006	SSBG0047	Nitrogen, Nitrate (	6	1.791759	0.875468737
BGL00006	SSBG0048	Nitrogen, Nitrate (	10	2.251292	1.098612289
BGL00001	SSBG0002	Nitrogen, Nitrate (	0	-0.8916	1.16315081
BGL00002	SSBG0011	Nitrogen, Nitrate (	25	3.218876	1.16315081
BGL00003	SSBG0020	Nitrogen, Nitrate (	24	3.178054	1.223775432
BGL00004	SSBG0030	Nitrogen, Nitrate (	3	1.163151	1.62924054
BGL00005	SSBG0039	Nitrogen, Nitrate (	1	0	1.722766598
BGL00006	SSBG0049	Nitrogen, Nitrate (	3	1.098612	1.791759469
BGL00001	SSBG0005	Nitrogen, Nitrate (	11	2.397895	2.140066163
BGL00002	SSBG0014	Nitrogen, Nitrate (	9	2.140066	2.163323026
BGL00003	SSBG0023	Nitrogen, Nitrate (	9	2.163323	2.251291799
BGL00004	SSBG0033	Nitrogen, Nitrate (	3	1.223775	2.397895273
BGL00005	SSBG0042	Nitrogen, Nitrate (	3	1.163151	2.564949357
BGL00006	SSBG0052	Nitrogen, Nitrate (	2	0.741937	2.833213344
BGL00001	SSBG0009	Nitrogen, Nitrate (	2	0.405465	2.944438979
BGL00002	SSBG0018	Nitrogen, Nitrate (	6	1.722767	3.17805383
BGL00003	SSBG0027	Nitrogen, Nitrate (	17	2.833213	3.218875825
BGL00004	SSBG0037	Nitrogen, Nitrate (	5	1.629241	3.295836866
BGL00005	SSBG0046	Nitrogen, Nitrate (	2	0.832909	3.33220451
BGL00006	SSBG0056	Nitrogen, Nitrate (	2	0.875469	3.80666249

Bin	*Frequency*
0	2
0.5	2
1	3
1.5	4
2	3
2.5	4
3	3
3.5	4
4	1
More	0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	1.1	0.095	0.009	-0.8916	0.4407	2.070523	0.97383989
2	19.0	2.944	8.670	0	0.3043	1.01399	
3	28.0	3.332	11.104	0.09531	0.2533	0.810693	d
4	27.0	3.296	10.863	0.405465	0.2151	0.605165	36.18462339
5	45.0	3.807	14.491	0.741937	0.1836	0.447271	
6	13.0	2.565	6.579	0.832909	0.1563	0.330032	
7	6.0	1.792	3.210	0.875469	0.1316	0.257639	
8	9.5	2.251	5.068	1.098612	0.1089	0.159684	
9	0.4	-0.892	0.795	1.163151	0.0876	0.108164	
10	25.0	3.219	10.361	1.163151	0.0672	0.073123	
11	24.0	3.178	10.100	1.223775	0.0476	0.044722	
12	3.2	1.163	1.353	1.629241	0.0284	0.014507	
13	1.0	0.000	0.000	1.722767	0.0094	0.000649	
14	3.0	1.099	1.207	1.791759			
15	11.0	2.398	5.750	2.140066			
16	8.5	2.140	4.580	2.163323			
17	8.7	2.163	4.680	2.251292			
18	3.4	1.224	1.498	2.397895			
19	3.2	1.163	1.353	2.564949			
20	2.1	0.742	0.550	2.833213			
21	1.5	0.405	0.164	2.944439			
22	5.6	1.723	2.968	3.178054			
23	17.0	2.833	8.027	3.218876			
24	5.1	1.629	2.654	3.295837			
25	2.3	0.833	0.694	3.332205			
26	2.4	0.875	0.766	3.806662			
		[SUM (x_i)]^2	SUM (x_i^2)				
		2114.046	117.494				

Mean [Ln(conc)]	1.768413838
Std Dev [Ln(conc)]	1.203073121
Z	1.645
95 th Quantile (mg/Kg)	**42**
Bias %	2.82 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**-15**
95% UL (mg/kg)=	**100**

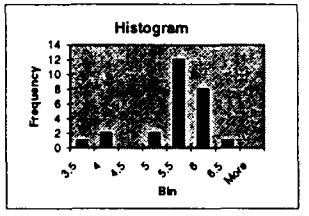
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**10**
80% UL (mg/kg)=	**75**

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Specific C	160	5.075174	3.401197382
BGL00002	SSBG0010	Specific C	230	5.438079	3.80666249
BGL00003	SSBG0019	Specific C	170	5.135798	3.951243719
BGL00004	SSBG0028	Specific C	150	5.010635	4.787491743
BGL00004	SSBG0029	Specific C	620	6.429719	4.941642423
BGL00005	SSBG0038	Specific C	360	5.886104	5.010635294
BGL00006	SSBG0047	Specific C	290	5.669881	5.010635294
BGL00006	SSBG0048	Specific C	280	5.63479	5.010635294
BGL00001	SSBG0002	Specific C	30.	3.401197	5.010635294
BGL00002	SSBG0011	Specific C	400	5.991465	5.075173815
BGL00003	SSBG0020	Specific C	180	5.192957	5.135798437
BGL00004	SSBG0030	Specific C	52.	3.951244	5.135798437
BGL00005	SSBG0039	Specific C	45.	3.806662	5.192956851
BGL00006	SSBG0049	Specific C	270	5.598422	5.192956851
BGL00001	SSBG0005	Specific C	340	5.828946	5.347107531
BGL00002	SSBG0014	Specific C	270	5.598422	5.438079309
BGL00003	SSBG0023	Specific C	230	5.438079	5.438079309
BGL00004	SSBG0033	Specific C	180	5.192957	5.521460918
BGL00005	SSBG0042	Specific C	120	4.787492	5.598421959
BGL00006	SSBG0052	Specific C	140	4.941642	5.598421959
BGL00001	SSBG0009	Specific C	150	5.010635	5.634789603
BGL00002	SSBG0018	Specific C	250	5.521461	5.669880923
BGL00003	SSBG0027	Specific C	210	5.347108	5.828945618
BGL00004	SSBG0037	Specific C	150	5.010635	5.886104031
BGL00005	SSBG0046	Specific C	170	5.135798	5.991464547
BGL00006	SSBG0056	Specific C	150	5.010635	6.429719478

Bin	*Frequency*
3.5	1
4	2
4.5	0
5	2
5.5	12
6	8
6.5	1
More	0



Mean [Ln(conc)]	5.194074558
Std Dev [Ln(conc)]	0.666645954
Z	1.645
95 th Quantile (mg/Kg)	**540**
Bias %	0.86 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**213**
95% UL (mg/kg)=	**866**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**338**
80% UL (mg/kg)=	**741**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	160.0	5.075	25.757	3.401197	0.4407	1.33467	0.907752604
2	230.0	5.438	29.573	3.806662	0.3043	0.664835	
3	170.0	5.136	26.376	3.951244	0.2533	0.4901	d
4	150.0	5.011	25.106	4.787492	0.2151	0.224017	11.1104207
5	620.0	6.430	41.341	4.941642	0.1836	0.133705	
6	360.0	5.886	34.646	5.010635	0.1563	0.097555	
7	290.0	5.670	32.148	5.010635	0.1316	0.077353	
8	280.0	5.635	31.751	5.010635	0.1089	0.06401	
9	30.0	3.401	11.568	5.010635	0.0876	0.044748	
10	400.0	5.991	35.898	5.075174	0.0672	0.024387	
11	180.0	5.193	26.967	5.135798	0.0476	0.014389	
12	52.0	3.951	15.612	5.135798	0.0284	0.006001	
13	45.0	3.807	14.491	5.192957	0.0094	0	
14	270.0	5.598	31.342	5.192957			
15	340.0	5.829	33.977	5.347108			
16	270.0	5.598	31.342	5.438079			
17	230.0	5.438	29.573	5.438079			
18	180.0	5.193	26.967	5.521461			
19	120.0	4.787	22.920	5.598422			
20	140.0	4.942	24.420	5.598422			
21	150.0	5.011	25.106	5.63479			
22	250.0	5.521	30.487	5.669881			
23	210.0	5.347	28.592	5.828946			
24	150.0	5.011	25.106	5.886104			
25	170.0	5.136	26.376	5.991465			
28	150.0	5.011	25.106	6.429719			
		[SUM (x_i)]^2	SUM (x_i^2)				
		18237.406	712.549				

LEHR Facility, Davis, California

SITE ID	SAMP ID	LAB CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Sulfate	39.	3.663562	0.955511445
BGL00002	SSBG0010	Sulfate	42.	3.73767	1.252762968
BGL00003	SSBG0019	Sulfate	13.	2.564949	2.174751721
BGL00004	SSBG0028	Sulfate	12.	2.484907	2.397895273
BGL00004	SSBG0029	Sulfate	20.	2.995732	2.48490665
BGL00005	SSBG0038	Sulfate	130	4.867534	2.48490665
BGL00006	SSBG0047	Sulfate	23.	3.135494	2.48490665
BGL00006	SSBG0048	Sulfate	27.	3.295837	2.564949357
BGL00001	SSBG0002	Sulfate	3.5	1.252763	2.708050201
BGL00002	SSBG0011	Sulfate	53.	3.970292	2.708050201
BGL00003	SSBG0020	Sulfate	17.	2.833213	2.833213344
BGL00004	SSBG0030	Sulfate	8.8	2.174752	2.833213344
BGL00005	SSBG0039	Sulfate	2.6	0.955511	2.833213344
BGL00006	SSBG0049	Sulfate	17.	2.833213	2.890371758
BGL00001	SSBG0005	Sulfate	29.	3.367296	2.944438979
BGL00002	SSBG0014	Sulfate	27.	3.295837	2.944438979
BGL00003	SSBG0023	Sulfate	29.	3.367296	2.995732274
BGL00004	SSBG0033	Sulfate	19.	2.944439	3.135494216
BGL00005	SSBG0042	Sulfate	19.	2.944439	3.295836866
BGL00006	SSBG0052	Sulfate	11.	2.397895	3.295836866
BGL00001	SSBG0009	Sulfate	18.	2.890372	3.36729583
BGL00002	SSBG0018	Sulfate	15.	2.70805	3.36729583
BGL00003	SSBG0027	Sulfate	15.	2.70805	3.663561646
BGL00004	SSBG0037	Sulfate	17.	2.833213	3.737669618
BGL00005	SSBG0046	Sulfate	12.	2.484907	3.970291914
BGL00006	SSBG0056	Sulfate	12.	2.484907	4.86753445

Mean [Ln(conc)]	2.892005014
Std Dev [Ln(conc)]	0.777362141
Z	1.645
95 th Quantile (mg/Kg)	**65**
Bias %	1.17 (OK, <5%)

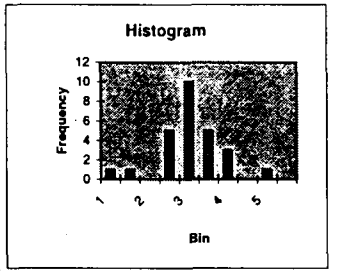
95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**17**
95% UL (mg/kg)=	**113**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**36**
80% UL (mg/kg)=	**94**

Bin	*Frequency*
1	1
1.5	1
2	0
2.5	5
3	10
3.5	5
4	3
4.5	0
5	1
More	0



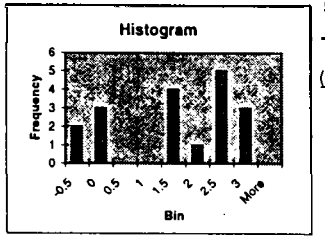
Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	39.0	3.664	13.422	0.955511	0.4407	1.724029	0.9413498
2	42.0	3.738	13.970	1.252763	0.3043	0.826944	
3	13.0	2.565	6.579	2.174752	0.2533	0.395887	d
4	12.0	2.485	6.175	2.397895	0.2151	0.272245	15.107297
5	20.0	2.996	8.974	2.484907	0.1836	0.162007	
6	130.0	4.868	23.693	2.484907	0.1563	0.137917	
7	23.0	3.135	9.831	2.484907	0.1316	0.106718	
8	27.0	3.296	10.863	2.564949	0.1089	0.079594	
9	3.5	1.253	1.569	2.70805	0.0876	0.037444	
10	53.0	3.970	15.763	2.70805	0.0672	0.019332	
11	17.0	2.833	8.027	2.833213	0.0476	0.005294	
12	8.8	2.175	4.730	2.833213	0.0284	0.003159	
13	2.6	0.956	0.913	2.833213	0.0094	0.000537	
14	17.0	2.833	8.027	2.890372			
15	29.0	3.367	11.339	2.944439			
16	27.0	3.296	10.863	2.944439			
17	29.0	3.367	11.339	2.995732			
18	19.0	2.944	8.670	3.135494			
19	19.0	2.944	8.670	3.295837			
20	11.0	2.398	5.750	3.295837			
21	18.0	2.890	8.354	3.367296			
22	15.0	2.708	7.334	3.367296			
23	15.0	2.708	7.334	3.663562			
24	17.0	2.833	8.027	3.73767			
25	12.0	2.485	6.175	3.970292			
26	12.0	2.485	6.175	4.867534			
		[SUM (x_i)]^2	SUM (x_i^2)				
		5653.856	232.563				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Sulfide	0.55	-0.597837	-0.597837
BGL00002	SSBG0010	Sulfide	18.	2.890372	-0.597837
BGL00003	SSBG0019	Sulfide	7.9	2.066863	-0.49429632
BGL00006	SSBG0047	Sulfide	2.8	1.029619	-0.4780358
BGL00006	SSBG0046	Sulfide	3.0	1.098612	-0.4780358
BGL00001	SSBG0002	Sulfide	14.	2.639057	1.029619417
BGL00002	SSBG0011	Sulfide	10.	2.302585	1.098612289
BGL00005	SSBG0039	Sulfide	0.55	-0.597837	1.098612289
BGL00006	SSBG0049	Sulfide	0.61	-0.494296	1.252762968
BGL00001	SSBG0005	Sulfide	10.	2.302585	1.887069649
BGL00002	SSBG0014	Sulfide	15.	2.70805	2.066862759
BGL00003	SSBG0023	Sulfide	3.5	1.252763	2.116255515
BGL00006	SSBG0052	Sulfide	0.62	-0.478036	2.302585093
BGL00001	SSBG0009	Sulfide	11.	2.397895	2.302585093
BGL00002	SSBG0018	Sulfide	8.3	2.116256	2.397895273
BGL00003	SSBG0027	Sulfide	3.0	1.098612	2.63905733
BGL00005	SSBG0046	Sulfide	6.6	1.88707	2.708050201
BGL00006	SSBG0056	Sulfide	0.62	-0.478036	2.890371758

Bin	Frequency
-0.5	2
0	3
0.5	0
1	0
1.5	4
2	1
2.5	5
3	3
More	0



Mean [Ln(conc)]	1.285794317
Std Dev [Ln(conc)]	1.283799586
Z	1.645
95 th Quantile (mg/Kg)	**30**
Bias %	4.68 (OK, <5%)
80 % Confidence Limits on 95 th Quantile	
a = 20%	
p = 95%	
K (estimating factor) =	2.249
80% LL (mg/kg) =	**-5**
80% UL (mg/kg)=	**65**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

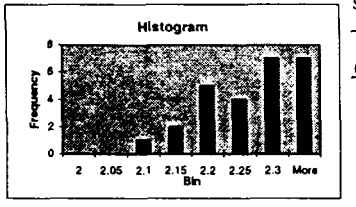
i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	0.6	-0.598	0.357	-0.597837	0.4886	1.704339	**0.856880807**
2	18.0	2.890	8.354	-0.597837	0.3253	1.075405	
3	7.9	2.067	4.272	-0.494296	0.2553	0.799945	**d**
4	2.8	1.030	1.060	-0.478036	0.2027	0.582951	**28.01840339**
5	3.0	1.099	1.207	-0.478036	0.1587	0.441285	
6	14.0	2.639	6.965	1.029619	0.1197	0.152374	
7	10.0	2.303	5.302	1.098612	0.0837	0.085177	
8	0.6	-0.598	0.357	1.098612	0.0496	0.048025	
9	0.6	-0.494	0.244	1.252763	0.0163	0.010339	
10	10.0	2.303	5.302	1.88707			
11	15.0	2.708	7.334	2.066863			
12	3.5	1.253	1.569	2.116256			
13	0.6	-0.478	0.229	2.302585			
14	11.0	2.398	5.750	2.302585			
15	8.3	2.116	4.479	2.397895			
16	3.0	1.099	1.207	2.639057			
17	6.6	1.887	3.561	2.70805			
18	0.6	-0.478	0.229	2.890372			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		535.659	57.777				

pH

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	Ln CONC	Ln C Ranked
BGL00001	SSBG0001	pH	9	2.197225	2.07944154
BGL00002	SSBG0010	pH	9	2.174752	2.10413415
BGL00003	SSBG0019	pH	8	2.079442	2.11625551
BGL00004	SSBG0028	pH	8	2.116256	2.17475172
BGL00004	SSBG0029	pH	8	2.104134	2.17475172
BGL00005	SSBG0038	pH	10	2.272126	2.18605128
BGL00006	SSBG0047	pH	9	2.174752	2.19722458
BGL00006	SSBG0048	pH	10	2.282382	2.19722458
BGL00001	SSBG0002	pH	9	2.230014	2.21920348
BGL00002	SSBG0011	pH	9	2.230014	2.2300144
BGL00003	SSBG0020	pH	9	2.186051	2.2300144
BGL00004	SSBG0030	pH	9	2.197225	2.24070969
BGL00005	SSBG0039	pH	9	2.219203	2.27212589
BGL00006	SSBG0049	pH	10	2.282382	2.28238239
BGL00001	SSBG0005	pH	10	2.302585	2.28238239
BGL00002	SSBG0014	pH	10	2.302585	2.28238239
BGL00003	SSBG0023	pH	10	2.292535	2.28238239
BGL00004	SSBG0033	pH	10	2.282382	2.29253476
BGL00005	SSBG0042	pH	10	2.302585	2.29253476
BGL00006	SSBG0052	pH	10	2.302585	2.30258509
BGL00001	SSBG0009	pH	9	2.24071	2.30258509
BGL00002	SSBG0018	pH	10	2.282382	2.30258509
BGL00003	SSBG0027	pH	10	2.292535	2.30258509
BGL00004	SSBG0037	pH	10	2.302585	2.30258509
BGL00005	SSBG0046	pH	10	2.302585	2.30258509
BGL00006	SSBG0056	pH	10	2.302585	2.30258509

2	*Bin*	*Frequency*
2.05	2	0
2.1	2.05	0
2.15	2.1	1
2.2	2.15	2
2.25	2.2	5
2.3	2.25	4
	2.3	7
	More	7



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	9.0	2.197	4.828	2.0794415	0.4407	0.0983394	**0.841907734**
2	8.8	2.175	4.730	2.1041342	0.3043	0.0603886	
3	8.0	2.079	4.324	2.1162555	0.2533	0.0471973	**d**
4	8.3	2.116	4.479	2.1747517	0.2151	0.027497	**0.116415283**
5	8.2	2.104	4.427	2.1747517	0.1836	0.0234702	
6	9.7	2.272	5.163	2.1860513	0.1563	0.0182142	
7	8.8	2.175	4.730	2.1972246	0.1316	0.0138654	
8	9.8	2.282	5.209	2.1972246	0.1089	0.0103793	
9	9.3	2.230	4.973	2.2192035	0.0876	0.0064238	
10	9.3	2.230	4.973	2.2300144	0.0672	0.0035191	
11	8.9	2.186	4.779	2.2300144	0.0476	0.0024927	
12	9.0	2.197	4.828	2.2407097	0.0284	0.0011835	
13	9.2	2.219	4.925	2.2721259	0.0094	9.641E-05	
14	9.8	2.282	5.209	2.2823824			
15	10.0	2.303	5.302	2.2823824			
16	**10.0**	**2.303**	**5.302**	**2.2823824**			
17	9.9	2.293	5.256	2.2823824			
18	**9.8**	**2.282**	**5.209**	**2.2925348**			
19	10.0	2.303	5.302	2.2925348			
20	**10.0**	**2.303**	**5.302**	**2.3025851**			
21	9.4	2.241	5.021	2.3025851			
22	**9.8**	**2.282**	**5.209**	**2.3025851**			
23	9.9	2.293	5.256	2.3025851			
24	**10.0**	**2.303**	**5.302**	**2.3025851**			
25	10.0	2.303	5.302	2.3025851			
26	10.0	2.303	5.302	2.3025851			
		[SUM (x_i)]^2	**SUM (x_i^2)**				
		3393.598	**130.639**				

Mean [Ln(conc)]	2.240561448
Std Dev [Ln(conc)]	0.068239368
Z	1.645
95 th Quantile (mg/Kg)	**10.5**
Bias %	0.01 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**10.0**
95% UL (mg/kg)=	**11.0**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**10.2**
80% UL (mg/kg)=	**10.9**

Antimony

LEHR Facility, Davis, California

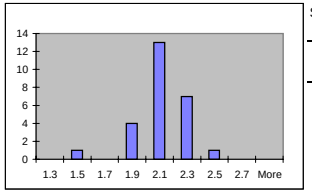
Site ID	Samp ID	Samp Depth	LabChem	CONC	Bin
BGL00001	SSBG0001	0.00	Antimony	0.37	
BGL00002	SSBG0010	0.00	Antimony	6	
BGL00003	SSBG0019	0.00	Antimony	6	
BGL00004	SSBG0028	0.00	Antimony	6	
BGL00004	SSBG0029	0.00	Antimony	6	
BGL00005	SSBG0038	0.00	Antimony	6	
BGL00006	SSBG0047	0.00	Antimony	6	
BGL00006	SSBG0048	0.00	Antimony	6	
BGL00001	SSBG0002	4.00	Antimony	6	
BGL00002	SSBG0011	4.00	Antimony	6	
BGL00003	SSBG0020	4.00	Antimony	6	
BGL00004	SSBG0030	4.00	Antimony	6	
BGL00005	SSBG0039	4.00	Antimony	6	
BGL00006	SSBG0049	4.00	Antimony	6	
BGL00001	SSBG0005	19.00	Antimony	6	
BGL00002	SSBG0014	19.00	Antimony	6	
BGL00003	SSBG0023	19.00	Antimony	6	
BGL00004	SSBG0033	19.00	Antimony	6	
BGL00005	SSBG0042	19.00	Antimony	6	
BGL00006	SSBG0052	19.00	Antimony	6	
BGL00001	SSBG0009	39.00	Antimony	6	
BGL00002	SSBG0018	39.00	Antimony	6	
BGL00003	SSBG0027	39.00	Antimony	6	
BGL00004	SSBG0037	39.00	Antimony	6	
BGL00005	SSBG0046	39.00	Antimony	6	
BGL00006	SSBG0056	39.00	Antimony	6	

Note: Shaded numbers are non detects treated here as one half the detection limit of 12.

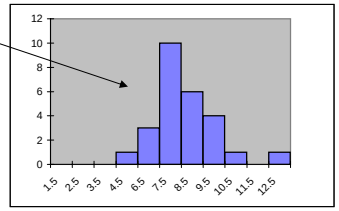
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	ln CONC	Ln CONC
BGL00001	SSBG0001	0.00	Arsenic	7.5	2.015	1.3862944
BGL00002	SSBG0010	0.00	Arsenic	8.5	2.140	1.856298
BGL00003	SSBG0019	0.00	Arsenic	6.5	1.872	1.8718022
BGL00004	SSBG0028	0.00	Arsenic	7.2	1.974	1.8718022
BGL00004	SSBG0029	0.00	Arsenic	7.1	1.960	1.8870696
BGL00005	SSBG0038	0.00	Arsenic	8.6	2.152	1.9459101
BGL00006	SSBG0047	0.00	Arsenic	7.1	1.960	1.9459101
BGL00006	SSBG0048	0.00	Arsenic	7.5	2.015	1.9600948
BGL00001	SSBG0002	4.00	Arsenic	6.4	1.856	1.9600948
BGL00002	SSBG0011	4.00	Arsenic	8	2.079	1.974081
BGL00003	SSBG0020	4.00	Arsenic	7	1.946	1.9878743
BGL00004	SSBG0030	4.00	Arsenic	6.5	1.872	1.9878743
BGL00005	SSBG0039	4.00	Arsenic	7.3	1.988	2.014903
BGL00006	SSBG0049	4.00	Arsenic	7.3	1.988	2.014903
BGL00001	SSBG0005	19.00	Arsenic	7.8	2.054	2.0541237
BGL00002	SSBG0014	19.00	Arsenic	8	2.079	2.0668628
BGL00003	SSBG0023	19.00	Arsenic	6.6	1.887	2.0794415
BGL00004	SSBG0033	19.00	Arsenic	7	1.946	2.0794415
BGL00005	SSBG0042	19.00	Arsenic	7.9	2.067	2.1400662
BGL00006	SSBG0052	19.00	Arsenic	8.5	2.140	2.1400662
BGL00001	SSBG0009	39.00	Arsenic	4	1.386	2.1517622
BGL00002	SSBG0018	39.00	Arsenic	9.1	2.208	2.1747517
BGL00003	SSBG0027	39.00	Arsenic	8.8	2.175	2.2082744
BGL00004	SSBG0037	39.00	Arsenic	9.5	2.251	2.2512918
BGL00005	SSBG0046	39.00	Arsenic	11.9	2.477	2.2617631
BGL00006	SSBG0056	39.00	Arsenic	9.6	2.262	2.4765384

	Bin	Frequency
1.1		
1.3	1.3	0
	1.5	1
	1.7	0
	1.9	4
	2.1	13
	2.3	7
	2.5	1
	2.7	0
	More	0



	Bin	Frequency
1.5		
2.5	1.5	0
3.5	2.5	0
4.5	3.5	0
6.5	4.5	1
7.5	6.5	3
8.5	7.5	10
9.5	8.5	6
10.5	9.5	4
11.5	10.5	1
12.5	11.5	0
	12.5	1
	More	0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)
1	7.5	2.015	4.060	1.38629436	0.4407	0.4804705
2	8.5	2.140	4.580	1.85629799	0.3043	0.123383
3	6.5	1.872	3.504	1.87180218	0.2533	0.0961247
4	7.2	1.974	3.897	1.87180218	0.2151	0.0723752
5	7.1	1.960	3.842	1.88706965	0.1836	0.0528184
6	8.6	2.152	4.630	1.94591015	0.1563	0.0321747
7	7.1	1.960	3.842	1.94591015	0.1316	0.0255509
8	7.5	2.015	4.060	1.96009478	0.1089	0.0195989
9	6.4	1.856	3.446	1.96009478	0.0876	0.0104548
10	8	2.079	4.324	1.97408103	0.0672	0.0070802
11	7	1.946	3.787	1.98787435	0.0476	0.0037598
12	6.5	1.872	3.504	1.98787435	0.0284	0.0018815
13	7.3	1.988	3.952	2.01490302	0.0094	0
14	7.3	1.988	3.952	2.01490302		
15	7.8	2.054	4.219	2.05412373		
16	8	2.079	4.324	2.06686276		
17	6.6	1.887	3.561	2.07944154		
18	7	1.946	3.787	2.07944154		
19	7.9	2.067	4.272	2.14006616		
20	8.5	2.140	4.580	2.14006616		
21	4	1.386	1.922	2.1517622		
22	9.1	2.208	4.876	2.17475172		
23	8.8	2.175	4.730	2.20827441		
24	9.5	2.251	5.068	2.2512918		
25	11.9	2.477	6.133	2.2617631		
26	9.6	2.262	5.116	2.4765384		
		[SUM (x_i)]^2	SUM (x_i^2)			
		2782.488	107.965			

W	**0.90509**
d	**0.94672**

W is less than 0.92.
Cannot assume
lognormal distributio

Mean [Ln(conc)]	2.0288191
Std Dev [Ln(conc)]	0.1945994
Z	1.645
95 th Quantile (mg/Kg)	**10.47**
Bias %	0.07 (OK, <5%)

80 % Confidence Limits on 95 th Quantile

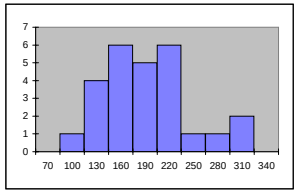
a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**6.32**
80% UL (mg/kg)=	**11.49**

Barium

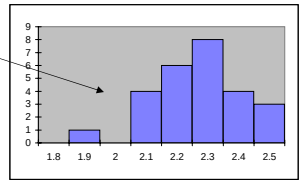
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	log conc	Ln CONC
BGL00001	SSBG0001	0.00	Barium	146	2.164	4.984
BGL00002	SSBG0010	0.00	Barium	162	2.210	5.088
BGL00003	SSBG0019	0.00	Barium	143	2.155	4.963
BGL00004	SSBG0028	0.00	Barium	136	2.134	4.913
BGL00004	SSBG0029	0.00	Barium	123	2.090	4.812
BGL00005	SSBG0038	0.00	Barium	180	2.255	5.193
BGL00006	SSBG0047	0.00	Barium	152	2.182	5.024
BGL00006	SSBG0048	0.00	Barium	181	2.258	5.198
BGL00001	SSBG0002	4.00	Barium	116	2.064	4.754
BGL00002	SSBG0011	4.00	Barium	233	2.367	5.451
BGL00003	SSBG0020	4.00	Barium	193	2.286	5.263
BGL00004	SSBG0030	4.00	Barium	107	2.029	4.673
BGL00005	SSBG0039	4.00	Barium	117	2.068	4.762
BGL00006	SSBG0049	4.00	Barium	171	2.233	5.142
BGL00001	SSBG0005	19.00	Barium	147	2.167	4.990
BGL00002	SSBG0014	19.00	Barium	215	2.332	5.371
BGL00003	SSBG0023	19.00	Barium	155	2.190	5.043
BGL00004	SSBG0033	19.00	Barium	191	2.281	5.252
BGL00005	SSBG0042	19.00	Barium	177	2.248	5.176
BGL00006	SSBG0052	19.00	Barium	199	2.299	5.293
BGL00001	SSBG0009	39.00	Barium	73.1	1.864	4.292
BGL00002	SSBG0018	39.00	Barium	255	2.407	5.541
BGL00003	SSBG0027	39.00	Barium	207	2.316	5.333
BGL00004	SSBG0037	39.00	Barium	285	2.455	5.652
BGL00005	SSBG0046	39.00	Barium	209	2.320	5.342
BGL00006	SSBG0056	39.00	Barium	308	2.489	5.730

Bin	Bin	Frequency
70	70	0
100	100	1
130	130	4
160	160	6
190	190	5
220	220	6
250	250	1
280	280	1
310	310	2
340	340	0
	More	0



	Bin	Frequency
1.8	1.8	0
1.9	1.9	1
2	2	0
2.1	2.1	4
2.2	2.2	6
2.3	2.3	8
2.4	2.4	4
2.5	2.5	3
	More	0



conc	ln(conc)	ln(conc)^2	rank number	ln(conc)rank	a stats	W stat
146	4.984	24.836	1.000	4.292	0.4407	0.633846
162	5.088	25.884	2.000	4.673	0.3043	0.298111
143	4.963	24.630	3.000	4.754	0.2533	0.199518
136	4.913	24.134	4.000	4.762	0.2151	0.148175
123	4.812	23.157	5.000	4.812	0.1836	0.102532
180	5.193	26.967	6.000	4.913	0.1563	0.067159
152	5.024	25.239	7.000	4.963	0.1316	0.048675
181	5.198	27.024	8.000	4.984	0.1089	0.033726
116	4.754	22.597	9.000	4.990	0.0876	0.02385
233	5.451	29.714	10.000	5.024	0.0672	0.015348
193	5.263	27.696	11.000	5.043	0.0476	0.007381
107	4.673	21.835	12.000	5.088	0.0284	0.002992
117	4.762	22.678	13.000	5.142	0.0094	0.000324
171	5.142	26.437	14.000	5.176		
147	4.990	24.904	15.000	5.193		
215	5.371	28.844	16.000	5.198		
155	5.043	25.436	17.000	5.252		
191	5.252	27.586	18.000	5.263		
177	5.176	26.793	19.000	5.293		
199	5.293	28.019	20.000	5.333		
73.1	4.292	18.420	21.000	5.342		
255	5.541	30.706	22.000	5.371		
207	5.333	28.438	23.000	5.451		
285	5.652	31.951	24.000	5.541		
209	5.342	28.541	25.000	5.652		
308	5.730	32.834	26.000	5.730		
	5.124	**685.299**				
	133.235					
	17751.60893	**2.544914681** this is the d value				

1.582 this is sum for W
2.502 this is sq of sum for W

0.983 this is W
W is > 0.92; assume
log normal distribution

Mean [Ln(conc)]	5.1244294
Std Dev [Ln(conc)]	0.3190558
Z	1.645
95 th Quantile (mg/Kg)	**284**
Bias %	0.20 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**212**
95% UL (mg/kg)=	**356**

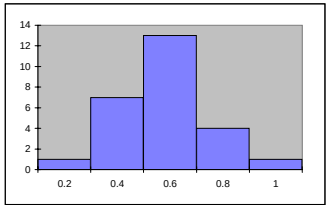
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**237**
80% UL (mg/kg)=	**331**

LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Ln CONC
BGL00001	SSBG0001	0.00	Beryllium	0.53	-0.6348783
BGL00001	SSBG0002	4.00	Beryllium	0.45	-0.7985077
BGL00001	SSBG0005	19.00	Beryllium	0.62	-0.4780358
BGL00001	SSBG0009	39.00	Beryllium	0.32	-1.1394343
BGL00002	SSBG0010	0.00	Beryllium	0.53	-0.6348783
BGL00002	SSBG0011	4.00	Beryllium	0.88	-0.1278334
BGL00002	SSBG0014	19.00	Beryllium	0.08	N/A
BGL00002	SSBG0018	39.00	Beryllium	0.53	-0.6348783
BGL00003	SSBG0019	0.00	Beryllium	0.49	-0.7133499
BGL00003	SSBG0020	4.00	Beryllium	0.61	-0.4942963
BGL00003	SSBG0023	19.00	Beryllium	0.7	-0.3566749
BGL00003	SSBG0027	39.00	Beryllium	0.79	-0.2357223
BGL00004	SSBG0028	0.00	Beryllium	0.33	-1.1086626
BGL00004	SSBG0029	0.00	Beryllium	0.37	-0.9942523
BGL00004	SSBG0030	4.00	Beryllium	0.3	-1.2039728
BGL00004	SSBG0033	19.00	Beryllium	0.57	-0.5621189
BGL00004	SSBG0037	39.00	Beryllium	0.44	-0.8209806
BGL00005	SSBG0038	0.00	Beryllium	0.38	-0.967584
BGL00005	SSBG0039	4.00	Beryllium	0.27	-1.3093333
BGL00005	SSBG0042	19.00	Beryllium	0.55	-0.597837
BGL00005	SSBG0046	39.00	Beryllium	0.47	-0.7550226
BGL00006	SSBG0047	0.00	Beryllium	0.39	-0.9416085
BGL00006	SSBG0048	0.00	Beryllium	0.44	-0.8209806
BGL00006	SSBG0049	4.00	Beryllium	0.42	-0.8675006
BGL00006	SSBG0052	19.00	Beryllium	0.54	-0.6161861
BGL00006	SSBG0056	39.00	Beryllium	0.6	-0.5108256

Bin	*Bin*	*Frequency*
0.2	0.2	1
0.4	0.4	7
0.6	0.6	13
0.8	0.8	4
1	1	1
More		0



N/A = Not Applicable. Data point is below 1% quantile of distribution

Mean [Ln(conc)]	-0.7330142
Std Dev [Ln(conc)]	0.2945547
Z	1.645
95 th Quantile (mg/Kg)	**0.78**
Bias %	0.17 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.372
95% LL (mg/kg) =	**0.59**
95% UL (mg/kg)=	**0.97**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.132
80% LL (mg/kg) =	**0.66**
80% UL (mg/kg)=	**0.90**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	x_i CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a*(x_{n+1} - x_i)$ (n=25)	**W**
1	0.53	-0.635	0.403	-1.309333	0.4450	0.52576748	**0.9860601**
2	0.45	-0.799	0.638	-1.203973	0.3069	0.29715607	
3	0.62	-0.478	0.229	-1.139434	0.2543	0.1990557	**d**
4	0.32	-1.139	1.298	-1.108663	0.2148	0.13545864	**2.082299**
5	0.53	-0.635	0.403	-0.994252	0.1822	0.09109197	
6	0.88	-0.128	0.016	-0.967584	0.1539	0.07029512	
7	0.53	-0.635	0.403	-0.941609	0.1283	0.04868852	
8	0.49	-0.713	0.509	-0.867501	0.1046	0.02820681	
9	0.61	-0.494	0.244	-0.820981	0.0823	0.01685458	
10	0.7	-0.357	0.127	-0.820981	0.0610	0.01135224	
11	0.79	-0.236	0.056	-0.798508	0.0403	0.00659427	
12	0.33	-1.109	1.229	-0.755023	0.0200	0.00240289	
13	0.37	-0.994	0.989	-0.71335	0.0000	0	
14	0.3	-1.204	1.450	-0.634878			
15	0.57	-0.562	0.316	-0.634878			
16	0.44	-0.821	0.674	-0.634878			
17	0.38	-0.968	0.936	-0.616186			
18	0.27	-1.309	1.714	-0.597837			
19	0.55	-0.598	0.357	-0.562119			
20	0.47	-0.755	0.570	-0.510826			
21	0.39	-0.942	0.887	-0.494296			
22	0.44	-0.821	0.674	-0.478036			
23	0.42	-0.868	0.753	-0.356675			
24	0.54	-0.616	0.380	-0.235722			
25	0.6	-0.511	0.261	-0.127833			
		[SUM (x_i)]^2	SUM (x_i^2)				
		335.819	15.515				

W is greater than 0.918.
Cannot rule out
lognormal distribution.

Samp ID	CONC	
SSBG0014	0.08	Removed from calculation Data point is below 1% quantile

Mean [Ln(conc)]	-0.733
Std Dev [Ln(conc)]	0.29455
Z	-2.33
1% Quantile (mg/Kg)	**0.24188**

LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Bin
BGL00001	SSBG0001	0.00	Cadmium	0.23	
BGL00002	SSBG0010	0.00	Cadmium	0.50	
BGL00003	SSBG0019	0.00	Cadmium	0.50	
BGL00004	SSBG0028	0.00	Cadmium	0.50	
BGL00004	SSBG0029	0.00	Cadmium	0.50	
BGL00005	SSBG0038	0.00	Cadmium	0.50	
BGL00006	SSBG0047	0.00	Cadmium	0.50	
BGL00006	SSBG0048	0.00	Cadmium	0.50	
BGL00001	SSBG0002	4.00	Cadmium	0.50	
BGL00002	SSBG0011	4.00	Cadmium	0.50	
BGL00003	SSBG0020	4.00	Cadmium	0.50	
BGL00004	SSBG0030	4.00	Cadmium	0.50	
BGL00005	SSBG0039	4.00	Cadmium	0.50	
BGL00006	SSBG0049	4.00	Cadmium	0.50	
BGL00001	SSBG0005	19.00	Cadmium	0.50	
BGL00002	SSBG0014	19.00	Cadmium	0.50	
BGL00003	SSBG0023	19.00	Cadmium	0.50	
BGL00004	SSBG0033	19.00	Cadmium	0.50	
BGL00005	SSBG0042	19.00	Cadmium	0.50	
BGL00006	SSBG0052	19.00	Cadmium	0.50	
BGL00001	SSBG0009	39.00	Cadmium	0.50	
BGL00002	SSBG0018	39.00	Cadmium	0.50	
BGL00003	SSBG0027	39.00	Cadmium	0.50	
BGL00004	SSBG0037	39.00	Cadmium	0.50	
BGL00005	SSBG0046	39.00	Cadmium	0.50	
BGL00006	SSBG0056	39.00	Cadmium	0.50	

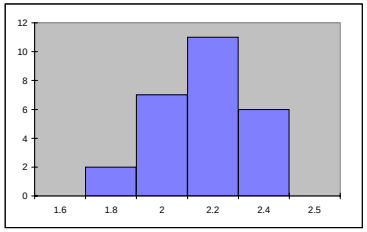
Note: all shaded numbers are non detects treated here as one half the detection limit of 1.

Chromium

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	logconc	Ln CONC	BIN
BGL00003	SSBG0023	19.00	Chromium	59.6	1.78	4.09	1.6
BGL00006	SSBG0052	19.00	Chromium	60.0	1.78	4.09	1.8
BGL00001	SSBG0009	39.00	Chromium	69.4	1.84	4.24	2
BGL00005	SSBG0042	19.00	Chromium	74.4	1.87	4.31	2.2
BGL00003	SSBG0027	39.00	Chromium	83.9	1.92	4.43	2.4
BGL00004	SSBG0037	39.00	Chromium	86.4	1.94	4.46	2.5
BGL00005	SSBG0046	39.00	Chromium	86.8	1.94	4.46	
BGL00002	SSBG0018	39.00	Chromium	87.2	1.94	4.47	More
BGL00004	SSBG0033	19.00	Chromium	87.7	1.94	4.47	
BGL00006	SSBG0056	39.00	Chromium	108.0	2.03	4.68	
BGL00001	SSBG0005	19.00	Chromium	110.0	2.04	4.70	
BGL00002	SSBG0014	19.00	Chromium	110.0	2.04	4.70	
BGL00006	SSBG0049	4.00	Chromium	119.0	2.08	4.78	
BGL00005	SSBG0038	0.00	Chromium	123.0	2.09	4.81	
BGL00002	SSBG0011	4.00	Chromium	127.0	2.10	4.84	
BGL00002	SSBG0010	0.00	Chromium	135.0	2.13	4.91	
BGL00004	SSBG0028	0.00	Chromium	145.0	2.16	4.98	
BGL00003	SSBG0020	4.00	Chromium	147.0	2.17	4.99	
BGL00006	SSBG0048	0.00	Chromium	148.0	2.17	5.00	
BGL00006	SSBG0047	0.00	Chromium	151.0	2.18	5.02	
BGL00003	SSBG0019	0.00	Chromium	160.0	2.20	5.08	
BGL00001	SSBG0001	0.00	Chromium	165.0	2.22	5.11	
BGL00004	SSBG0029	0.00	Chromium	184.0	2.26	5.21	
BGL00005	SSBG0039	4.00	Chromium	199.0	2.30	5.29	
BGL00001	SSBG0002	4.00	Chromium	214.0	2.33	5.37	
BGL00004	SSBG0030	4.00	Chromium	251.0	2.40	5.53	

Bin	*Frequency*
1.6	0
1.8	2
2	7
2.2	11
2.4	6
2.5	0
More	0



Mean [Ln(conc)]	4.76969223
Std Dev [Ln(conc)]	0.38736459
Z	1.645
95 th Quantile (mg/Kg)	**223**
Bias %	0.29 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**152**
95% UL (mg/kg)=	**294**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

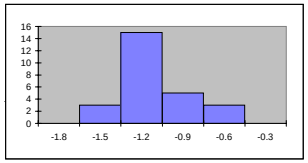
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**178**
80% UL (mg/kg)=	**268**

CONC	lnconc	lnconc^2	rank number	lnconc rank	a stats	W stats
59.6	4.088	16.709	1.000	4.088	0.4407	0.633637299
60.0	4.094	16.764	2.000	4.094	0.3043	0.386957451
69.4	4.240	17.977	3.000	4.240	0.2533	0.266830769
74.4	4.309	18.571	4.000	4.309	0.2151	0.194768708
83.9	4.430	19.622	5.000	4.430	0.1836	0.124172326
86.4	4.459	19.883	6.000	4.459	0.1563	0.096309894
86.8	4.464	19.924	7.000	4.464	0.1316	0.072863395
87.2	4.468	19.965	8.000	4.468	0.1089	0.057608965
87.7	4.474	20.016	9.000	4.474	0.0876	0.045246336
108.0	4.682	21.922	10.000	4.682	0.0672	0.019797289
110.0	4.700	22.095	11.000	4.700	0.0476	0.009748214
110.0	4.700	22.095	12.000	4.700	0.0284	0.004081271
119.0	4.779	22.840	13.000	4.779	0.0094	0.000310772
123.0	4.812	23.157	14.000	4.812		**1.912** this is sum for W
127.0	4.844	23.466	15.000	4.844		**3.657** this is sq of sum for W
135.0	4.905	24.062	16.000	4.905		
145.0	4.977	24.768	17.000	4.977		
147.0	4.990	24.904	18.000	4.990		**0.975 this is W**
148.0	4.997	24.972	19.000	4.997		**W is > 0.92; assume**
151.0	5.017	25.173	20.000	5.017		log normal distribution
160.0	5.075	25.757	21.000	5.075		
165.0	5.106	26.071	22.000	5.106		
184.0	5.215	27.196	23.000	5.215		
199.0	5.293	28.019	24.000	5.293		
214.0	5.366	28.794	25.000	5.366		
251.0	5.525	30.531	26.000	5.525		
	4.770	**595.250**				
	124.012					
	15378.97565	**3.751** this is the d value				

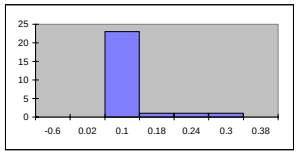
LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	logconc	Ln CONC
BGL00004	SSBG0029	0.00	Chromium, Hexavalent (+6)	0.023	-1.63827	-3.772261
BGL00003	SSBG0020	4.00	Chromium, Hexavalent (+6)	0.025	-1.60206	-3.688879
BGL00004	SSBG0037	39.00	Chromium, Hexavalent (+6)	0.028	-1.55284	-3.575551
BGL00001	SSBG0009	39.00	Chromium, Hexavalent (+6)	0.036	-1.4437	-3.324236
BGL00004	SSBG0028	0.00	Chromium, Hexavalent (+6)	0.037	-1.4318	-3.296837
BGL00001	SSBG0002	4.00	Chromium, Hexavalent (+6)	0.037	-1.4318	-3.296837
BGL00002	SSBG0010	0.00	Chromium, Hexavalent (+6)	0.038	-1.42022	-3.270169
BGL00003	SSBG0019	0.00	Chromium, Hexavalent (+6)	0.038	-1.42022	-3.270169
BGL00002	SSBG0018	39.00	Chromium, Hexavalent (+6)	0.040	-1.39794	-3.218876
BGL00002	SSBG0011	4.00	Chromium, Hexavalent (+6)	0.041	-1.38722	-3.194183
BGL00001	SSBG0005	19.00	Chromium, Hexavalent (+6)	0.041	-1.38722	-3.194183
BGL00003	SSBG0027	39.00	Chromium, Hexavalent (+6)	0.042	-1.37675	-3.170086
BGL00004	SSBG0033	19.00	Chromium, Hexavalent (+6)	0.053	-1.27572	-2.937463
BGL00002	SSBG0014	19.00	Chromium, Hexavalent (+6)	0.055	-1.25964	-2.900422
BGL00003	SSBG0023	19.00	Chromium, Hexavalent (+6)	0.055	-1.25964	-2.900422
BGL00005	SSBG0042	19.00	Chromium, Hexavalent (+6)	0.055	-1.25964	-2.900422
BGL00004	SSBG0030	4.00	Chromium, Hexavalent (+6)	0.061	-1.21467	-2.796881
BGL00005	SSBG0039	4.00	Chromium, Hexavalent (+6)	0.062	-1.20761	-2.780621
BGL00006	SSBG0056	39.00	Chromium, Hexavalent (+6)	0.071	-1.14874	-2.645075
BGL00001	SSBG0001	0.00	Chromium, Hexavalent (+6)	0.077	-1.11351	-2.56395
BGL00005	SSBG0038	0.00	Chromium, Hexavalent (+6)	0.080	-1.09691	-2.525729
BGL00005	SSBG0046	39.00	Chromium, Hexavalent (+6)	0.083	-1.08092	-2.488915
BGL00006	SSBG0052	19.00	Chromium, Hexavalent (+6)	0.096	-1.01773	-2.343407
BGL00006	SSBG0049	4.00	Chromium, Hexavalent (+6)	0.150	-0.82391	-1.89712
BGL00006	SSBG0048	0.00	Chromium, Hexavalent (+6)	0.190	-0.72125	-1.660731
BGL00006	SSBG0047	0.00	Chromium, Hexavalent (+6)	0.250	-0.60206	-1.386294

BIN	Bin	Frequency
-0.3	-1.8	0
-0.6	-1.5	3
-0.9	-1.2	15
-1.2	-0.9	5
-1.5	-0.6	3
-1.8	-0.3	0
	More	0



BIN	Bin	Frequency
-0.6	-0.6	0
0.02	0.02	0
0.1	0.1	23
0.18	0.18	1
0.24	0.24	1
0.3	0.3	1
0.38	0.38	0
	More	0



CONC	lnconc	lnconc^2	rank num	lnconc rank	a stats	W stats
0.023	-3.7722611	14.230	1	-3.772261	0.4407	1.0515
0.025	-3.6888795	13.608	2	-3.688879	0.3043	0.61717
0.028	-3.5755508	12.785	3	-3.575551	0.2533	0.42515
0.036	-3.3242363	11.051	4	-3.324236	0.2151	0.21098
0.037	-3.2968374	10.869	5	-3.296837	0.1836	0.14833
0.037	-3.2968374	10.869	6	-3.296837	0.1563	0.12052
0.038	-3.2701691	10.694	7	-3.270169	0.1316	0.09294
0.038	-3.2701691	10.694	8	-3.270169	0.1089	0.06807
0.040	-3.2188758	10.361	9	-3.218876	0.0876	0.03839
0.041	-3.1941832	10.203	10	-3.194183	0.0672	0.0267
0.041	-3.1941832	10.203	11	-3.194183	0.0476	0.01398
0.042	-3.1700857	10.049	12	-3.170086	0.0284	0.00766
0.053	-2.9374634	8.629	13	-2.937463	0.0094	0.00035
0.055	-2.9004221	8.412	14	-2.900422		**2.822** this is sum for W
0.055	-2.9004221	8.412	15	-2.900422		**7.962** this is sq of sum for W
0.055	-2.9004221	8.412	16	-2.900422		
0.061	-2.7968814	7.823	17	-2.796881		
0.062	-2.7806209	7.732	18	-2.780621		**0.925 this is W**
0.071	-2.6450754	6.996	19	-2.645075		**W is > 0.92; assume**
0.077	-2.5639499	6.574	20	-2.56395		**log normal distribution**
0.080	-2.5257286	6.379	21	-2.525729		
0.083	-2.4889147	6.195	22	-2.488915		
0.096	-2.3434071	5.492	23	-2.343407		
0.150	-1.89712	3.599	24	-1.89712		
0.190	-1.6607312	2.758	25	-1.660731		
0.250	-1.3862944	1.922	26	-1.386294		
	-2.885	**224.951**				
	-75.000					
	5624.95825	**8.606** this is the d value				

Mean [Ln(conc)]	-2.884605
Std Dev [Ln(conc)]	0.58672
Z	1.645
95 th Quantile (mg/Kg)	**0.147**
Bias %	0.66 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**0.071**
95% UL (mg/kg)=	**0.223**

80 % Confidence Limits on 95 th Quantile

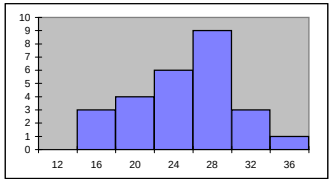
a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**0.099**
80% UL (mg/kg)=	**0.194**

Cobalt

LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Ln CONC
BGL00001	SSBG0001	0.00	Cobalt	26.7	3.284663565
BGL00002	SSBG0010	0.00	Cobalt	25.5	3.238678452
BGL00003	SSBG0019	0.00	Cobalt	24.6	3.202746443
BGL00004	SSBG0028	0.00	Cobalt	19.8	2.985681938
BGL00004	SSBG0029	0.00	Cobalt	20.9	3.039749159
BGL00005	SSBG0038	0.00	Cobalt	21.6	3.072693315
BGL00006	SSBG0047	0.00	Cobalt	20.8	3.034952987
BGL00006	SSBG0048	0.00	Cobalt	24.4	3.194583132
BGL00001	SSBG0002	4.00	Cobalt	27.4	3.310543013
BGL00002	SSBG0011	4.00	Cobalt	30.3	3.411147713
BGL00003	SSBG0020	4.00	Cobalt	29.7	3.391147046
BGL00004	SSBG0030	4.00	Cobalt	20.4	3.015534901
BGL00005	SSBG0039	4.00	Cobalt	25.6	3.242592351
BGL00006	SSBG0049	4.00	Cobalt	21.1	3.04927304
BGL00001	SSBG0005	19.00	Cobalt	25.7	3.246490992
BGL00002	SSBG0014	19.00	Cobalt	26.2	3.265759411
BGL00003	SSBG0023	19.00	Cobalt	18.2	2.901421594
BGL00004	SSBG0033	19.00	Cobalt	17.7	2.87356464
BGL00005	SSBG0042	19.00	Cobalt	15.8	2.76000994
BGL00006	SSBG0052	19.00	Cobalt	15.8	2.76000994
BGL00001	SSBG0009	39.00	Cobalt	12.6	2.533696814
BGL00002	SSBG0018	39.00	Cobalt	23.2	3.144152279
BGL00003	SSBG0027	39.00	Cobalt	25	3.218875825
BGL00004	SSBG0037	39.00	Cobalt	29.1	3.370738174
BGL00005	SSBG0046	39.00	Cobalt	17.7	2.87356464
BGL00006	SSBG0056	39.00	Cobalt	32.9	3.493472658

Bin	*Bin*	*Frequency*
12	12	0
16	16	3
20	20	4
24	24	6
28	28	9
32	32	3
36	36	1
More		0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	26.7	3.285	10.789	2.5337	0.4407	0.422973214	**0.96402**
2	25.5	3.239	10.489	2.76001	0.3043	0.198141224	
3	24.6	3.203	10.258	2.76001	0.2533	0.159867029	**d**
4	19.8	2.986	8.914	2.87356	0.2151	0.106942027	**1.33363**
5	20.9	3.040	9.240	2.87356	0.1836	0.080229229	
6	21.6	3.073	9.441	2.90142	0.1563	0.05990072	
7	20.8	3.035	9.211	2.98568	0.1316	0.036858195	
8	24.4	3.195	10.205	3.01553	0.1089	0.025151118	
9	27.4	3.311	10.960	3.03495	0.0876	0.018189208	
10	30.3	3.411	11.636	3.03975	0.0672	0.013368049	
11	29.7	3.391	11.500	3.04927	0.0476	0.008073093	
12	20.4	3.016	9.093	3.07269	0.0284	0.003693509	
13	25.6	3.243	10.514	3.14415	0.0094	0.00047405	
14	21.1	3.049	9.298	3.19458			
15	25.7	3.246	10.540	3.20275			
16	26.2	3.266	10.665	3.21888			
17	18.2	2.901	8.418	3.23868			
18	17.7	2.874	8.257	3.24259			
19	15.8	2.760	7.618	3.24649			
20	15.8	2.760	7.618	3.26576			
21	12.6	2.534	6.420	3.28466			
22	23.2	3.144	9.886	3.31054			
23	25	3.219	10.361	3.37074			
24	29.1	3.371	11.362	3.39115			
25	17.7	2.874	8.257	3.41115			
26	32.9	3.493	12.204	3.49347			
		[SUM (x)]^2	SUM (x_i^2)				
		6547.358	253.155				

W is greater than 0.92. Cannot rule out lognormal distribution.

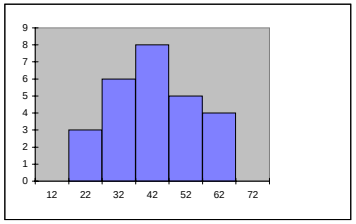
Copper

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	Ln CONC
BGL00005	SSBG0039	4.00	Copper	20.1	3.00
BGL00004	SSBG0030	4.00	Copper	21.0	3.04
BGL00001	SSBG0009	39.00	Copper	21.2	3.05
BGL00004	SSBG0028	0.00	Copper	25.1	3.22
BGL00004	SSBG0029	0.00	Copper	25.8	3.25
BGL00001	SSBG0002	4.00	Copper	25.9	3.25
BGL00006	SSBG0047	0.00	Copper	28.8	3.36
BGL00006	SSBG0049	4.00	Copper	31.9	3.46
BGL00006	SSBG0052	19.00	Copper	31.9	3.46
BGL00001	SSBG0001	0.00	Copper	32.7	3.49
BGL00005	SSBG0038	0.00	Copper	33.5	3.51
BGL00003	SSBG0019	0.00	Copper	35.5	3.57
BGL00006	SSBG0048	0.00	Copper	35.8	3.58
BGL00005	SSBG0042	19.00	Copper	36.5	3.60
BGL00002	SSBG0010	0.00	Copper	37.3	3.62
BGL00004	SSBG0033	19.00	Copper	39.2	3.67
BGL00003	SSBG0023	19.00	Copper	39.8	3.68
BGL00003	SSBG0020	4.00	Copper	42.5	3.75
BGL00001	SSBG0005	19.00	Copper	42.7	3.75
BGL00005	SSBG0046	39.00	Copper	43.3	3.77
BGL00002	SSBG0018	39.00	Copper	44.5	3.80
BGL00004	SSBG0037	39.00	Copper	45.0	3.81
BGL00002	SSBG0011	4.00	Copper	56.6	4.04
BGL00002	SSBG0014	19.00	Copper	57.0	4.04
BGL00003	SSBG0027	39.00	Copper	57.1	4.04
BGL00006	SSBG0056	39.00	Copper	59.5	4.09

BIN

	Bin	*Frequency*
12	12	0
22	22	3
32	32	6
42	42	8
52	52	5
62	62	4
72	72	0
More		0



Mean [Ln(conc)]	3.57351594
Std Dev [Ln(conc)]	0.31218915
Z	1.645
95 th Quantile (mg/Kg)	**60**
Bias %	0.19 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**45**
95% UL (mg/kg)=	**74**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**50**
80% UL (mg/kg)=	**69**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

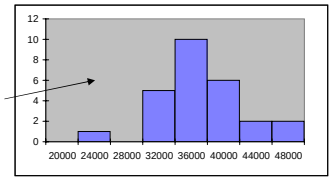
i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	**W**
1	20.1	3.001	9.004	3.001	0.4407	0.478272538	**0.95779**
2	21.0	3.045	9.269	3.045	0.3043	0.304385715	
3	21.2	3.054	9.327	3.054	0.2533	0.250526387	**d**
4	25.1	3.223	10.387	3.223	0.2151	0.174906659	**2.43655**
5	25.8	3.250	10.565	3.250	0.1836	0.102134476	
6	25.9	3.254	10.590	3.254	0.1563	0.084596784	
7	28.8	3.360	11.292	3.360	0.1316	0.053663486	
8	31.9	3.463	11.990	3.463	0.1089	0.031754468	
9	31.9	3.463	11.990	3.463	0.0876	0.025132271	
10	32.7	3.487	12.162	3.487	0.0672	0.013204251	
11	33.5	3.512	12.331	3.512	0.0476	0.00747945	
12	35.5	3.570	12.742	3.570	0.0284	0.001404682	
13	35.8	3.578	12.802	3.578	0.0094	0.000182025	
14	36.5	3.597	12.941	3.597			
15	37.3	3.619	13.097	3.619			
16	39.2	3.669	13.459	3.669			
17	39.8	3.684	13.571	3.684			
18	42.5	3.750	14.059	3.750			
19	42.7	3.754	14.094	3.754			
20	43.3	3.768	14.199	3.768			
21	44.5	3.795	14.406	3.795			
22	45.0	3.807	14.491	3.807			
23	56.6	4.036	16.289	4.036			
24	57.0	4.043	16.346	4.043			
25	57.1	4.045	16.360	4.045			
26	59.5	4.086	16.695	4.086			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		8632.531	334.457				

W is greater than 0.92. Cannot rule out lognormal distribution.

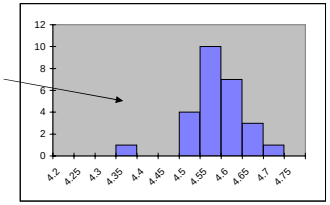
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	log conc	Ln CONC
BGL00001	SSBG0001	0.00	Iron	34500	4.538	10.449
BGL00002	SSBG0010	0.00	Iron	35700	4.553	10.483
BGL00003	SSBG0019	0.00	Iron	34800	4.542	10.457
BGL00004	SSBG0028	0.00	Iron	30900	4.490	10.339
BGL00004	SSBG0029	0.00	Iron	31300	4.496	10.351
BGL00005	SSBG0038	0.00	Iron	33600	4.526	10.422
BGL00006	SSBG0047	0.00	Iron	33000	4.519	10.404
BGL00006	SSBG0048	0.00	Iron	36600	4.563	10.508
BGL00001	SSBG0002	4.00	Iron	33500	4.525	10.419
BGL00002	SSBG0011	4.00	Iron	46300	4.666	10.743
BGL00003	SSBG0020	4.00	Iron	38400	4.584	10.556
BGL00004	SSBG0030	4.00	Iron	32000	4.505	10.373
BGL00005	SSBG0039	4.00	Iron	30500	4.484	10.325
BGL00006	SSBG0049	4.00	Iron	33100	4.520	10.407
BGL00001	SSBG0005	19.00	Iron	37100	4.569	10.521
BGL00002	SSBG0014	19.00	Iron	44500	4.648	10.703
BGL00003	SSBG0023	19.00	Iron	32200	4.508	10.380
BGL00004	SSBG0033	19.00	Iron	33400	4.524	10.416
BGL00005	SSBG0042	19.00	Iron	32100	4.507	10.377
BGL00006	SSBG0052	19.00	Iron	30400	4.483	10.322
BGL00001	SSBG0009	39.00	Iron	20600	4.314	9.933
BGL00002	SSBG0018	39.00	Iron	36700	4.565	10.511
BGL00003	SSBG0027	39.00	Iron	42600	4.629	10.660
BGL00004	SSBG0037	39.00	Iron	38400	4.584	10.556
BGL00005	SSBG0046	39.00	Iron	39000	4.591	10.571
BGL00006	SSBG0056	39.00	Iron	44000	4.64345	10.692

Bin	*Bin*	*Frequency*
20000	20000	0
24000	24000	1
28000	28000	0
32000	32000	5
36000	36000	10
40000	40000	6
48000	44000	2
	48000	2
	More	0



Bin	*Bin*	*Frequency*
4.2	4.2	0
4.25	4.25	0
4.3	4.3	0
4.35	4.35	1
4.4	4.4	0
4.45	4.45	0
4.5	4.5	4
4.55	4.55	10
4.6	4.6	7
4.65	4.65	3
4.7	4.7	1
4.75	4.75	0
	More	0



Mean [Ln(conc)]	10.4568931
Std Dev [Ln(conc)]	0.16070903
Z	1.645
95 th Quantile (mg/Kg)	**45,309**
Bias %	0.05 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**39,828**
95% UL (mg/kg)=	**50,790**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**41,702**
80% UL (mg/kg)=	**48,916**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)
1	34500	10.449	109.176	9.933	0.4407	0.356901285
2	35700	10.483	109.891	10.322	0.3043	0.115952475
3	34800	10.457	109.357	10.325	0.2533	0.092825065
4	30900	10.339	106.885	10.339	0.2151	0.069068195
5	31300	10.351	107.151	10.351	0.1836	0.040381636
6	33600	10.422	108.624	10.373	0.1563	0.028496859
7	33000	10.404	108.249	10.377	0.1316	0.023582908
8	36600	10.508	110.414	10.380	0.1089	0.015425741
9	33500	10.419	108.562	10.404	0.0876	0.009309181
10	46300	10.743	115.410	10.407	0.0672	0.006754605
11	38400	10.556	111.425	10.416	0.0476	0.003169912
12	32000	10.373	107.609	10.419	0.0284	0.001081243
13	30500	10.325	106.616	10.422	0.0094	0.000248473
14	33100	10.407	108.312	10.449		
15	37100	10.521	110.699	10.457		
16	44500	10.703	114.559	10.483		
17	32200	10.380	107.739	10.508		
18	33400	10.416	108.500	10.511		
19	32100	10.377	107.674	10.521		
20	30400	10.322	106.548	10.556		
21	20600	9.933	98.665	10.556		
22	36700	10.511	110.471	10.571		
23	42600	10.660	113.627	10.660		
24	38400	10.556	111.425	10.692		
25	39000	10.571	111.753	10.703		
26	44000	10.692	114.318	10.743		
		$[SUM (x_i)]^2$	SUM (x_i^2)			
		73918.310	2843.658			

W
0.9021

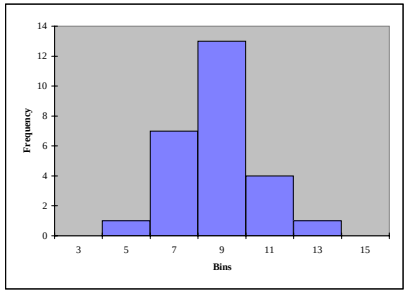
W is less than 0.92. Cannot assume lognormal distribution.

d
0.64568

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	Ln CONC	BIN
BGL00001	SSBG0009	39.00	Lead	3.4	1.223775432	
BGL00004	SSBG0030	4.00	Lead	5.4	1.686398954	3
BGL00001	SSBG0002	4.00	Lead	6.1	1.808288771	5
BGL00005	SSBG0039	4.00	Lead	6.2	1.824549292	7
BGL00004	SSBG0028	0.00	Lead	6.6	1.887069649	9
BGL00004	SSBG0029	0.00	Lead	6.7	1.902107526	11
BGL00002	SSBG0018	39.00	Lead	6.8	1.916922612	13
BGL00006	SSBG0049	4.00	Lead	7.0	1.945910149	15
BGL00003	SSBG0020	4.00	Lead	7.5	2.014903021	
BGL00003	SSBG0019	0.00	Lead	7.6	2.028148247	More
BGL00006	SSBG0048	0.00	Lead	7.7	2.041220329	
BGL00001	SSBG0001	0.00	Lead	7.9	2.066862759	
BGL00001	SSBG0005	19.00	Lead	8.0	2.079441542	
BGL00006	SSBG0047	0.00	Lead	8.1	2.091864062	
BGL00005	SSBG0042	19.00	Lead	8.2	2.104134154	
BGL00004	SSBG0033	19.00	Lead	8.4	2.128231706	
BGL00005	SSBG0038	0.00	Lead	8.5	2.140066163	
BGL00005	SSBG0046	39.00	Lead	8.7	2.163323026	
BGL00003	SSBG0023	19.00	Lead	8.8	2.174751721	
BGL00004	SSBG0037	39.00	Lead	8.9	2.186051277	
BGL00006	SSBG0052	19.00	Lead	9.0	2.197224577	
BGL00002	SSBG0014	19.00	Lead	9.1	2.208274414	
BGL00002	SSBG0011	4.00	Lead	9.3	2.2300144	
BGL00002	SSBG0010	0.00	Lead	10.1	2.312535424	
BGL00003	SSBG0027	39.00	Lead	10.4	2.341805806	
BGL00006	SSBG0056	39.00	Lead	11.9	2.4765384	

	Bin	*Frequency*
	3	0
	5	1
	7	7
	9	13
	11	4
	13	1
	15	0
More		0



Mean [Ln(conc)]	2.045400516
Std Dev [Ln(conc)]	0.243674141
Z	1.645
95 th Quantile (mg/Kg)	**11.5**
Bias %	0.11 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**9.4**
95% UL (mg/kg)=	**13.7**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**10.1**
80% UL (mg/kg)=	**13.0**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

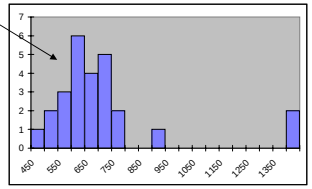
i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n+1} - x_i)$ (n=26)	**W**
1	3.4	1.224	1.498	1.224	0.4407	0.55209264	**0.902967**
2	5.4	1.686	2.844	1.686	0.3043	0.19944031	
3	6.1	1.808	3.270	1.808	0.2533	0.12772568	**d**
4	6.2	1.825	3.329	1.825	0.2151	0.08721554	**1.484427**
5	6.6	1.887	3.561	1.887	0.1836	0.05897319	
6	6.7	1.902	3.618	1.902	0.1563	0.0461268	
7	6.8	1.917	3.675	1.917	0.1316	0.03541733	
8	7.0	1.946	3.787	1.946	0.1089	0.02492085	
9	7.5	2.015	4.060	2.015	0.0876	0.01300159	
10	7.6	2.028	4.113	2.028	0.0672	0.00752088	
11	7.7	2.041	4.167	2.041	0.0476	0.00414174	
12	7.9	2.067	4.272	2.067	0.0284	0.00105851	
13	8.0	2.079	4.324	2.079	0.0094	0.00011677	
14	8.1	2.092	4.376	2.092			
15	8.2	2.104	4.427	2.104			
16	8.4	2.128	4.529	2.128			
17	8.5	2.140	4.580	2.140			
18	8.7	2.163	4.680	2.163			
19	8.8	2.175	4.730	2.175			
20	8.9	2.186	4.779	2.186			
21	9.0	2.197	4.828	2.197			
22	9.1	2.208	4.876	2.208			
23	9.3	2.230	4.973	2.230			
24	10.1	2.313	5.348	2.313			
25	10.4	2.342	5.484	2.342			
26	11.9	2.477	6.133	2.477			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		2828.156	110.260				

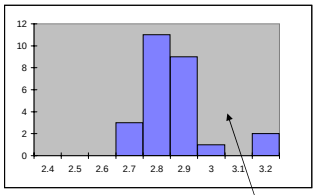
W is less than 0.92. Cannot assume lognormal distribution.

LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	log conc	Ln CONC
BGL00001	SSBG0001	0.00	Manganese	592	2.772	6.384
BGL00002	SSBG0010	0.00	Manganese	638	2.805	6.458
BGL00003	SSBG0019	0.00	Manganese	579	2.763	6.361
BGL00004	SSBG0028	0.00	Manganese	468	2.670	6.148
BGL00004	SSBG0029	0.00	Manganese	479	2.680	6.172
BGL00005	SSBG0038	0.00	Manganese	567	2.754	6.340
BGL00006	SSBG0047	0.00	Manganese	514	2.711	6.242
BGL00006	SSBG0048	0.00	Manganese	606	2.782	6.407
BGL00001	SSBG0002	4.00	Manganese	592	2.772	6.384
BGL00002	SSBG0011	4.00	Manganese	744	2.872	6.612
BGL00003	SSBG0020	4.00	Manganese	699	2.844	6.550
BGL00004	SSBG0030	4.00	Manganese	527	2.722	6.267
BGL00005	SSBG0039	4.00	Manganese	654	2.816	6.483
BGL00006	SSBG0049	4.00	Manganese	562	2.750	6.332
BGL00001	SSBG0005	19.00	Manganese	661	2.820	6.494
BGL00002	SSBG0014	19.00	Manganese	731	2.864	6.594
BGL00003	SSBG0023	19.00	Manganese	634	2.802	6.452
BGL00004	SSBG0033	19.00	Manganese	683	2.834	6.526
BGL00005	SSBG0042	19.00	Manganese	587	2.769	6.375
BGL00006	SSBG0052	19.00	Manganese	527	2.722	6.267
BGL00001	SSBG0009	39.00	Manganese	437	2.640	6.080
BGL00002	SSBG0018	39.00	Manganese	870	2.940	6.768
BGL00003	SSBG0027	39.00	Manganese	687	2.837	6.532
BGL00004	SSBG0037	39.00	Manganese	1390	3.143	N/A
BGL00005	SSBG0046	39.00	Manganese	628	2.798	6.443
BGL00006	SSBG0056	39.00	Manganese	1390	3.143	N/A

	Bin	Frequency
450	450	1
500	500	2
550	550	3
600	600	6
650	650	4
700	700	5
750	750	2
800	800	0
850	850	0
900	900	1
950	950	0
1000	1000	0
1050	1050	0
1100	1100	0
1150	1150	0
1200	1200	0
1250	1250	0
1300	1300	0
1350	1350	0
1400	1400	2
More		0





	Bin	Frequency
2.4	2.4	0
2.5	2.5	0
2.6	2.6	0
2.7	2.7	3
2.8	2.8	11
2.9	2.9	9
3	3	1
3.1	3.2	2
3.2	More	0

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n+1} - x_i)$ (n=26)	**W**
1	592	6.384	40.749	6.080	0.4493	0.309370015	**0.9898649**
2	638	6.458	41.710	6.148	0.3098	0.143614835	
3	579	6.361	40.466	6.172	0.2554	0.107960865	**d**
4	468	6.148	37.804	6.242	0.2145	0.065943194	**0.5868146**
5	479	6.172	38.090	6.267	0.1807	0.047909667	
6	567	6.340	40.200	6.267	0.1512	0.0392053	
7	514	6.242	38.965	6.332	0.1245	0.020200373	
8	606	6.407	41.048	6.340	0.0997	0.01423198	
9	592	6.384	40.749	6.361	0.0764	0.007413536	
10	744	6.612	43.719	6.375	0.0539	0.004151601	
11	699	6.550	42.898	6.384	0.0321	0.001894976	
12	527	6.267	39.278	6.384	0.0107	0.000250095	
13	654	6.483	42.031	6.407			
14	562	6.332	40.088	6.443			
15	661	6.494	42.169	6.452			
16	731	6.594	43.486	6.458			
17	634	6.452	41.629	6.483			
18	683	6.526	42.595	6.494			
19	587	6.375	40.641	6.526			
20	527	6.267	39.278	6.532			
21	437	6.080	36.966	6.550			
22	870	6.768	45.813	6.594			
23	687	6.532	42.671	6.612			
24	628	6.443	41.506	6.768			
		$[SUM (x_i)]^2$	SUM (x_i^2)				
		23615.091	984.549				

W is greater than 0.916.
Cannot rule out
lognormal distribution.

Samp ID	CONC
SSBG0037	1390
SSBG0056	1390

Outliers removed from calculation.
Data were flagged by lab as inaccurate.
Concentrations were above
instrument calibration.

Mean [Ln(conc)]	6.403
Std Dev [Ln(conc)]	0.15973
Z	1.645
95 th Quantile (mg/Kg)	**785**
Bias %	0.05 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.391
95% LL (mg/kg) =	**686**
95% UL (mg/kg)=	**884**

80 % Confidence Limits on 95 th Quantile

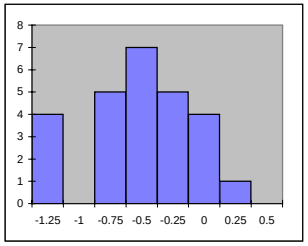
a = 20%	
p = 95%	
K (estimating factor) =	2.145
80% LL (mg/kg) =	**720**
80% UL (mg/kg)=	**850**

Note: Dotted cells are numbers that were excluded from the 95th quantile calculation.
Data were flagged by lab as inaccurate.
Concentrations were above instrument calibration.

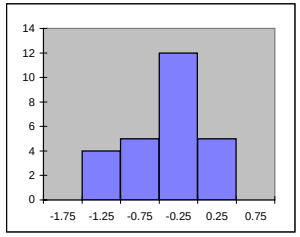
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	log conc	Ln CONC
BGL00001	SSBG0001	0.00	Mercury	0.49	-0.30980392	-0.713349888
BGL00002	SSBG0010	0.00	Mercury	0.43	-0.36653154	-0.84397007
BGL00003	SSBG0019	0.00	Mercury	0.48	-0.31875876	-0.733969175
BGL00004	SSBG0028	0.00	Mercury	0.41	-0.38721614	-0.891598119
BGL00004	SSBG0029	0.00	Mercury	0.66	-0.18045606	-0.415515444
BGL00005	SSBG0038	0.00	Mercury	0.67	-0.1739252	-0.400477567
BGL00006	SSBG0047	0.00	Mercury	0.82	-0.08618615	-0.198450939
BGL00006	SSBG0048	0.00	Mercury	1.6	0.204119983	0.470003629
BGL00001	SSBG0002	4.00	Mercury	0.16	-0.79588002	-1.832581464
BGL00002	SSBG0011	4.00	Mercury	0.05	-1.30103	-2.995732274
BGL00003	SSBG0020	4.00	Mercury	0.75	-0.12493874	-0.287682072
BGL00004	SSBG0030	4.00	Mercury	0.16	-0.79588002	-1.832581464
BGL00005	SSBG0039	4.00	Mercury	0.2	-0.69897	-1.609437912
BGL00006	SSBG0049	4.00	Mercury	0.33	-0.48148606	-1.108662625
BGL00001	SSBG0005	19.00	Mercury	0.22	-0.65757732	-1.514127733
BGL00002	SSBG0014	19.00	Mercury	0.24	-0.61978876	-1.427116356
BGL00003	SSBG0023	19.00	Mercury	0.05	-1.30103	-2.995732274
BGL00004	SSBG0033	19.00	Mercury	0.12	-0.92081875	-2.120263536
BGL00005	SSBG0042	19.00	Mercury	0.13	-0.88605665	-2.040220829
BGL00006	SSBG0052	19.00	Mercury	0.05	-1.30103	-2.995732274
BGL00001	SSBG0009	39.00	Mercury	0.23	-0.63827216	-1.46967597
BGL00002	SSBG0018	39.00	Mercury	0.27	-0.56863624	-1.30933332
BGL00003	SSBG0027	39.00	Mercury	0.05	-1.30103	-2.995732274
BGL00004	SSBG0037	39.00	Mercury	0.17	-0.76955108	-1.771956842
BGL00005	SSBG0046	39.00	Mercury	0.18	-0.74472749	-1.714798428
BGL00006	SSBG0056	39.00	Mercury	0.21	-0.67778071	-1.560647748

Bin	*Bin*	*Frequency*
-1.25	-1.25	4
-1	-1	0
-0.75	-0.75	5
-0.5	-0.5	7
-0.25	-0.25	5
0	0	4
0.25	0.25	1
0.5	0.5	0
	More	0



Bin	*Bin*	*Frequency*
-1.75	-1.75	0
-1.25	-1.25	4
-0.75	-0.75	5
-0.25	-0.25	12
0.25	0.25	5
0.75	0.75	0
	More	0



conc	ln(conc)	ln(conc)^2	rank numb	ln(conc)rar	a stats	W stat
0.49	-0.71335	0.5088681	1	-2.99573	0.4407	1.52734981
0.43	-0.84397	0.7122855	2	-2.99573	0.3043	0.85121271
0.48	-0.73397	0.5387107	3	-2.99573	0.2533	0.68594912
0.41	-0.8916	0.7949472	4	-2.99573	0.2151	0.55823929
0.66	-0.41552	0.1726531	5	-2.12026	0.1836	0.31299175
0.67	-0.40048	0.1603823	6	-2.04022	0.1563	0.20738993
0.82	-0.19845	0.0393828	7	-1.83258	0.1316	0.14457738
1.6	0.470004	0.2209034	8	-1.83258	0.1089	0.10765978
0.16	-1.83258	3.3583548	9	-1.77196	0.0876	0.07711942
0.05	-2.99573	8.9744119	10	-1.7148	0.0672	0.04073233
0.75	-0.28768	0.082761	11	-1.60944	0.0476	0.01428498
0.16	-1.83258	3.3583548	12	-1.56065	0.0284	0.00379229
0.2	-1.60944	2.5902904	13	-1.51413	0.0094	0.00041785
0.33	-1.10866	1.2291328	14	-1.46968		**4.532** this is sum for W
0.22	-1.51413	2.2925828	15	-1.42712		**20.536** this is sq of sum for W
0.24	-1.42712	2.0366611	16	-1.30933		
0.05	-2.99573	8.9744119	17	-1.10866		
0.12	-2.12026	4.4955175	18	-0.8916		**0.955 this is W**
0.13	-2.04022	4.162501	19	-0.84397		**W is > 0.92; assume**
0.05	-2.99573	8.9744119	20	-0.73397		**log normal distribution**
0.23	-1.46968	2.1599475	21	-0.71335		
0.27	-1.30933	1.7143537	22	-0.41552		
0.05	-2.99573	8.9744119	23	-0.40048		
0.17	-1.77196	3.139831	24	-0.28768		
0.18	-1.7148	2.9405336	25	-0.19845		
0.21	-1.56065	2.4356214	26	0.470004		
	-1.435	**75.042**				
	-37.309					
	1391.987	**21.5042596**	this is the d value			

Mean [Ln(conc)]	-1.434974729
Std Dev [Ln(conc)]	0.927453711
Z	1.645
95 th Quantile (mg/Kg)	**1.09**
Bias %	1.67 (OK, <5%)

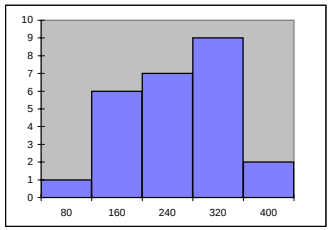
95 % Confidence Limits on 95 th Quantile		*80 % Confidence Limits on 95 th Quantile*	
a = 5%		a = 20%	
p = 95%		p = 95%	
K (estimating factor) =	2.3556	K (estimating factor) =	2.1216
95% LL (mg/kg) =	**0.07**	**80% LL (mg/kg) =**	**0.49**
95% UL (mg/kg)=	**2.12**	**80% UL (mg/kg)=**	**1.7**

Note: Shaded samples are non-detects, treated here as one-half the detection limit value of 0.1

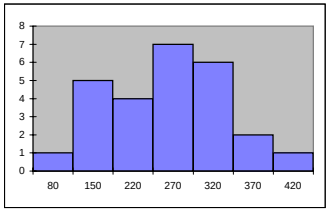
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Ln CONC
BGL00001	SSBG0001	0.00	Nickel	313	5.746203191
BGL00002	SSBG0010	0.00	Nickel	266	5.583496309
BGL00003	SSBG0019	0.00	Nickel	289	5.666426688
BGL00004	SSBG0028	0.00	Nickel	224	5.411646052
BGL00004	SSBG0029	0.00	Nickel	271	5.602118821
BGL00005	SSBG0038	0.00	Nickel	231	5.442417711
BGL00006	SSBG0047	0.00	Nickel	264	5.575949103
BGL00006	SSBG0048	0.00	Nickel	286	5.655991811
BGL00001	SSBG0002	4.00	Nickel	404	6.001414878
BGL00002	SSBG0011	4.00	Nickel	271	5.602118821
BGL00003	SSBG0020	4.00	Nickel	337	5.82008293
BGL00004	SSBG0030	4.00	Nickel	315	5.752572639
BGL00005	SSBG0039	4.00	Nickel	333	5.80814249
BGL00006	SSBG0049	4.00	Nickel	227	5.424950017
BGL00001	SSBG0005	19.00	Nickel	251	5.525452939
BGL00002	SSBG0014	19.00	Nickel	189	5.241747015
BGL00003	SSBG0023	19.00	Nickel	104	4.644390899
BGL00004	SSBG0033	19.00	Nickel	122	4.804021045
BGL00005	SSBG0042	19.00	Nickel	106	4.663439094
BGL00006	SSBG0052	19.00	Nickel	78.6	4.364371699
BGL00001	SSBG0009	39.00	Nickel	114	4.736198448
BGL00002	SSBG0018	39.00	Nickel	153	5.030437921
BGL00003	SSBG0027	39.00	Nickel	162	5.087596335
BGL00004	SSBG0037	39.00	Nickel	183	5.209486153
BGL00005	SSBG0046	39.00	Nickel	141	4.94875989
BGL00006	SSBG0056	39.00	Nickel	231	5.442417711

Bin	*Bin*	*Frequency*
80	80	1
160	160	6
240	240	7
320	320	9
400	400	2
	480	1
	More	0



Bin	*Bin*	*Frequency*
80	80	1
150	150	5
220	220	4
270	270	7
320	320	6
370	370	2
420	420	1
	More	0



Mean [Ln(conc)]	5.3381481
Std Dev [Ln(conc)]	0.430503694
Z	1.645
95 th Quantile (mg/Kg)	**423**
Bias %	0.36 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**271**
95% UL (mg/kg)=	**574**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**326**
80% UL (mg/kg)=	**519**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)
1	313	5.746	33.019	4.36437	0.4407	0.721444929
2	266	5.583	31.175	4.64439	0.3043	0.357763085
3	289	5.666	32.108	4.66344	0.2533	0.28995337
4	224	5.412	29.286	4.7362	0.2151	0.218622088
5	271	5.602	31.384	4.80402	0.1836	0.172984642
6	231	5.442	29.620	4.94876	0.1563	0.11217132
7	264	5.576	31.091	5.03044	0.1316	0.082322892
8	286	5.656	31.990	5.0876	0.1089	0.056031499
9	404	6.001	36.017	5.20949	0.0876	0.034394622
10	271	5.602	31.384	5.24175	0.0672	0.022965553
11	337	5.820	33.873	5.41165	0.0476	0.007820825
12	315	5.753	33.092	5.42495	0.0284	0.002854283
13	333	5.808	33.735	5.44242	0.0094	0
14	227	5.425	29.430	5.44242		
15	251	5.525	30.531	5.52545		
16	189	5.242	27.476	5.57595		
17	104	4.644	21.570	5.5835		
18	122	4.804	23.079	5.60212		
19	106	4.663	21.748	5.60212		
20	78.6	4.364	19.048	5.65599		
21	114	4.736	22.432	5.66643		
22	153	5.030	25.305	5.7462		
23	162	5.088	25.884	5.75257		
24	183	5.209	27.139	5.80814		
25	141	4.949	24.490	5.82008		
26	231	5.442	29.620	6.00141		

$[SUM (x_i)]^2$	SUM (x_i^2)
19263.178	745.525

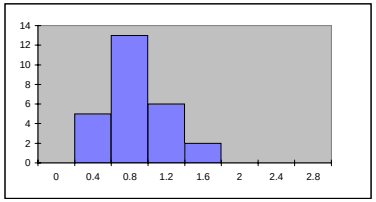
W	**0.93315**
d	**4.63334**

W is greater than 0.92. Cannot rule out lognormal distribution.

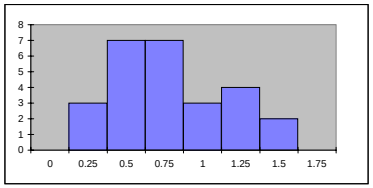
LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Ln CONC
BGL00001	SSBG0001	0.00	Selenium	0.6	-0.510825624
BGL00002	SSBG0010	0.00	Selenium	0.23	-1.46967597
BGL00003	SSBG0019	0.00	Selenium	0.5	-0.693147181
BGL00004	SSBG0028	0.00	Selenium	1	0
BGL00004	SSBG0029	0.00	Selenium	1.1	0.09531018
BGL00005	SSBG0038	0.00	Selenium	0.45	-0.798507696
BGL00006	SSBG0047	0.00	Selenium	1.4	0.336472237
BGL00006	SSBG0048	0.00	Selenium	1.1	0.09531018
BGL00001	SSBG0002	4.00	Selenium	0.75	-0.287682072
BGL00002	SSBG0011	4.00	Selenium	0.52	-0.653926467
BGL00003	SSBG0020	4.00	Selenium	0.31	-1.171182982
BGL00004	SSBG0030	4.00	Selenium	0.65	-0.430782916
BGL00005	SSBG0039	4.00	Selenium	0.9	-0.105360516
BGL00006	SSBG0049	4.00	Selenium	1.3	0.262364264
BGL00001	SSBG0005	19.00	Selenium	0.48	-0.733969175
BGL00002	SSBG0014	19.00	Selenium	0.24	-1.427116356
BGL00003	SSBG0023	19.00	Selenium	0.64	-0.446287103
BGL00004	SSBG0033	19.00	Selenium	1.1	0.09531018
BGL00005	SSBG0042	19.00	Selenium	1.2	0.182321557
BGL00006	SSBG0052	19.00	Selenium	0.5	-0.693147181
BGL00001	SSBG0009	39.00	Selenium	0.21	-1.560647748
BGL00002	SSBG0018	39.00	Selenium	0.38	-0.967584026
BGL00003	SSBG0027	39.00	Selenium	0.5	-0.693147181
BGL00004	SSBG0037	39.00	Selenium	0.58	-0.544727175
BGL00005	SSBG0046	39.00	Selenium	0.65	-0.430782916
BGL00006	SSBG0056	39.00	Selenium	0.78	-0.248461359

Bin	*Bin*	*Frequency*
0		
0.4	0	0
1.2	0.8	13
1.6	1.2	6
2	1.6	2
2.4	2	0
2.8	2.4	0
	2.8	0
	More	0



Bin	*Bin*	*Frequency*
0		
0.25	0	0
0.5	0.25	3
0.75	0.5	7
1	0.75	7
1.25	1	3
1.5	1.25	4
1.75	1.5	2
	1.75	0
	More	0



Mean [Ln(conc)]	-0.492302809
Std Dev [Ln(conc)]	0.537033938
Z	1.645
95 th Quantile (mg/Kg)	**1.48**
Bias %	0.56 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**0.79**
95% UL (mg/kg)=	**2.17**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**1.0**
80% UL (mg/kg)=	**1.9**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)
1	0.6	-0.511	0.261	-1.560648	0.4407	0.83606078
2	0.23	-1.470	2.160	-1.469676	0.3043	0.52705984
3	0.5	-0.693	0.480	-1.427116	0.2533	0.40767062
4	1	0.000	0.000	-1.171183	0.2151	0.27242268
5	1.1	0.095	0.009	-0.967584	0.1836	0.19514738
6	0.45	-0.799	0.638	-0.798508	0.1563	0.13970373
7	1.4	0.336	0.113	-0.733969	0.1316	0.09659034
8	1.1	0.095	0.009	-0.693147	0.1089	0.06400997
9	0.75	-0.288	0.083	-0.693147	0.0876	0.03895448
10	0.52	-0.654	0.428	-0.693147	0.0672	0.02724726
11	0.31	-1.171	1.372	-0.653926	0.0476	0.01062163
12	0.65	-0.431	0.186	-0.544727	0.0284	0.00323602
13	0.9	-0.105	0.011	-0.510826	0.0094	0.00060666
14	1.3	0.262	0.069	-0.446287		
15	0.48	-0.734	0.539	-0.430783		
16	0.24	-1.427	2.037	-0.430783		
17	0.64	-0.446	0.199	-0.287682		
18	1.1	0.095	0.009	-0.248461		
19	1.2	0.182	0.033	-0.105361		
20	0.5	-0.693	0.480	0		
21	0.21	-1.561	2.436	0.0953102		
22	0.38	-0.968	0.936	0.0953102		
23	0.5	-0.693	0.480	0.0953102		
24	0.58	-0.545	0.297	0.1823216		
25	0.65	-0.431	0.186	0.2623643		
26	0.78	-0.248	0.062	0.3364722		
		$[SUM (x_i)]^2$	$SUM (x_i^2)$			
		163.837	13.512			

W	**0.95156**
d	**7.21014**

W is greater than 0.92. Cannot rule out lognormal distribution.

Note: No sam Note: Shaded samples are non detects treated here as one half the detection limit of 1.

LEHR Facility, Davis, California

Site ID	Samp ID	Samp Depth	LabChem	CONC	Bin
BGL00001	SSBG0001	0.00	Silver	0.26	
BGL00002	SSBG0010	0.00	Silver	1	
BGL00003	SSBG0019	0.00	Silver	1	
BGL00004	SSBG0028	0.00	Silver	1	
BGL00004	SSBG0029	0.00	Silver	1	
BGL00005	SSBG0038	0.00	Silver	1	
BGL00006	SSBG0047	0.00	Silver	1	
BGL00006	SSBG0048	0.00	Silver	1	
BGL00001	SSBG0002	4.00	Silver	1	
BGL00002	SSBG0011	4.00	Silver	1	
BGL00003	SSBG0020	4.00	Silver	1	
BGL00004	SSBG0030	4.00	Silver	1	
BGL00005	SSBG0039	4.00	Silver	1	
BGL00006	SSBG0049	4.00	Silver	1	
BGL00001	SSBG0005	19.00	Silver	1	
BGL00002	SSBG0014	19.00	Silver	1	
BGL00003	SSBG0023	19.00	Silver	1	
BGL00004	SSBG0033	19.00	Silver	1	
BGL00005	SSBG0042	19.00	Silver	1	
BGL00006	SSBG0052	19.00	Silver	1	
BGL00001	SSBG0009	39.00	Silver	1	
BGL00002	SSBG0018	39.00	Silver	1	
BGL00003	SSBG0027	39.00	Silver	1	
BGL00004	SSBG0037	39.00	Silver	1	
BGL00005	SSBG0046	39.00	Silver	1	
BGL00006	SSBG0056	39.00	Silver	1	

Note: all shaded samples are non detects treated as one half the detection limit of 2

LEHR Facility, Davis, California

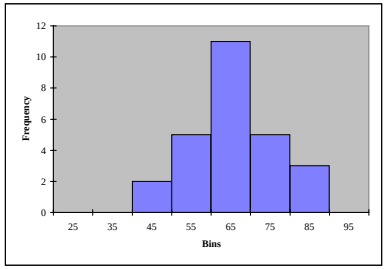
Site ID	Samp ID	Samp Depth	LabChem	CONC	Bin
BGL00001	SSBG0001	0.00	Thallium	0.68	
BGL00002	SSBG0010	0.00	Thallium	1	
BGL00003	SSBG0019	0.00	Thallium	1	
BGL00004	SSBG0028	0.00	Thallium	1	
BGL00004	SSBG0029	0.00	Thallium	1	
BGL00005	SSBG0038	0.00	Thallium	1	
BGL00006	SSBG0047	0.00	Thallium	1	
BGL00006	SSBG0048	0.00	Thallium	1	
BGL00001	SSBG0002	4.00	Thallium	1	
BGL00002	SSBG0011	4.00	Thallium	1	
BGL00003	SSBG0020	4.00	Thallium	1	
BGL00004	SSBG0030	4.00	Thallium	1	
BGL00005	SSBG0039	4.00	Thallium	1	
BGL00006	SSBG0049	4.00	Thallium	1	
BGL00001	SSBG0005	19.00	Thallium	1	
BGL00002	SSBG0014	19.00	Thallium	1	
BGL00003	SSBG0023	19.00	Thallium	1	
BGL00004	SSBG0033	19.00	Thallium	1	
BGL00005	SSBG0042	19.00	Thallium	1	
BGL00006	SSBG0052	19.00	Thallium	1	
BGL00001	SSBG0009	39.00	Thallium	1	
BGL00002	SSBG0018	39.00	Thallium	1	
BGL00003	SSBG0027	39.00	Thallium	1	
BGL00004	SSBG0037	39.00	Thallium	1	
BGL00005	SSBG0046	39.00	Thallium	1	
BGL00006	SSBG0056	39.00	Thallium	1	

Note: all shaded values are non detects treated here as one half the detection limit of 2.

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	Ln CONC
BGL00001	SSBG0009	39.00	Vanadium	37.1	3.61361697
BGL00005	SSBG0039	4.00	Vanadium	38.9	3.660994251
BGL00004	SSBG0030	4.00	Vanadium	45.7	3.822098298
BGL00001	SSBG0002	4.00	Vanadium	45.9	3.826465117
BGL00004	SSBG0029	0.00	Vanadium	46.6	3.841600541
BGL00004	SSBG0028	0.00	Vanadium	49.3	3.897924081
BGL00001	SSBG0001	0.00	Vanadium	54.5	3.998200702
BGL00006	SSBG0047	0.00	Vanadium	55.3	4.012772909
BGL00006	SSBG0049	4.00	Vanadium	56.0	4.025351691
BGL00003	SSBG0019	0.00	Vanadium	58.0	4.060443011
BGL00006	SSBG0052	19.00	Vanadium	58.1	4.062165664
BGL00003	SSBG0023	19.00	Vanadium	58.5	4.069026754
BGL00005	SSBG0038	0.00	Vanadium	58.7	4.072439727
BGL00001	SSBG0005	19.00	Vanadium	59.9	4.092676505
BGL00002	SSBG0010	0.00	Vanadium	60.1	4.096009842
BGL00005	SSBG0042	19.00	Vanadium	61.6	4.120661871
BGL00006	SSBG0048	0.00	Vanadium	62.2	4.130355
BGL00003	SSBG0020	4.00	Vanadium	62.9	4.141546164
BGL00004	SSBG0033	19.00	Vanadium	66.2	4.192680463
BGL00002	SSBG0018	39.00	Vanadium	67.7	4.21508618
BGL00005	SSBG0046	39.00	Vanadium	70.7	4.258445573
BGL00003	SSBG0027	39.00	Vanadium	71.8	4.273884476
BGL00004	SSBG0037	39.00	Vanadium	72.0	4.276666119
BGL00002	SSBG0014	19.00	Vanadium	76.1	4.332048265
BGL00002	SSBG0011	4.00	Vanadium	76.9	4.342505877
BGL00006	SSBG0056	39.00	Vanadium	78.7	4.365643155

25	*Bin*	*Frequency*		
35	25	0		
45	35	0		
55	45	2		
65	55	5		
75	65	11		
85	75	5		
95	85	3		
	95	0		
	More	0		



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a*(x_{n-i+1} - x_i)$ (n=26)	W
1	37.1	3.614	13.058	3.613617	0.4407	0.3314179	**0.94754**
2	38.9	3.661	13.403	3.660994	0.3043	0.207384	
3	45.7	3.822	14.608	3.822098	0.2533	0.1291703	**d**
4	45.9	3.826	14.642	3.826465	0.2151	0.0968382	**0.98743**
5	46.6	3.842	14.758	3.841601	0.1836	0.0793673	
6	49.3	3.898	15.194	3.897924	0.1563	0.0563495	
7	54.5	3.998	15.986	3.998201	0.1316	0.0285421	
8	55.3	4.013	16.102	4.012773	0.1089	0.0195919	
9	56.0	4.025	16.203	4.025352	0.0876	0.0101786	
10	58.0	4.060	16.487	4.060443	0.0672	0.0046981	
11	58.1	4.062	16.501	4.062166	0.0476	0.0027844	
12	58.5	4.069	16.557	4.069027	0.0284	0.0007663	
13	58.7	4.072	16.585	4.07244	0.0094	0.0001902	
14	59.9	4.093	16.750	4.092677			
15	60.1	4.096	16.777	4.09601			
16	61.6	4.121	16.980	4.120662			
17	62.2	4.130	17.060	4.130355			
18	62.9	4.142	17.152	4.141546			
19	66.2	4.193	17.579	4.19268			
20	67.7	4.215	17.767	4.215086			
21	70.7	4.258	18.134	4.258446			
22	71.8	4.274	18.266	4.273884			
23	72.0	4.277	18.290	4.276666			
24	76.1	4.332	18.767	4.332048			
25	76.9	4.343	18.857	4.342506			
26	78.7	4.366	19.059	4.365643			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		11193.917	431.523				

W is greater than 0.92.
Cannot rule out
lognormal distribution.

Mean [Ln(conc)]	4.069281123
Std Dev [Ln(conc)]	0.198738661
Z	1.645
95 th Quantile (mg/Kg)	**81**
Bias %	0.08 (OK, <5%)

95 % Confidence Limits on 95 th Quantile		*80 % Confidence Limits on 95 th Quantile*	
a = 5%		a = 20%	
p = 95%		p = 95%	
K (estimating factor) =	2.3556	K (estimating factor) =	2.1216
95% LL (mg/kg) =	**69**	**80% LL (mg/kg) =**	**73**
95% UL (mg/kg)=	**93**	**80% UL (mg/kg)=**	**89**

LEHR Facility, Davis, California

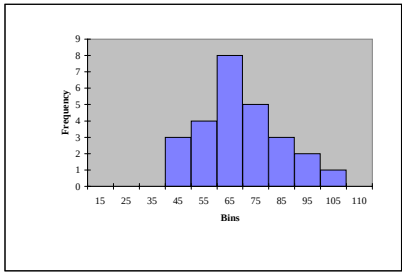
Site ID	Samp ID	Samp Depth	LabChem	CONC	Bin
BGL00001	SSBG0001	0.00	Molybdenum	1	
BGL00002	SSBG0010	0.00	Molybdenum	1	
BGL00003	SSBG0019	0.00	Molybdenum	1	
BGL00004	SSBG0028	0.00	Molybdenum	1	
BGL00004	SSBG0029	0.00	Molybdenum	1	
BGL00005	SSBG0038	0.00	Molybdenum	1	
BGL00006	SSBG0047	0.00	Molybdenum	1	
BGL00006	SSBG0048	0.00	Molybdenum	1	
BGL00001	SSBG0002	4.00	Molybdenum	1	
BGL00002	SSBG0011	4.00	Molybdenum	1	
BGL00003	SSBG0020	4.00	Molybdenum	1	
BGL00004	SSBG0030	4.00	Molybdenum	1	
BGL00005	SSBG0039	4.00	Molybdenum	1	
BGL00006	SSBG0049	4.00	Molybdenum	1	
BGL00001	SSBG0005	19.00	Molybdenum	1	
BGL00002	SSBG0014	19.00	Molybdenum	1	
BGL00003	SSBG0023	19.00	Molybdenum	1	
BGL00004	SSBG0033	19.00	Molybdenum	1	
BGL00005	SSBG0042	19.00	Molybdenum	1	
BGL00006	SSBG0052	19.00	Molybdenum	1	
BGL00001	SSBG0009	39.00	Molybdenum	1	
BGL00002	SSBG0018	39.00	Molybdenum	1	
BGL00003	SSBG0027	39.00	Molybdenum	1	
BGL00004	SSBG0037	39.00	Molybdenum	1	
BGL00005	SSBG0046	39.00	Molybdenum	1	
BGL00006	SSBG0056	39.00	Molybdenum	1	

Note: All shaded numbers are non detects treated as one half the detection limit of 2.

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	SAMP_DEPTH	LAB_CHEM	CONC	Ln CONC	BIN
BGL00005	SSBG0039	4.00	Zinc	37.6	3.62700405	15
BGL00001	SSBG0009	39.00	Zinc	39.6	3.678829118	25
BGL00004	SSBG0030	4.00	Zinc	43.0	3.761200116	35
BGL00004	SSBG0028	0.00	Zinc	47.9	3.869115504	45
BGL00004	SSBG0029	0.00	Zinc	49.3	3.897924081	55
BGL00001	SSBG0002	4.00	Zinc	49.8	3.908014984	65
BGL00006	SSBG0052	19.00	Zinc	53.2	3.974058396	75
BGL00006	SSBG0049	4.00	Zinc	56.4	4.032469159	85
BGL00006	SSBG0047	0.00	Zinc	56.6	4.036008985	95
BGL00005	SSBG0038	0.00	Zinc	57.0	4.043051268	105
BGL00005	SSBG0042	19.00	Zinc	58.3	4.065602093	110
BGL00006	SSBG0048	0.00	Zinc	59.4	4.084294226	
BGL00001	SSBG0001	0.00	Zinc	60.6	4.104294893	
BGL00003	SSBG0019	0.00	Zinc	60.6	4.104294893	
BGL00005	SSBG0046	39.00	Zinc	64.0	4.158883083	
BGL00004	SSBG0033	19.00	Zinc	66.1	4.191168747	
BGL00003	SSBG0020	4.00	Zinc	67.8	4.216562195	
BGL00002	SSBG0010	0.00	Zinc	69.5	4.241326753	
BGL00004	SSBG0037	39.00	Zinc	69.6	4.242764567	
BGL00001	SSBG0005	19.00	Zinc	73.0	4.290459441	
BGL00002	SSBG0018	39.00	Zinc	78.8	4.366912997	
BGL00003	SSBG0023	19.00	Zinc	79.0	4.369447852	
BGL00002	SSBG0014	19.00	Zinc	84.2	4.433194921	
BGL00002	SSBG0011	4.00	Zinc	87.2	4.468204331	
BGL00003	SSBG0027	39.00	Zinc	90.4	4.504244267	
BGL00006	SSBG0056	39.00	Zinc	101.0	4.615120517	

Bin	*Frequency*
15	0
25	0
35	0
45	0
55	3
65	4
75	8
85	5
95	3
105	2
110	1
110	0
More	0



Mean [Ln(conc)]	4.126325055
Std Dev [Ln(conc)]	0.251340431
Z	1.645
95 th Quantile (mg/Kg)	**94**
Bias %	0.12 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**75**
95% UL (mg/kg)=	**112**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**82**
80% UL (mg/kg)=	**106**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n+1} - x_i)$ (n=26)	**W**
1	37.6	3.627	13.155	3.627004	0.4407	0.4354629	**0.98562**
2	39.6	3.679	13.534	3.678829	0.3043	0.2511738	
3	43.0	3.761	14.147	3.7612	0.2533	0.1790842	**d**
4	47.9	3.869	14.970	3.869116	0.2151	0.1213335	**1.5793**
5	49.3	3.898	15.194	3.897924	0.1836	0.0865718	
6	49.8	3.908	15.273	3.908015	0.1563	0.0717258	
7	53.2	3.974	15.793	3.974058	0.1316	0.0416384	
8	56.4	4.032	16.261	4.032469	0.1089	0.0229012	
9	56.6	4.036	16.289	4.036009	0.0876	0.0179858	
10	57.0	4.043	16.346	4.043051	0.0672	0.0116599	
11	58.3	4.066	16.529	4.065602	0.0476	0.005977	
12	59.4	4.084	16.681	4.084294	0.0284	0.0021183	
13	60.6	4.104	16.845	4.104295	0.0094	0	
14	60.6	4.104	16.845	4.104295			
15	64.0	4.159	17.296	4.158883			
16	66.1	4.191	17.566	4.191169			
17	67.8	4.217	17.779	4.216562			
18	69.5	4.241	17.989	4.241327			
19	69.6	4.243	18.001	4.242765			
20	73.0	4.290	18.408	4.290459			
21	78.8	4.367	19.070	4.366913			
22	79.0	4.369	19.092	4.369448			
23	84.2	4.433	19.653	4.433195			
24	87.2	4.468	19.965	4.468204			
25	90.4	4.504	20.288	4.504244			
26	101.0	4.615	21.299	4.615121			

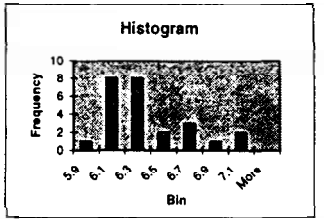
$[SUM (x_i)]^2$	$SUM (x_i^2)$
11509.954	444.270

W is greater than 0.9
Cannot rule out lognormal distribution.

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	Units	CONC	CRanked	Ln Conc
BGL00001	SSBG0001	Alkalinity Total(	mg/kg	410	350	5.857933
BGL00002	SSBG0010	Alkalinity Total(	mg/kg	410	370	5.913503
BGL00003	SSBG0019	Alkalinity Total(	mg/kg	490	370	5.913503
BGL00004	SSBG0028	Alkalinity Total(	mg/kg	370	380	5.940171
BGL00004	SSBG0029	Alkalinity Total(	mg/kg	380	380	5.940171
BGL00005	SSBG0038	Alkalinity Total(	mg/kg	520	400	5.991465
BGL00006	SSBG0047	Alkalinity Total(	mg/kg	1000	410	6.016157
BGL00006	SSBG0048	Alkalinity Total(	mg/kg	550	410	6.016157
BGL00001	SSBG0002	Alkalinity Total(	mg/kg	380	410	6.016157
BGL00002	SSBG0011	Alkalinity Total(	mg/kg	480	450	6.109248
BGL00003	SSBG0020	Alkalinity Total(	mg/kg	710	450	6.109248
BGL00004	SSBG0030	Alkalinity Total(	mg/kg	350	470	6.152733
BGL00005	SSBG0039	Alkalinity Total(	mg/kg	370	480	6.173786
BGL00006	SSBG0049	Alkalinity Total(	mg/kg	830	480	6.173786
BGL00001	SSBG0005	Alkalinity Total(	mg/kg	1000	490	6.194405
BGL00002	SSBG0014	Alkalinity Total(	mg/kg	710	500	6.214608
BGL00003	SSBG0023	Alkalinity Total(	mg/kg	710	520	6.253829
BGL00004	SSBG0033	Alkalinity Total(	mg/kg	410	550	6.309918
BGL00005	SSBG0042	Alkalinity Total(	mg/kg	470	550	6.309918
BGL00006	SSBG0052	Alkalinity Total(	mg/kg	480	710	6.565265
BGL00001	SSBG0009	Alkalinity Total(	mg/kg	400	710	6.565265
BGL00003	SSBG0027	Alkalinity Total(	mg/kg	500	710	6.565265
BGL00004	SSBG0037	Alkalinity Total(	mg/kg	550	830	6.721426
BGL00005	SSBG0046	Alkalinity Total(	mg/kg	450	1,000	6.907755
BGL00006	SSBG0056	Alkalinity Total(	mg/kg	450	1,000	6.907755

Bin	Frequency
5.9	1
6.1	8
6.3	8
6.5	2
6.7	3
6.9	1
7.1	2
More	0



Removed from Calc
SSBG001E Alkalinity T mg/kg 11000

Mean [Ln(conc)] 6.233577
Std Dev [Ln(conc)] 0.306475
Z 1.645
95 th Quantile (mg/Kg) 844
Bias % 0.19 (OK, <5%)

80 % Confidence Limits on 95 th Quantile
a = 20%
p = 95%
K (estimating factor) = 2.132
80% LL (mg/kg) = 708
80% UL (mg/kg)= 979

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

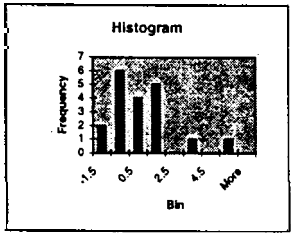
i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=25)	W
1	350	5.858	34.315	5.857933	0.4450	0.467171	**0.885050121**
2	370	5.914	34.970	5.913503	0.3069	0.305136	
3	370	5.914	34.970	5.913503	0.2543	0.205455	**d**
4	380	5.940	35.286	5.940171	0.2148	0.13427	**2.254250939**
5	380	5.940	35.286	5.940171	0.1822	0.113892	
6	400	5.991	35.898	5.991465	0.1539	0.088308	
7	410	6.016	36.194	6.016157	0.1283	0.03769	
8	410	6.016	36.194	6.016157	0.1046	0.030727	
9	410	6.016	36.194	6.016157	0.0823	0.01956	
10	450	6.109	37.323	6.109248	0.0610	0.006427	
11	450	6.109	37.323	6.109248	0.0403	0.003432	
12	470	6.153	37.856	6.152733	0.0200	0.000421	
13	480	6.174	38.116	6.173786	0.0000	0	
14	480	6.174	38.116	6.173786			
15	490	6.194	38.371	6.194405			
16	500	6.215	38.621	6.214608			
17	520	6.254	39.110	6.253829			
18	550	6.310	39.815	6.309918			
19	550	6.310	39.815	6.309918			
20	710	6.565	43.103	6.565265			
21	710	6.565	43.103	6.565265			
22	710	6.565	43.103	6.565265			
23	830	6.721	45.178	6.721426			
24	1,000	6.908	47.717	6.907755			
25	1,000	6.908	47.717	6.907755			
		[SUM (x_i)]^2	SUM (x_i^2)				
		24285.927	973.691				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	LN CONC	LN C Ranked
BGL00002	SSBG0010	Ammonia-Nitrogen	1.1	0.0953102	-1.714798428
BGL00003	SSBG0019	Ammonia-Nitrogen	3.8	1.3350011	-1.560647748
BGL00004	SSBG0028	Ammonia-Nitrogen	0.27	-1.3093333	-1.30933332
BGL00005	SSBG0038	Ammonia-Nitrogen	0.85	-0.1625189	-1.30933332
BGL00006	SSBG0047	Ammonia-Nitrogen	3.7	1.3083328	-1.203972804
BGL00006	SSBG0048	Ammonia-Nitrogen	17.	2.8332133	-1.108662625
BGL00001	SSBG0002	Ammonia-Nitrogen	0.21	-1.5606477	-1.021651248
BGL00002	SSBG0011	Ammonia-Nitrogen	1.5	0.4054651	-0.967584026
BGL00004	SSBG0030	Ammonia-Nitrogen	0.27	-1.3093333	-0.162518929
BGL00005	SSBG0039	Ammonia-Nitrogen	0.33	-1.1086626	0.09531018
BGL00006	SSBG0049	Ammonia-Nitrogen	3.2	1.1631508	0.405465108
BGL00001	SSBG0005	Ammonia-Nitrogen	0.18	-1.7147984	0.470003629
BGL00004	SSBG0033	Ammonia-Nitrogen	0.30	-1.2039728	0.741937345
BGL00005	SSBG0042	Ammonia-Nitrogen	0.38	-0.967584	1.098612289
BGL00006	SSBG0052	Ammonia-Nitrogen	2.1	0.7419373	1.16315081
BGL00001	SSBG0009	Ammonia-Nitrogen	190	5.2470241	1.30833282
BGL00004	SSBG0037	Ammonia-Nitrogen	3.0	1.0986123	1.335001067
BGL00005	SSBG0046	Ammonia-Nitrogen	0.36	-1.0216512	2.833213344
BGL00006	SSBG0056	Ammonia-Nitrogen	1.6	0.4700036	5.247024072

Mean [Ln(conc)]	**0.228397274**
Std Dev [Ln(conc)]	**1.748902174**
Z	1.645
95 th Quantile (mg/Kg)	**22**
Bias %	8.38
80 % Confidence Limits on 95 th Quantile	
a = 20%	
p = 95%	
K (estimating factor) =	2.228
80% LL (mg/kg) =	**-17**
80% UL (mg/kg)=	**62**

Bin	*Frequency*
-1.5	2
-0.5	6
0.5	4
1.5	5
2.5	0
3.5	1
4.5	0
5.5	1
More	0



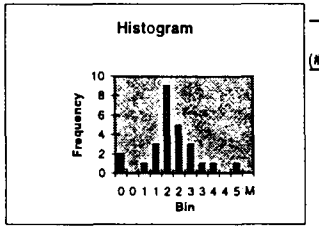
Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	**1.1**	**0.095**	0.009	-1.7148	0.4808	3.347244	**0.870300914**
2	3.8	1.335	1.782	-1.56065	0.3232	1.420096	
3	0.3	-1.309	1.714	-1.30933	0.2561	0.677214	**d**
4	**0.9**	**-0.163**	0.026	-1.30933	0.2059	0.538977	**55.05585866**
5	3.7	1.308	1.712	-1.20397	0.1641	0.388445	
6	17.0	2.833	8.027	-1.10866	0.1271	0.280545	
7	0.2	-1.561	2.436	-1.02165	0.0932	0.164366	
8	1.5	0.405	0.164	-0.96758	0.0612	0.08798	
9	0.3	-1.309	1.714	-0.16252	0.0303	0.01721	
10	0.3	-1.109	1.229	0.09531	0.0000	0	
11	3.2	1.163	1.353	0.405465			
12	0.2	-1.715	2.941	0.470004			
13	0.3	-1.204	1.450	0.741937			
14	**0.4**	**-0.968**	**0.936**	1.098612			
15	2.1	0.742	0.550	1.163151			
16	190.0	5.247	27.531	1.308333			
17	3.0	1.099	1.207	1.335001			
18	0.4	-1.022	1.044	2.833213			
19	1.6	0.470	0.221	5.247024			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		18.832	56.047				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Chloride	5.6	1.722767	-0.12783337
BGL00002	SSBG0010	Chloride	7.6	2.028148	0
BGL00003	SSBG0019	Chloride	1.0	0	0.78845736
BGL00004	SSBG0028	Chloride	19.	2.944439	1.029619417
BGL00004	SSBG0029	Chloride	46.	3.828641	1.223775432
BGL00005	SSBG0038	Chloride	130	4.867534	1.410986974
BGL00006	SSBG0047	Chloride	22.	3.091042	1.589235205
BGL00006	SSBG0048	Chloride	16.	2.772589	1.648658626
BGL00001	SSBG0002	Chloride	0.88	-0.127833	1.686398954
BGL00002	SSBG0011	Chloride	12.	2.484907	1.686398954
BGL00003	SSBG0020	Chloride	15.	2.70805	1.722766598
BGL00004	SSBG0030	Chloride	3.4	1.223775	1.722766598
BGL00005	SSBG0039	Chloride	2.2	0.788457	1.740466175
BGL00006	SSBG0049	Chloride	11.	2.397895	1.774952351
BGL00001	SSBG0005	Chloride	12.	2.484907	1.887069649
BGL00002	SSBG0014	Chloride	5.4	1.686399	2.028148247
BGL00003	SSBG0023	Chloride	2.8	1.029619	2.028148247
BGL00004	SSBG0033	Chloride	6.6	1.88707	2.397895273
BGL00005	SSBG0042	Chloride	5.2	1.648659	2.48490665
BGL00006	SSBG0052	Chloride	5.9	1.774952	2.48490665
BGL00001	SSBG0009	Chloride	5.7	1.740466	2.708050201
BGL00002	SSBG0018	Chloride	5.4	1.686399	2.772588722
BGL00003	SSBG0027	Chloride	4.9	1.589235	2.944438979
BGL00004	SSBG0037	Chloride	7.6	2.028148	3.091042453
BGL00005	SSBG0046	Chloride	4.1	1.410987	3.828641396
BGL00006	SSBG0056	Chloride	5.6	1.722767	4.86753445

Bin	*Frequency*
0	2
0.5	0
1	1
1.5	3
2	9
2.5	5
3	3
3.5	1
4	1
4.5	0
5	1
More	0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	5.6	1.723	2.968	-0.127833	0.4407	2.201459	0.951001
2	7.6	2.028	4.113	0	0.3043	1.165056	
3	1.0	0.000	0.000	0.788457	0.2533	0.583245	d
4	19.0	2.944	8.670	1.029619	0.2151	0.411878	28.02443
5	46.0	3.829	14.658	1.223775	0.1836	0.284362	
6	130.0	4.868	23.693	1.410987	0.1563	0.202731	
7	22.0	3.091	9.555	1.589235	0.1316	0.11787	
8	16.0	2.773	7.687	1.648659	0.1089	0.091067	
9	0.9	-0.128	0.016	1.686399	0.0876	0.062327	
10	12.0	2.485	6.175	1.686399	0.0672	0.022966	
11	15.0	2.708	7.334	1.722767	0.0476	0.014536	
12	3.4	1.224	1.498	1.722767	0.0284	0.004666	
13	2.2	0.788	0.622	1.740466	0.0094	0.000324	
14	11.0	2.398	5.750	1.774952			
15	12.0	2.485	6.175	1.88707			
16	5.4	1.686	2.844	2.028148			
17	2.8	1.030	1.060	2.028148			
18	6.6	1.887	3.561	2.397895			
19	5.2	1.649	2.718	2.484907			
20	5.9	1.775	3.150	2.484907			
21	5.7	1.740	3.029	2.70805			
22	5.4	1.686	2.844	2.772589			
23	4.9	1.589	2.526	2.944439			
24	7.6	2.028	4.113	3.091042			
25	4.1	1.411	1.991	3.828641			
26	5.6	1.723	2.968	4.867534			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		2644.018	129.717				

Mean [Ln(conc)]	1.977693084
Std Dev [Ln(conc)]	1.05876212
Z	1.645
95 th Quantile (mg/Kg)	**41**
Bias %	2.18 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**-5**
95% UL (mg/kg)=	**88**

80 % Confidence Limits on 95 th Quantile

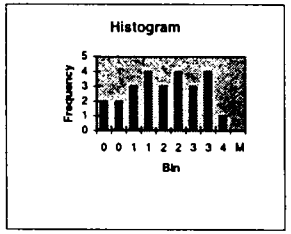
a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**14**
80% UL (mg/kg)=	**68**

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Nitrogen, Nitrate (	1	0.09531	-0.891598119
BGL00002	SSBG0010	Nitrogen, Nitrate (	19	2.944439	0
BGL00003	SSBG0019	Nitrogen, Nitrate (	28	3.332205	0.09531018
BGL00004	SSBG0028	Nitrogen, Nitrate (	27	3.295837	0.405465108
BGL00004	SSBG0029	Nitrogen, Nitrate (	45	3.806662	0.741937345
BGL00005	SSBG0038	Nitrogen, Nitrate (	13	2.564949	0.832909123
BGL00006	SSBG0047	Nitrogen, Nitrate (	6	1.791759	0.875468737
BGL00006	SSBG0048	Nitrogen, Nitrate (	10	2.251292	1.098612289
BGL00001	SSBG0002	Nitrogen, Nitrate (	0	-0.8916	1.16315081
BGL00002	SSBG0011	Nitrogen, Nitrate (	25	3.218876	1.16315081
BGL00003	SSBG0020	Nitrogen, Nitrate (	24	3.178054	1.223775432
BGL00004	SSBG0030	Nitrogen, Nitrate (	3	1.163151	1.62924054
BGL00005	SSBG0039	Nitrogen, Nitrate (	1	0	1.722766598
BGL00006	SSBG0049	Nitrogen, Nitrate (	3	1.098612	1.791759469
BGL00001	SSBG0005	Nitrogen, Nitrate (	11	2.397895	2.140066163
BGL00002	SSBG0014	Nitrogen, Nitrate (	9	2.140066	2.163323026
BGL00003	SSBG0023	Nitrogen, Nitrate (	9	2.163323	2.251291799
BGL00004	SSBG0033	Nitrogen, Nitrate (	3	1.223775	2.397895273
BGL00005	SSBG0042	Nitrogen, Nitrate (	3	1.163151	2.564949357
BGL00006	SSBG0052	Nitrogen, Nitrate (	2	0.741937	2.833213344
BGL00001	SSBG0009	Nitrogen, Nitrate (	2	0.405465	2.944438979
BGL00002	SSBG0018	Nitrogen, Nitrate (	6	1.722767	3.17805383
BGL00003	SSBG0027	Nitrogen, Nitrate (	17	2.833213	3.218875825
BGL00004	SSBG0037	Nitrogen, Nitrate (	5	1.629241	3.295836866
BGL00005	SSBG0046	Nitrogen, Nitrate (	2	0.832909	3.33220451
BGL00006	SSBG0056	Nitrogen, Nitrate (	2	0.875469	3.80666249

Bin	*Frequency*
0	2
0.5	2
1	3
1.5	4
2	3
2.5	4
3	3
3.5	4
4	1
More	0



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	1.1	0.095	0.009	-0.8916	0.4407	2.070523	0.97383989
2	19.0	2.944	8.670	0	0.3043	1.01399	
3	28.0	3.332	11.104	0.09531	0.2533	0.810693	d
4	27.0	3.296	10.863	0.405465	0.2151	0.605165	36.18462339
5	45.0	3.807	14.491	0.741937	0.1836	0.447271	
6	13.0	2.565	6.579	0.832909	0.1563	0.330032	
7	6.0	1.792	3.210	0.875469	0.1316	0.257639	
8	9.5	2.251	5.068	1.098612	0.1089	0.159684	
9	0.4	-0.892	0.795	1.163151	0.0876	0.108164	
10	25.0	3.219	10.361	1.163151	0.0672	0.073123	
11	24.0	3.178	10.100	1.223775	0.0476	0.044722	
12	3.2	1.163	1.353	1.629241	0.0284	0.014507	
13	1.0	0.000	0.000	1.722767	0.0094	0.000649	
14	3.0	1.099	1.207	1.791759			
15	11.0	2.398	5.750	2.140066			
16	8.5	2.140	4.580	2.163323			
17	8.7	2.163	4.680	2.251292			
18	3.4	1.224	1.498	2.397895			
19	3.2	1.163	1.353	2.564949			
20	2.1	0.742	0.550	2.833213			
21	1.5	0.405	0.164	2.944439			
22	5.6	1.723	2.968	3.178054			
23	17.0	2.833	8.027	3.218876			
24	5.1	1.629	2.654	3.295837			
25	2.3	0.833	0.694	3.332205			
26	2.4	0.875	0.766	3.806662			
		[SUM (x_i)]^2	SUM (x_i^2)				
		2114.046	117.494				

Mean [Ln(conc)]	1.768413838
Std Dev [Ln(conc)]	1.203073121
Z	1.645
95 th Quantile (mg/Kg)	**42**
Bias %	2.82 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**-15**
95% UL (mg/kg)=	**100**

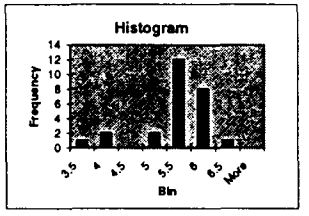
80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**10**
80% UL (mg/kg)=	**75**

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Specific C	160	5.075174	3.401197382
BGL00002	SSBG0010	Specific C	230	5.438079	3.80666249
BGL00003	SSBG0019	Specific C	170	5.135798	3.951243719
BGL00004	SSBG0028	Specific C	150	5.010635	4.787491743
BGL00004	SSBG0029	Specific C	620	6.429719	4.941642423
BGL00005	SSBG0038	Specific C	360	5.886104	5.010635294
BGL00006	SSBG0047	Specific C	290	5.669881	5.010635294
BGL00006	SSBG0048	Specific C	280	5.63479	5.010635294
BGL00001	SSBG0002	Specific C	30.	3.401197	5.010635294
BGL00002	SSBG0011	Specific C	400	5.991465	5.075173815
BGL00003	SSBG0020	Specific C	180	5.192957	5.135798437
BGL00004	SSBG0030	Specific C	52.	3.951244	5.135798437
BGL00005	SSBG0039	Specific C	45.	3.806662	5.192956851
BGL00006	SSBG0049	Specific C	270	5.598422	5.192956851
BGL00001	SSBG0005	Specific C	340	5.828946	5.347107531
BGL00002	SSBG0014	Specific C	270	5.598422	5.438079309
BGL00003	SSBG0023	Specific C	230	5.438079	5.438079309
BGL00004	SSBG0033	Specific C	180	5.192957	5.521460918
BGL00005	SSBG0042	Specific C	120	4.787492	5.598421959
BGL00006	SSBG0052	Specific C	140	4.941642	5.598421959
BGL00001	SSBG0009	Specific C	150	5.010635	5.634789603
BGL00002	SSBG0018	Specific C	250	5.521461	5.669880923
BGL00003	SSBG0027	Specific C	210	5.347108	5.828945618
BGL00004	SSBG0037	Specific C	150	5.010635	5.886104031
BGL00005	SSBG0046	Specific C	170	5.135798	5.991464547
BGL00006	SSBG0056	Specific C	150	5.010635	6.429719478

Bin	*Frequency*
3.5	1
4	2
4.5	0
5	2
5.5	12
6	8
6.5	1
More	0



Mean [Ln(conc)]	5.194074558
Std Dev [Ln(conc)]	0.666645954
Z	1.645
95 th Quantile (mg/Kg)	**540**
Bias %	0.86 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**213**
95% UL (mg/kg)=	**866**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**338**
80% UL (mg/kg)=	**741**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	160.0	5.075	25.757	3.401197	0.4407	1.33467	0.907752604
2	230.0	5.438	29.573	3.806662	0.3043	0.664835	
3	170.0	5.136	26.376	3.951244	0.2533	0.4901	d
4	150.0	5.011	25.106	4.787492	0.2151	0.224017	11.1104207
5	620.0	6.430	41.341	4.941642	0.1836	0.133705	
6	360.0	5.886	34.646	5.010635	0.1563	0.097555	
7	290.0	5.670	32.148	5.010635	0.1316	0.077353	
8	280.0	5.635	31.751	5.010635	0.1089	0.06401	
9	30.0	3.401	11.568	5.010635	0.0876	0.044748	
10	400.0	5.991	35.898	5.075174	0.0672	0.024387	
11	180.0	5.193	26.967	5.135798	0.0476	0.014389	
12	52.0	3.951	15.612	5.135798	0.0284	0.006001	
13	45.0	3.807	14.491	5.192957	0.0094	0	
14	270.0	5.598	31.342	5.192957			
15	340.0	5.829	33.977	5.347108			
16	270.0	5.598	31.342	5.438079			
17	230.0	5.438	29.573	5.438079			
18	180.0	5.193	26.967	5.521461			
19	120.0	4.787	22.920	5.598422			
20	140.0	4.942	24.420	5.598422			
21	150.0	5.011	25.106	5.63479			
22	250.0	5.521	30.487	5.669881			
23	210.0	5.347	28.592	5.828946			
24	150.0	5.011	25.106	5.886104			
25	170.0	5.136	26.376	5.991465			
28	150.0	5.011	25.106	6.429719			
		[SUM (x_i)]^2	SUM (x_i^2)				
		18237.406	712.549				

LEHR Facility, Davis, California

SITE ID	SAMP ID	LAB CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Sulfate	39.	3.663562	0.955511445
BGL00002	SSBG0010	Sulfate	42.	3.73767	1.252762968
BGL00003	SSBG0019	Sulfate	13.	2.564949	2.174751721
BGL00004	SSBG0028	Sulfate	12.	2.484907	2.397895273
BGL00004	SSBG0029	Sulfate	20.	2.995732	2.48490665
BGL00005	SSBG0038	Sulfate	130	4.867534	2.48490665
BGL00006	SSBG0047	Sulfate	23.	3.135494	2.48490665
BGL00006	SSBG0048	Sulfate	27.	3.295837	2.564949357
BGL00001	SSBG0002	Sulfate	3.5	1.252763	2.708050201
BGL00002	SSBG0011	Sulfate	53.	3.970292	2.708050201
BGL00003	SSBG0020	Sulfate	17.	2.833213	2.833213344
BGL00004	SSBG0030	Sulfate	8.8	2.174752	2.833213344
BGL00005	SSBG0039	Sulfate	2.6	0.955511	2.833213344
BGL00006	SSBG0049	Sulfate	17.	2.833213	2.890371758
BGL00001	SSBG0005	Sulfate	29.	3.367296	2.944438979
BGL00002	SSBG0014	Sulfate	27.	3.295837	2.944438979
BGL00003	SSBG0023	Sulfate	29.	3.367296	2.995732274
BGL00004	SSBG0033	Sulfate	19.	2.944439	3.135494216
BGL00005	SSBG0042	Sulfate	19.	2.944439	3.295836866
BGL00006	SSBG0052	Sulfate	11.	2.397895	3.295836866
BGL00001	SSBG0009	Sulfate	18.	2.890372	3.36729583
BGL00002	SSBG0018	Sulfate	15.	2.70805	3.36729583
BGL00003	SSBG0027	Sulfate	15.	2.70805	3.663561646
BGL00004	SSBG0037	Sulfate	17.	2.833213	3.737669618
BGL00005	SSBG0046	Sulfate	12.	2.484907	3.970291914
BGL00006	SSBG0056	Sulfate	12.	2.484907	4.86753445

Mean [Ln(conc)]	2.892005014
Std Dev [Ln(conc)]	0.777362141
Z	1.645
95 th Quantile (mg/Kg)	**65**
Bias %	1.17 (OK, <5%)

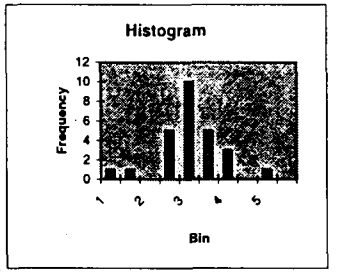
95 % Confidence Limits on 95 th Quantile

a = 5%	
p = 95%	
K (estimating factor) =	2.3556
95% LL (mg/kg) =	**17**
95% UL (mg/kg)=	**113**

80 % Confidence Limits on 95 th Quantile

a = 20%	
p = 95%	
K (estimating factor) =	2.1216
80% LL (mg/kg) =	**36**
80% UL (mg/kg)=	**94**

Bin	*Frequency*
1	1
1.5	1
2	0
2.5	5
3	10
3.5	5
4	3
4.5	0
5	1
More	0



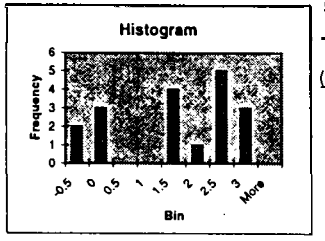
Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	39.0	3.664	13.422	0.955511	0.4407	1.724029	0.9413498
2	42.0	3.738	13.970	1.252763	0.3043	0.826944	
3	13.0	2.565	6.579	2.174752	0.2533	0.395887	d
4	12.0	2.485	6.175	2.397895	0.2151	0.272245	15.107297
5	20.0	2.996	8.974	2.484907	0.1836	0.162007	
6	130.0	4.868	23.693	2.484907	0.1563	0.137917	
7	23.0	3.135	9.831	2.484907	0.1316	0.106718	
8	27.0	3.296	10.863	2.564949	0.1089	0.079594	
9	3.5	1.253	1.569	2.70805	0.0876	0.037444	
10	53.0	3.970	15.763	2.70805	0.0672	0.019332	
11	17.0	2.833	8.027	2.833213	0.0476	0.005294	
12	8.8	2.175	4.730	2.833213	0.0284	0.003159	
13	2.6	0.956	0.913	2.833213	0.0094	0.000537	
14	17.0	2.833	8.027	2.890372			
15	29.0	3.367	11.339	2.944439			
16	27.0	3.296	10.863	2.944439			
17	29.0	3.367	11.339	2.995732			
18	19.0	2.944	8.670	3.135494			
19	19.0	2.944	8.670	3.295837			
20	11.0	2.398	5.750	3.295837			
21	18.0	2.890	8.354	3.367296			
22	15.0	2.708	7.334	3.367296			
23	15.0	2.708	7.334	3.663562			
24	17.0	2.833	8.027	3.73767			
25	12.0	2.485	6.175	3.970292			
26	12.0	2.485	6.175	4.867534			
		[SUM (x_i)]^2	SUM (x_i^2)				
		5653.856	232.563				

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHE	CONC	LN Conc	LN C Ranked
BGL00001	SSBG0001	Sulfide	0.55	-0.597837	-0.597837
BGL00002	SSBG0010	Sulfide	18.	2.890372	-0.597837
BGL00003	SSBG0019	Sulfide	7.9	2.066863	-0.49429632
BGL00006	SSBG0047	Sulfide	2.8	1.029619	-0.4780358
BGL00006	SSBG0046	Sulfide	3.0	1.098612	-0.4780358
BGL00001	SSBG0002	Sulfide	14.	2.639057	1.029619417
BGL00002	SSBG0011	Sulfide	10.	2.302585	1.098612289
BGL00005	SSBG0039	Sulfide	0.55	-0.597837	1.098612289
BGL00006	SSBG0049	Sulfide	0.61	-0.494296	1.252762968
BGL00001	SSBG0005	Sulfide	10.	2.302585	1.887069649
BGL00002	SSBG0014	Sulfide	15.	2.70805	2.066862759
BGL00003	SSBG0023	Sulfide	3.5	1.252763	2.116255515
BGL00006	SSBG0052	Sulfide	0.62	-0.478036	2.302585093
BGL00001	SSBG0009	Sulfide	11.	2.397895	2.302585093
BGL00002	SSBG0018	Sulfide	8.3	2.116256	2.397895273
BGL00003	SSBG0027	Sulfide	3.0	1.098612	2.63905733
BGL00005	SSBG0046	Sulfide	6.6	1.88707	2.708050201
BGL00006	SSBG0056	Sulfide	0.62	-0.478036	2.890371758

Bin	Frequency
-0.5	2
0	3
0.5	0
1	0
1.5	4
2	1
2.5	5
3	3
More	0



Mean [Ln(conc)]	1.285794317
Std Dev [Ln(conc)]	1.283799586
Z	1.645
95 th Quantile (mg/Kg)	**30**
Bias %	4.68 (OK, <5%)
80 % Confidence Limits on 95 th Quantile	
a = 20%	
p = 95%	
K (estimating factor) =	2.249
80% LL (mg/kg) =	**-5**
80% UL (mg/kg)=	**65**

Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

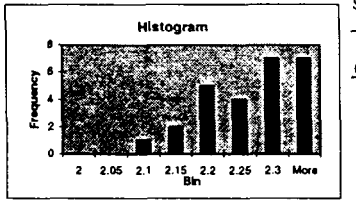
i (# Samples	CONC	x_i LN (Conc)	$(x_i)^2$ $[LN(Conc)]^2$	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	0.6	-0.598	0.357	-0.597837	0.4886	1.704339	**0.856880807**
2	18.0	2.890	8.354	-0.597837	0.3253	1.075405	
3	7.9	2.067	4.272	-0.494296	0.2553	0.799945	**d**
4	2.8	1.030	1.060	-0.478036	0.2027	0.582951	**28.01840339**
5	3.0	1.099	1.207	-0.478036	0.1587	0.441285	
6	14.0	2.639	6.965	1.029619	0.1197	0.152374	
7	10.0	2.303	5.302	1.098612	0.0837	0.085177	
8	0.6	-0.598	0.357	1.098612	0.0496	0.048025	
9	0.6	-0.494	0.244	1.252763	0.0163	0.010339	
10	10.0	2.303	5.302	1.88707			
11	15.0	2.708	7.334	2.066863			
12	3.5	1.253	1.569	2.116256			
13	0.6	-0.478	0.229	2.302585			
14	11.0	2.398	5.750	2.302585			
15	8.3	2.116	4.479	2.397895			
16	3.0	1.099	1.207	2.639057			
17	6.6	1.887	3.561	2.70805			
18	0.6	-0.478	0.229	2.890372			
		$[SUM (x_i)]^2$	$SUM (x_i^2)$				
		535.659	57.777				

pH

LEHR Facility, Davis, California

SITE_ID	SAMP_ID	LAB_CHEM	CONC	Ln CONC	Ln C Ranked
BGL00001	SSBG0001	pH	9	2.197225	2.07944154
BGL00002	SSBG0010	pH	9	2.174752	2.10413415
BGL00003	SSBG0019	pH	8	2.079442	2.11625551
BGL00004	SSBG0028	pH	8	2.116256	2.17475172
BGL00004	SSBG0029	pH	8	2.104134	2.17475172
BGL00005	SSBG0038	pH	10	2.272126	2.18605128
BGL00006	SSBG0047	pH	9	2.174752	2.19722458
BGL00006	SSBG0048	pH	10	2.282382	2.19722458
BGL00001	SSBG0002	pH	9	2.230014	2.21920348
BGL00002	SSBG0011	pH	9	2.230014	2.2300144
BGL00003	SSBG0020	pH	9	2.186051	2.2300144
BGL00004	SSBG0030	pH	9	2.197225	2.24070969
BGL00005	SSBG0039	pH	9	2.219203	2.27212589
BGL00006	SSBG0049	pH	10	2.282382	2.28238239
BGL00001	SSBG0005	pH	10	2.302585	2.28238239
BGL00002	SSBG0014	pH	10	2.302585	2.28238239
BGL00003	SSBG0023	pH	10	2.292535	2.28238239
BGL00004	SSBG0033	pH	10	2.282382	2.29253476
BGL00005	SSBG0042	pH	10	2.302585	2.29253476
BGL00006	SSBG0052	pH	10	2.302585	2.30258509
BGL00001	SSBG0009	pH	9	2.24071	2.30258509
BGL00002	SSBG0018	pH	10	2.282382	2.30258509
BGL00003	SSBG0027	pH	10	2.292535	2.30258509
BGL00004	SSBG0037	pH	10	2.302585	2.30258509
BGL00005	SSBG0046	pH	10	2.302585	2.30258509
BGL00006	SSBG0056	pH	10	2.302585	2.30258509

2	*Bin*	*Frequency*
2.05	2	0
2.1	2.05	0
2.15	2.1	1
2.2	2.15	2
2.25	2.2	5
2.3	2.25	4
	2.3	7
	More	7



Shapiro Wilk Test to Determine Whether Log Transformed Data Fits Normal Distribution

i (# Samples)	CONC	x_i LN (Conc)	$(x_i)^2$ [LN(Conc)]^2	x_i Ranked	a stats	$a^*(x_{n-i+1} - x_i)$ (n=26)	W
1	9.0	2.197	4.828	2.0794415	0.4407	0.0983394	**0.841907734**
2	8.8	2.175	4.730	2.1041342	0.3043	0.0603886	
3	8.0	2.079	4.324	2.1162555	0.2533	0.0471973	**d**
4	8.3	2.116	4.479	2.1747517	0.2151	0.027497	**0.116415283**
5	8.2	2.104	4.427	2.1747517	0.1836	0.0234702	
6	9.7	2.272	5.163	2.1860513	0.1563	0.0182142	
7	8.8	2.175	4.730	2.1972246	0.1316	0.0138654	
8	9.8	2.282	5.209	2.1972246	0.1089	0.0103793	
9	9.3	2.230	4.973	2.2192035	0.0876	0.0064238	
10	9.3	2.230	4.973	2.2300144	0.0672	0.0035191	
11	8.9	2.186	4.779	2.2300144	0.0476	0.0024927	
12	9.0	2.197	4.828	2.2407097	0.0284	0.0011835	
13	9.2	2.219	4.925	2.2721259	0.0094	9.641E-05	
14	9.8	2.282	5.209	2.2823824			
15	10.0	2.303	5.302	2.2823824			
16	**10.0**	**2.303**	**5.302**	**2.2823824**			
17	9.9	2.293	5.256	2.2823824			
18	**9.8**	**2.282**	**5.209**	**2.2925348**			
19	10.0	2.303	5.302	2.2925348			
20	**10.0**	**2.303**	**5.302**	**2.3025851**			
21	9.4	2.241	5.021	2.3025851			
22	**9.8**	**2.282**	**5.209**	**2.3025851**			
23	9.9	2.293	5.256	2.3025851			
24	**10.0**	**2.303**	**5.302**	**2.3025851**			
25	10.0	2.303	5.302	2.3025851			
26	10.0	2.303	5.302	2.3025851			
		[SUM (x_i)]^2	**SUM (x_i^2)**				
		3393.598	**130.639**				

Mean [Ln(conc)]	2.240561448
Std Dev [Ln(conc)]	0.068239368
Z	1.645
95 th Quantile (mg/Kg)	**10.5**
Bias %	0.01 (OK, <5%)

95 % Confidence Limits on 95 th Quantile

a = 5%
p = 95%

K (estimating factor) =	2.3556
95% LL (mg/kg) =	**10.0**
95% UL (mg/kg)=	**11.0**

80 % Confidence Limits on 95 th Quantile

a = 20%
p = 95%

K (estimating factor) =	2.1216
80% LL (mg/kg) =	**10.2**
80% UL (mg/kg)=	**10.9**

APPENDIX C

1994 AND 1996 DOG PEN DATA

APPENDIX C TABLES

Table C-1. Dog Pen Data, December 1994

Table C-2. June 1996 Analytic Results for Dog Pens Area

Table C-3. July 1996 Analytic Results for Dog Pens Area

Table C-4. 1996 Analytic Results for Dog Pens Area – Pesticides and PCBs

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00001				SBL00002				SBL00003				SBL00004			
			5.5				5.75				5.75				6			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.59	I	0.11	0.13	0.49	I	0.16	0.2	0.63	I	0.15	0.19	0.61	I	0.11	0.13
Bismuth-212	RAD	pCi/g	0.21	I	0.18	0.5	0.33	I	0.26	0.37	0.35	I	0.3	0.4	0.54	I	0.18	0.56
Bismuth-214	RAD	pCi/g	0.368	I	0.072	0.078	0.301	I	0.09	0.095	0.469	I	0.097	0.092	0.316	I	0.068	0.076
Carbon-14	RAD	pCi/g	0.3	I	7.3	9.4	-0.3	I	5.2	6.6	9.4	I	7.5	9.4	-1	I	2.9	3.9
Cesium-137	RAD	pCi/g	-0.005	I	0.01	0.027	-0.018	I	0.01	0.052	-0.023	I	0.02	0.047	0.004	I	0.015	0.026
Cobalt-60	RAD	pCi/g	-0.0062	I	0.0	0.025	0.05	I	0.018	0.05	0.006	I	0.022	0.04	-0.0141	I	0.0	0.029
Gross Alpha	RAD	pCi/g	8	IC	4.7	5.8	7.3	IC	4.7	6.1	7	IC	4.8	6.7	12	IC	5.4	5.8
Gross Beta	RAD	pCi/g	15.1	IC	3.9	5.2	14.9	IC	3.9	5.3	16.6	IC	4	5.4	16.4	IC	4	5.3
Lead-210	RAD	pCi/g	-0.31	IC	2.17	5.2	1.08	IC	1.17	5.3	0.91	IC	0.8	5.4	1.11	IC	2.14	5.3
Lead-212	RAD	pCi/g	0.616	I	0.083	0.053	0.488	I	0.085	0.067	0.65	I	0.1	0.072	0.656	I	0.086	0.052
Lead-214	RAD	pCi/g	0.433	I	0.065	0.072	0.403	I	0.079	0.078	0.52	I	0.09	0.098	0.485	I	0.066	0.069
Potassium-40	RAD	pCi/g	11.6	I	1.4	0.37	10.1	I	1.5	0.58	12.2	I	1.6	0.44	11.2	I	1.3	0.36
Radium-226	RAD	pCi/g	0.93	I	0.47	0.5	0.99	I	0.39	0.37	0.9	I	0.42	0.4	0.55	I	0.4	0.56
Strontium-90	RAD	pCi/g	-0.13	I	0.31	0.55	-0.08	I	0.23	0.41	-0.15	I	0.54	0.95	-0.12	I	0.33	0.58
Thallium-208	RAD	pCi/g	0.18	I	0.036	0.033	0.168	I	0.051	0.052	0.226	I	0.053	0.047	0.197	I	0.038	0.034
Thorium-234	RAD	pCi/g	1.04	IC	0.35	5.8	0.47	IC	0.31	6.1	0.88	IC	0.38	6.7	0.87	IC	0.34	5.8
Uranium-235	RAD	pCi/g	0.029	I	0.1	0.16	0.01	I	0.13	0.2	0.05	I	0.14	0.2	0.046	I	0.1	0.16
Tritium	RAD	pCi/L	170	I	200	250	70	I	190	250	-120	I	170	260	-80	I	170	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00005				SBL00006				SBL00006				SBL00006			
			5.75				5.5				10.5				20.5			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.302	I	0.094	0.13	0.54	I	0.21	0.31	0.43	I	0.16	0.22	0.41	I	0.17	0.22
Bismuth-212	RAD	pCi/g	0.23	I	0.17	0.43	0.45	I	0.37	0.39	0.38	I	0.31	0.54	0.3	I	0.29	0.24
Bismuth-214	RAD	pCi/g	0.299	I	0.064	0.058	0.39	I	0.13	0.15	0.52	I	0.12	0.11	0.51	I	0.11	0.1
Carbon-14	RAD	pCi/g	-0.5	I	3.7	4.7	-0.4	I	7.5	9.6	-0.5	I	9.2	12	1.6	I	6.3	7.8
Cesium-137	RAD	pCi/g	-0.0062	I	0.0	0.029	-0.022	I	0.02	0.074	0.003	I	0.03	0.052	-0.009	I	0.02	0.054
Cobalt-60	RAD	pCi/g	0.026	I	0.011	0.026	-0.015	I	0.02	0.079	0.002	I	0.026	0.055	-0.001	I	0.01	0.049
Gross Alpha	RAD	pCi/g	5.8	IC	4.4	6.1	6.7	IC	4.5	6.1	6.1	IC	4.5	6.3	5.5	IC	4.1	5.6
Gross Beta	RAD	pCi/g	12.6	IC	3.9	5.5	13.7	IC	3.8	5.3	14.6	IC	3.8	5.2	17.5	IC	4.1	5.3
Lead-210	RAD	pCi/g	0.17	IC	0.49	5.5	0.65	IC	1.55	5.3	0.76	IC	0.87	5.2	0.72	IC	0.83	5.3
Lead-212	RAD	pCi/g	0.396	I	0.064	0.049	0.55	I	0.11	0.09	0.554	I	0.1	0.084	0.64	I	0.11	0.091
Lead-214	RAD	pCi/g	0.328	I	0.055	0.057	0.418	I	0.1	0.12	0.582	I	0.1	0.1	0.58	I	0.11	0.11
Potassium-40	RAD	pCi/g	10.1	I	1.2	0.32	10.7	I	1.8	0.81	11.2	I	1.6	0.58	10.1	I	1.6	0.7
Radium-226	RAD	pCi/g	5.11	I	0.94	0.43	0.82	I	0.38	0.39	0.94	I	0.46	0.54	1.82	I	0.79	0.24
Strontium-90	RAD	pCi/g	-0.5	I	0.47	0.84	-0.12	I	0.24	0.41	-0.23	I	0.42	0.73	-0.21	I	0.44	0.78
Thallium-208	RAD	pCi/g	0.117	I	0.032	0.03	0.151	I	0.064	0.073	0.156	I	0.055	0.061	0.119	I	0.051	0.059
Thorium-234	RAD	pCi/g	0.6	IC	0.23	6.1	0.7	IC	0.43	6.1	0.94	IC	0.41	6.3	0.59	IC	0.41	5.6
Uranium-235	RAD	pCi/g	-0.039	I	0.09	0.13	-0.03	I	0.18	0.28	0.07	I	0.16	0.24	-0.06	I	0.15	0.24
Tritium	RAD	pCi/L	-130	I	160	250	-90	I	170	260	-130	I	170	250	60	I	190	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007 5.75				SBL00008 5.75				SBL00008 10.75				SBL00008 20.75			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.542	I	0.097	0.12	0.39	I	0.12	0.18	0.68	I	0.17	0.21	0.83	I	0.19	0.2
Bismuth-212	RAD	pCi/g	0.38	I	0.17	0.42	0.05	I	0.21	0.45	0.43	I	0.31	0.52	0.05	I	0.31	0.31
Bismuth-214	RAD	pCi/g	0.365	I	0.066	0.065	0.344	I	0.086	0.09	0.54	I	0.12	0.12	0.46	I	0.11	0.12
Carbon-14	RAD	pCi/g	1.2	I	6.8	8.5	0.5	I	4.2	5.3	16.4	I	7.7	8.1	-1.6	I	4.3	5.6
Cesium-137	RAD	pCi/g	0.005	I	0.013	0.022	0.008	I	0.03	0.042	-0.011	I	0.03	0.056	-0.024	I	0.03	0.059
Cobalt-60	RAD	pCi/g	0.007	I	0.013	0.02	-0.015	I	0.01	0.049	0.016	I	0.024	0.057	0.002	I	0.028	0.057
Gross Alpha	RAD	pCi/g	5.3	IC	4.2	6.1	-1.9	IC	2.3	6.3	6.7	IC	4.5	6	7.9	IC	4.6	5.7
Gross Beta	RAD	pCi/g	14.6	IC	3.7	5	7.5	IC	3.4	5.1	9.4	IC	3.7	5.5	11.4	IC	3.7	5.2
Lead-210	RAD	pCi/g	0.45	IC	2.01	5	0.53	IC	0.63	5.1	0.5	IC	0.88	5.5	1.2	IC	0.92	5.2
Lead-212	RAD	pCi/g	0.594	I	0.078	0.048	0.418	I	0.079	0.069	0.73	I	0.11	0.084	0.66	I	0.11	0.089
Lead-214	RAD	pCi/g	0.501	I	0.063	0.059	0.469	I	0.078	0.077	0.64	I	0.11	0.11	0.534	I	0.1	0.11
Potassium-40	RAD	pCi/g	12	I	1.4	0.32	9.2	I	1.3	0.43	11	I	1.6	0.49	16.4	I	2.2	0.59
Radium-226	RAD	pCi/g	0.73	I	0.37	0.42	0.59	I	0.36	0.45	1	I	0.48	0.52	1.08	I	0.44	0.31
Strontium-90	RAD	pCi/g	-0.18	I	0.22	0.39	-0.13	I	0.18	0.32	0.02	I	0.17	0.29	-0.38	I	0.51	0.91
Thallium-208	RAD	pCi/g	0.189	I	0.035	0.03	0.131	I	0.04	0.04	0.184	I	0.055	0.055	0.19	I	0.059	0.063
Thorium-234	RAD	pCi/g	0.93	IC	0.31	6.1	0.45	IC	0.3	6.3	1.24	IC	0.42	6	0.52	IC	0.43	5.7
Uranium-235	RAD	pCi/g	0.019	I	0.092	0.14	0.19	I	0.12	0.19	-0.02	I	0.15	0.24	-0.1	I	0.14	0.26
Tritium	RAD	pCi/L	-90	I	170	260	260	I	190	260	-10	I	170	220	250	I	180	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00009				SBL00010				SBL000011				SBL00012			
					5.75				5.75				6				0	
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.57	I	0.17	0.23	0.47	I	0.17	0.21	0.67	I	0.17	0.21	0.45	I	0.15	0.21
Bismuth-212	RAD	pCi/g	0.35	I	0.28	0.25	0.06	I	0.32	0.32	0.25	I	0.34	0.38	0.42	I	0.28	0.24
Bismuth-214	RAD	pCi/g	0.51	I	0.11	0.099	0.36	I	0.11	0.11	0.62	I	0.12	0.11	0.387	I	0.1	0.11
Carbon-14	RAD	pCi/g	6	I	12	16	2.6	I	3.5	4.2	5.6	I	7.4	8.8	1.2	I	4.1	5.1
Cesium-137	RAD	pCi/g	-0.003	I	0.02	0.055	0.009	I	0.044	0.062	-0.026	I	0.02	0.061	0.006	I	0.035	0.051
Cobalt-60	RAD	pCi/g	0.008	I	0.026	0.056	-0.005	I	0.02	0.054	-0.011	I	0.02	0.064	0.007	I	0.022	0.062
Gross Alpha	RAD	pCi/g	9.1	IC	5	5.9	2	IC	3.5	6.1	10.5	IC	5.1	5.8	6.9	IC	4.6	6
Gross Beta	RAD	pCi/g	13	IC	4	5.5	12.8	IC	3.8	5.2	12.1	IC	3.4	4.6	14.7	IC	3.9	5.2
Lead-210	RAD	pCi/g	0.4	IC	0.77	5.5	1.54	IC	1.38	5.2	0.81	IC	0.91	4.6	0.69	IC	0.78	5.2
Lead-212	RAD	pCi/g	0.71	I	0.11	0.086	0.327	I	0.082	0.084	0.71	I	0.11	0.081	0.48	I	0.086	0.07
Lead-214	RAD	pCi/g	0.614	I	0.1	0.094	0.326	I	0.083	0.09	0.64	I	0.11	0.11	0.416	I	0.085	0.094
Potassium-40	RAD	pCi/g	11.5	I	1.6	0.54	11.3	I	1.7	0.52	11.1	I	1.6	0.64	10.6	I	1.5	0.55
Radium-226	RAD	pCi/g	0.52	I	0.24	0.25	0.39	I	0.28	0.32	0.98	I	0.47	0.38	0.57	I	0.26	0.24
Strontium-90	RAD	pCi/g	-0.26	I	0.29	0.51	0.22	I	0.55	0.94	0.9	I	1	1.7	-0.22	I	0.33	0.59
Thallium-208	RAD	pCi/g	0.163	I	0.052	0.055	0.091	I	0.051	0.062	0.213	I	0.059	0.057	0.13	I	0.047	0.05
Thorium-234	RAD	pCi/g	0.76	IC	0.39	5.9	0.53	IC	0.36	6.1	1.21	IC	0.43	5.8	0.7	IC	0.37	6
Uranium-235	RAD	pCi/g	0.12	I	0.15	0.23	0.24	I	0.15	0.24	0.11	I	0.15	0.24	-0.126	I	0.08	0.22
Tritium	RAD	pCi/L	30	I	210	250	60	I	210	250	-70	I	190	250	-10	I	200	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00012				SBL00013				SBL00013				SBL00013			
			0.5				0				2.5				3			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.35	I	0.12	0.16	0.51	I	0.28	0.41	0.53	I	0.16	0.18	0.47	I	0.13	0.16
Bismuth-212	RAD	pCi/g	0.25	I	0.2	0.2	0.38	I	0.49	0.29	0.62	I	0.32	0.17	0.12	I	0.22	0.25
Bismuth-214	RAD	pCi/g	0.296	I	0.082	0.087	0.73	I	0.19	0.19	0.61	I	0.12	0.11	0.38	I	0.088	0.075
Carbon-14	RAD	pCi/g	11.3	I	4	4	2.9	I	5.2	6.3	-0.3	I	1.4	1.8	0.7	I	3.8	4.8
Cesium-137	RAD	pCi/g	-0.007	I	0.01	0.043	0.04	I	0.07	0.11	-0.003	I	0.02	0.051	-0.016	I	0.01	0.044
Cobalt-60	RAD	pCi/g	0.041	I	0.018	0.041	0.015	I	0.037	0.091	0.01	I	0.026	0.057	0.007	I	0.019	0.04
Gross Alpha	RAD	pCi/g	1	IC	3	5.8	7.4	IC	4.4	5.2	1.4	IC	3	5.7	-0.3	IC	2.7	5.8
Gross Beta	RAD	pCi/g	9.8	IC	3.6	5.2	13.2	IC	4	5.5	11.1	IC	3.9	5.6	9.6	IC	3.6	5.3
Lead-210	RAD	pCi/g	0.53	IC	0.67	5.2	1.63	IC	3.94	5.5	0.73	IC	0.83	5.6	1.26	IC	0.67	5.3
Lead-212	RAD	pCi/g	0.317	I	0.066	0.061	0.55	I	0.13	0.13	0.63	I	0.11	0.09	0.427	I	0.079	0.066
Lead-214	RAD	pCi/g	0.379	I	0.073	0.079	0.58	I	0.15	0.18	0.7	I	0.11	0.11	0.378	I	0.074	0.081
Potassium-40	RAD	pCi/g	10.1	I	1.4	0.44	9.2	I	2	1.2	10.8	I	1.6	0.58	10.3	I	1.4	0.46
Radium-226	RAD	pCi/g	0.25	I	0.17	0.2	0.39	I	0.23	0.29	0.21	I	0.15	0.17	0.18	I	0.17	0.25
Strontium-90	RAD	pCi/g	-0.24	I	0.36	0.64	-0.15	I	0.31	0.54	0.02	I	0.35	0.6	-0.03	I	0.38	0.66
Thallium-208	RAD	pCi/g	0.116	I	0.04	0.042	0.272	I	0.093	0.099	0.173	I	0.053	0.053	0.139	I	0.042	0.042
Thorium-234	RAD	pCi/g	0.78	IC	0.33	5.8	0.88	IC	0.59	5.2	0.63	IC	0.4	5.7	0.69	IC	0.31	5.8
Uranium-235	RAD	pCi/g	-0.02	I	0.11	0.18	0.05	I	0.24	0.38	0.02	I	0.16	0.25	0.19	I	0.12	0.19
Tritium	RAD	pCi/L	-90	I	190	250	250	I	200	250	-30	I	200	250	-10	I	200	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014				SBL00014				SBL000015				SBL00015			
			0				2.5				0				5			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.56	I	0.17	0.21	0.44	I	0.16	0.24	0.54	I	0.15	0.18	0.54	I	0.18	0.22
Bismuth-212	RAD	pCi/g	0.55	I	0.3	0.56	0.16	I	0.28	0.087	0.08	I	0.26	0.24	0.56	I	0.31	0.31
Bismuth-214	RAD	pCi/g	0.412	I	0.1	0.096	0.41	I	0.11	0.12	0.423	I	0.1	0.088	0.59	I	0.12	0.11
Carbon-14	RAD	pCi/g	3.3	I	5.8	7.1	3.1	I	6	7.4	4.2	I	9.7	12	1.7	I	6.6	8.2
Cesium-137	RAD	pCi/g	0.013	I	0.035	0.047	-0.003	I	0.03	0.051	0.014	I	0.036	0.05	-0.031	I	0.02	0.065
Cobalt-60	RAD	pCi/g	-0.011	I	0.02	0.068	-0.01	I	0.02	0.073	-0.005	I	0.01	0.047	-0.009	I	0.02	0.068
Gross Alpha	RAD	pCi/g	4.4	IC	4.1	6.2	5	IC	3.9	5.1	10	IC	5.1	5.6	11.8	IC	5.4	5.7
Gross Beta	RAD	pCi/g	12.2	IC	3.8	5.4	13.1	IC	4	5.5	12.5	IC	3.9	5.4	16.2	IC	4	5.2
Lead-210	RAD	pCi/g	0.46	IC	0.78	5.4	2.05	IC	2.33	5.5	0.56	IC	0.74	5.4	0.85	IC	0.93	5.2
Lead-212	RAD	pCi/g	0.72	I	0.11	0.075	0.336	I	0.081	0.082	0.61	I	0.1	0.078				
Lead-214	RAD	pCi/g	0.573	I	0.1	0.099	0.385	I	0.089	0.1	0.552	I	0.097	0.096				
Potassium-40	RAD	pCi/g	10.9	I	1.6	0.48	10.6	I	1.6	0.72	10.8	I	1.6	0.49				
Radium-226	RAD	pCi/g	0.12	I	0.29	0.56	0.51	I	0.25	0.087	0.45	I	0.25	0.24	0.97	I	0.33	0.31
Strontium-90	RAD	pCi/g	-0.8	I	1.1	2	-0.35	I	0.39	0.69	-0.24	I	0.36	0.64	-0.23	I	0.32	0.56
Thallium-208	RAD	pCi/g	0.191	I	0.053	0.049	0.144	I	0.055	0.059	0.141	I	0.05	0.055				
Thorium-234	RAD	pCi/g	0.76	IC	0.38	6.2	0.46	IC	0.35	5.1	0.81	IC	0.38	5.6	0.8	IC	0.45	5.7
Uranium-235	RAD	pCi/g	0.24	I	0.15	0.24	0.04	I	0.15	0.24	0.05	I	0.15	0.23				
Tritium	RAD	pCi/L	70	I	210	250	-170	I	180	250	-90	I	190	250	-40	I	210	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00015				SBL00016				SBL00016				SBL00016			
			6.5				0				0				5			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.77	I	0.2	0.23	0.43	I	0.14	0.18	0.6	I	0.16	0.2	0.68	I	0.17	0.2
Bismuth-212	RAD	pCi/g	0.51	I	0.36	0.25	0.39	I	0.26	0.14	0.33	I	0.28	0.27	0.35	I	0.33	0.072
Bismuth-214	RAD	pCi/g	0.5	I	0.13	0.13	0.487	I	0.1	0.088	0.47	I	0.11	0.099	0.54	I	0.12	0.099
Carbon-14	RAD	pCi/g	-1.1	I	7.6	9.8	3.5	I	6.9	8.4	9	I	7	9	2.2	I	6.5	8
Cesium-137	RAD	pCi/g	0.025	I	0.041	0.056	0.045	I	0.034	0.04	0.001	I	0.037	0.054	-0.02	I	0.02	0.06
Cobalt-60	RAD	pCi/g	-0.002	I	0.02	0.064	0.028	I	0.02	0.034	-0.004	I	0.02	0.051	-0.01	I	0.01	0.053
Gross Alpha	RAD	pCi/g	8.5	IC	4.7	5.2	8.7	IC	5.1	6.3	4.4	IC	3.7	5	10.7	IC	5.4	6.1
Gross Beta	RAD	pCi/g	13.9	IC	4	5.5	13.3	IC	4	5.5	14.1	IC	3.8	5.2	13.8	IC	4	5.4
Lead-210	RAD	pCi/g	1.14	IC	1.04	5.5	0.61	IC	0.71	5.5	0.96	IC	0.86	5.2	0.45	IC	0.84	5.4
Lead-212	RAD	pCi/g	0.7	I	0.12	0.091	0.592	I	0.1	0.074	0.587	I	0.1	0.081	0.75	I	0.12	0.089
Lead-214	RAD	pCi/g	0.68	I	0.12	0.12	0.542	I	0.093	0.096	0.566	I	0.097	0.095	0.71	I	0.11	0.11
Potassium-40	RAD	pCi/g	12	I	1.8	0.71	11.8	I	1.6	0.5	11.4	I	1.6	0.58	12.4	I	1.8	0.62
Radium-226	RAD	pCi/g	0.57	I	0.25	0.25	0.46	I	0.19	0.14	0.29	I	0.2	0.27	0.74	I	0.28	0.072
Strontium-90	RAD	pCi/g	-0.13	I	0.28	0.5	-0.17	I	0.27	0.48	-0.15	I	0.3	0.53	0.56	I	0.33	0.56
Thallium-208	RAD	pCi/g	0.212	I	0.061	0.057	0.185	I	0.051	0.05	0.175	I	0.053	0.052	0.203	I	0.057	0.055
Thorium-234	RAD	pCi/g	0.6	IC	0.46	5.2	0.58	IC	0.35	6.3	0.93	IC	0.4	5	0.65	IC	0.41	6.1
Uranium-235	RAD	pCi/g	0.02	I	0.16	0.27	-0.02	I	0.12	0.21	0.04	I	0.14	0.23	0.08	I	0.16	0.25
Tritium	RAD	pCi/L	160	I	220	240	80	I	210	250	-120	I	190	250	-70	I	190	250

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00017 2.5				SBL00017 5				SBL000018 2.5				SBL00018 5			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.53	I	0.15	0.18	0.56	I	0.22	0.31	0.36	I	0.16	0.22	0.67	I	0.19	0.23
Bismuth-212	RAD	pCi/g	0.36	I	0.29	0.22	0.25	I	0.39	0.21	0.39	I	0.31	0.23	0.38	I	0.34	0.19
Bismuth-214	RAD	pCi/g	0.433	I	0.1	0.098	0.54	I	0.14	0.14	0.47	I	0.11	0.11	0.64	I	0.13	0.13
Carbon-14	RAD	pCi/g	-1.3	I	6.3	8.6	-0.6	I	6	8	0.5	I	3.4	4.5	0.8	I	2.3	3
Cesium-137	RAD	pCi/g	0.002	I	0.032	0.047	-0.014	I	0.03	0.079	-0.013	I	0.02	0.054	-0.014	I	0.02	0.063
Cobalt-60	RAD	pCi/g	0.001	I	0.021	0.046	0.013	I	0.026	0.051	0.013	I	0.024	0.054	0.027	I	0.026	0.054
Gross Alpha	RAD	pCi/g	4	IC	3.8	5.6	6	IC	4.2	5.3	7.7	IC	4.9	6.4	10.8	IC	5.2	5.2
Gross Beta	RAD	pCi/g	11.8	IC	3.8	5.4	12.9	IC	4	5.5	12.9	IC	4	5.5	14.4	IC	4.1	5.5
Lead-210	RAD	pCi/g	0.86	IC	0.82	5.4	0.19	IC	2.94	5.5	1.02	IC	0.83	5.5	0.73	IC	0.95	5.5
Lead-212	RAD	pCi/g	0.526	I	0.09	0.072	0.58	I	0.12	0.1	0.58	I	0.11	0.095	0.74	I	0.12	0.088
Lead-214	RAD	pCi/g	0.524	I	0.089	0.087	0.52	I	0.11	0.14	0.62	I	0.11	0.1	0.72	I	0.11	0.11
Potassium-40	RAD	pCi/g	11.1	I	1.6	0.56	10.9	I	1.8	0.8	11.8	I	1.7	0.54	13	I	1.9	0.67
Radium-226	RAD	pCi/g	0.38	I	0.21	0.22	0.4	I	0.2	0.21	0.23	I	0.18	0.23	0.33	I	0.19	0.19
Strontium-90	RAD	pCi/g	0.05	I	0.33	0.57	-0.14	I	0.33	0.57	0.54	I	0.32	0.54	-0.01	I	0.35	0.61
Thallium-208	RAD	pCi/g	0.148	I	0.047	0.048	0.205	I	0.071	0.074	0.129	I	0.052	0.058	0.196	I	0.062	0.064
Thorium-234	RAD	pCi/g	0.6	IC	0.37	5.6	0.74	IC	0.45	5.3	0.41	IC	0.41	6.4	0.95	IC	0.47	5.2
Uranium-235	RAD	pCi/g	0.22	I	0.13	0.22	0.02	I	0.19	0.3	-0.01	I	0.15	0.24	0.26	I	0.16	0.26
Tritium	RAD	pCi/L	220	I	210	240	-110	I	160	240	240	I	180	240	110	I	190	240

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00019 0				SBL00019 2.5			
			Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228	RAD	pCi/g	0.62	I	0.16	0.18	0.47	I	0.15	0.19
Bismuth-212	RAD	pCi/g	0.57	I	0.33	0.25	0.25	I	0.28	0.26
Bismuth-214	RAD	pCi/g	0.44	I	0.11	0.1	0.52	I	0.11	0.1
Carbon-14	RAD	pCi/g	-4.6	I	8.3	12	8.9	I	6.7	8.9
Cesium-137	RAD	pCi/g	-0.0024	I	0.0	0.055	-0.005	I	0.03	0.058
Cobalt-60	RAD	pCi/g	-0.0008	I	0.0	0.058	0.003	I	0.02	0.045
Gross Alpha	RAD	pCi/g	5.6	IC	4.3	6.1	5.1	IC	4.1	5.8
Gross Beta	RAD	pCi/g	15.6	IC	4.2	5.6	11.1	IC	3.7	5.2
Lead-210	RAD	pCi/g	0.6	IC	0.85	5.6	1.12	IC	0.82	5.2
Lead-212	RAD	pCi/g	0.66	I	0.11	0.086	0.56	I	0.096	0.078
Lead-214	RAD	pCi/g	0.589	I	0.1	0.11	0.592	I	0.097	0.089
Potassium-40	RAD	pCi/g	12.5	I	1.8	0.55	12.2	I	1.7	0.48
Radium-226	RAD	pCi/g	0.21	I	0.18	0.25	0.27	I	0.2	0.26
Strontium-90	RAD	pCi/g	0.18	I	0.31	0.52	0.03	I	0.33	0.56
Thallium-208	RAD	pCi/g	0.162	I	0.056	0.06	0.157	I	0.05	0.052
Thorium-234	RAD	pCi/g	0.69	IC	0.4	6.1	0.53	IC	0.39	5.8
Uranium-235	RAD	pCi/g	0.05	I	0.14	0.23	0.05	I	0.14	0.23
Tritium	RAD	pCi/L	-30	I	170	240	240	I	180	240

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Alkalinity Total(as CaCO3)	CATAN	mg/Kg	-----	-----	-----	640	-----	-----	750	-----	-----	-----	-----	-----	940	-----	-----	-----	-----	-----	-----
Ammonia-Nitrogen	CATAN	mg/Kg	-----	-----	-----	2.5	-----	-----	3.1	-----	-----	-----	-----	-----	2.8	-----	-----	-----	-----	-----	-----
Chloride	CATAN	mg/Kg	-----	-----	-----	1.2	-----	-----	0.57	-----	-----	-----	-----	-----	2.6	-----	-----	-----	-----	-----	-----
Nitrogen, Nitrate (as N)	CATAN	mg/Kg	-----	-----	-----	0.14	-----	-----	4	-----	-----	11	-----	-----	6.6	-----	-----	11	33	9.4	12
Sulfate	CATAN	mg/Kg	-----	-----	-----	3.8	-----	-----	6.5	-----	-----	-----	-----	-----	8.5	-----	-----	-----	-----	-----	-----
Nitrogen, Nitrate (as N)	CATAN	mg/L	0.013	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Formaldehyde	GEN	mg/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sulfide	GEN	mg/Kg	-----	-----	-----	6	-----	-----	14	-----	-----	-----	-----	-----	16	-----	-----	-----	-----	-----	-----
TPH as Diesel	GEN	mg/Kg	-----	-----	-----	<11	-----	-----	<12	-----	-----	<11	-----	-----	<12	-----	-----	<11	<13	<12	<11
TPH as Kerosene	GEN	mg/Kg	-----	-----	-----	<11	-----	-----	<12	-----	-----	<11	-----	-----	<12	-----	-----	<11	<13	<12	<11
pH	GEN	pH	-----	-----	-----	9.2	-----	-----	9.7	-----	-----	-----	-----	-----	9.7	-----	-----	-----	-----	-----	-----
Specific Conductance (EC)	GEN	uS/cm	-----	-----	-----	67	-----	-----	98	-----	-----	-----	-----	-----	140	-----	-----	-----	-----	-----	-----
Antimony	METAL	mg/Kg	-----	-----	-----	<60	-----	-----	<60	-----	-----	<60	-----	-----	<60	-----	-----	<60	<60	<60	<60
Arsenic	METAL	mg/Kg	-----	-----	-----	8.1	-----	-----	8	-----	-----	7.1	-----	-----	8.2	-----	-----	6.4	8.4	8	5.5
Barium	METAL	mg/Kg	-----	-----	-----	159	-----	-----	215	-----	-----	124	-----	-----	219	-----	-----	98.8	170	199	106
Beryllium	METAL	mg/Kg	-----	-----	-----	0.47	-----	-----	0.55	-----	-----	0.36	-----	-----	0.5	-----	-----	0.29	0.44	0.5	0.39
Cadmium	METAL	mg/Kg	-----	-----	-----	<5	-----	-----	<5	-----	-----	<5	-----	-----	<5	-----	-----	<5	<5	<5	<5
Chromium	METAL	mg/Kg	-----	-----	-----	120	-----	-----	115	-----	-----	195	-----	-----	119	-----	-----	183	107	99.1	53.7
Chromium, Hexavalent (+6)	METAL	mg/Kg	-----	0.072	0.21	0.21	0.064	0.11	0.18	0.076	0.1	0.099	0.088	0.064	0.23	0.064	0.04	0.12	0.13	0.12	0.2
Cobalt	METAL	mg/Kg	-----	-----	-----	22.4	-----	-----	23.4	-----	-----	21.4	-----	-----	26.2	-----	-----	19.6	19.6	21.5	27.9
Copper	METAL	mg/Kg	-----	-----	-----	41.7	-----	-----	46.1	-----	-----	29.2	-----	-----	46.8	-----	-----	22.3	46.6	42.7	23.1
Iron	METAL	mg/Kg	-----	-----	-----	44,500	-----	-----	44,900	-----	-----	38,000	-----	-----	46,600	-----	-----	32,500	38,300	41,000	22,600
Lead	METAL	mg/Kg	-----	-----	-----	8.1	-----	-----	8.8	-----	-----	6.6	-----	-----	8.8	-----	-----	5.6	8.4	8.4	6.3
Manganese	METAL	mg/Kg	-----	-----	-----	599	-----	-----	692	-----	-----	543	-----	-----	839	-----	-----	482	653	648	379
Mercury	METAL	mg/Kg	-----	-----	-----	<0.2	-----	-----	<0.2	-----	-----	0.14	-----	-----	<0.2	-----	-----	0.14	0.26	0.18	<0.2
Molybdenum	METAL	mg/Kg	-----	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	<10	<10	<10
Nickel	METAL	mg/Kg	-----	-----	-----	229	-----	-----	211	-----	-----	280	-----	-----	228	-----	-----	262	173	195	71.4
Selenium	METAL	mg/Kg	-----	-----	-----	0.62	-----	-----	0.6	-----	-----	0.46	-----	-----	0.72	-----	-----	<5	<5	<5	<5

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Silver	METAL	mg/Kg	-----	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	<10	<10	<10
Thallium	METAL	mg/Kg	-----	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	-----	-----	<10	<10	<10	<10
Vanadium	METAL	mg/Kg	-----	-----	-----	68.1	-----	-----	72.7	-----	-----	57.9	-----	-----	77.5	-----	-----	48.8	61.6	64.9	51.1
Zinc	METAL	mg/Kg	-----	-----	-----	100	-----	-----	79.9	-----	-----	56.2	-----	-----	80.5	-----	-----	48	74.7	76.7	49.5
Chromium, Hexavalent (+6)	METAL	mg/L	0.0076	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Antimony	METAL	ug/L	1.4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Arsenic	METAL	ug/L	<2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Barium	METAL	ug/L	<20	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Beryllium	METAL	ug/L	<1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cadmium	METAL	ug/L	<1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chromium	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cobalt	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Copper	METAL	ug/L	1.7	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Iron	METAL	ug/L	77.7	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Lead	METAL	ug/L	<2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Manganese	METAL	ug/L	<15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mercury	METAL	ug/L	<0.2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Molybdenum	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nickel	METAL	ug/L	<20	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Selenium	METAL	ug/L	<3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Silver	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Thallium	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vanadium	METAL	ug/L	<10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Zinc	METAL	ug/L	3.7	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4,4'-DDD	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
4,4'-DDE	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
4,4'-DDT	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Aldrin	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Alpha-BHC	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Alpha-Chlordane	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Aroclor-1016	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Aroclor-1221	PES	ug/Kg	-----	-----	-----	<75	-----	-----	<79	-----	-----	<72	-----	-----	<80	-----	-----	<73	<87	<79	<74
Aroclor-1232	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Aroclor-1242	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Aroclor-1248	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Aroclor-1254	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Aroclor-1260	PES	ug/Kg	-----	-----	-----	<38	-----	-----	<39	-----	-----	<36	-----	-----	<40	-----	-----	<37	<43	<39	<37
Beta-BHC	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Delta-BHC	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Dieldrin	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Endosulfan I	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Endosulfan II	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Endosulfan Sulfate	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Endrin	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Endrin Aldehyde	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Endrin Ketone	PES	ug/Kg	-----	-----	-----	<3.8	-----	-----	<3.9	-----	-----	<3.6	-----	-----	<4	-----	-----	<3.7	<4.3	<3.9	<3.7
Gamma-BHC	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Gamma-Chlordane	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Heptachlor	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Heptachlor Epoxide	PES	ug/Kg	-----	-----	-----	<1.9	-----	-----	<2	-----	-----	<1.8	-----	-----	<2	-----	-----	<1.8	<2.2	<2	<1.9
Methoxychlor	PES	ug/Kg	-----	-----	-----	<19	-----	-----	<20	-----	-----	<18	-----	-----	<20	-----	-----	<18	<22	<20	<19
Toxaphene	PES	ug/Kg	-----	-----	-----	<190	-----	-----	<200	-----	-----	<180	-----	-----	<200	-----	-----	<180	<220	<200	<190
1,2,4-Trichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,3-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,4-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
2,2'-oxybis(1-Chloropropane)	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4,5-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4,6-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4-Dichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4-Dimethylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4-Dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,4-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2,6-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Chloronaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Chlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methyl-4,6-dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methylnaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3,3'-Dichlorobenzidine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Bromophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chloro-3-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chloroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chlorophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acenaphthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acenaphthylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(a)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(a)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Benzo(b)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(g,h,i)perylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(k)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzyl Butyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Chloroethoxy)methane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Chloroethyl)ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Ethylhexyl)phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbazole	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chrysene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Di-n-Butylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Di-n-Octylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibenzo(a,h)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibenzofuran	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Diethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dimethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fluorene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorobutadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorocyclopentadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachloroethane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Indeno(1,2,3-cd)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Isophorone	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N-Nitrosodi-n-propylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N-Nitrosodiphenylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Naphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nitrobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pentachlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Phenanthrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Phenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,1-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,2,2-Tetrachloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,2-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1-Dichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloroethene (total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloropropane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Butanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Hexanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Methyl-2-Pentanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acetone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromodichloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromoform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromomethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbon Disulfide	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbon Tetrachloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chlorobenzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloroform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
cis-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibromochloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ethyl Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Methylene Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	EQUIPBLNK	SBL00001			SBL00002			SBL00003			SBL00004			SBL00005			SBL00006		
				0.5	3	5.5	0.75	3.25	5.75	0.75	3.25	5.75	1	3.5	6	0.75	3.25	5.75	5.5	10.5	20.5
Styrene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tetrachloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Toluene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
trans-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Trichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vinyl Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Xylenes (Total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Alkalinity Total(as CaCO3)	CATAN	mg/Kg	-----	1,200	2,000	710	580	-----	970	-----	-----	-----	-----	-----
Ammonia-Nitrogen	CATAN	mg/Kg	-----	4.5	2.4	2	2.7	-----	2.9	-----	-----	-----	-----	-----
Chloride	CATAN	mg/Kg	-----	5.5	7.3	6.3	4.7	-----	2.4	-----	-----	-----	-----	-----
Nitrogen, Nitrate (as N)	CATAN	mg/Kg	23	7.5	10	8.1	12	13	7.1	7.4	1.9	14	3.6	1.8
Sulfate	CATAN	mg/Kg	-----	8.8	15	9.8	13	-----	5.8	-----	-----	-----	-----	-----
Nitrogen, Nitrate (as N)	CATAN	mg/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Formaldehyde	GEN	mg/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sulfide	GEN	mg/Kg	-----	<62	<61	<59	<61	-----	<66	-----	-----	-----	-----	-----
TPH as Diesel	GEN	mg/Kg	<12	<12	<12	<12	<12	<12	<13	<12	16	27	<13	<10
TPH as Kerosene	GEN	mg/Kg	<12	<12	<12	<12	<12	<12	<13	<12	<11	<12	<13	<10
pH	GEN	pH	-----	9.9	10	9.8	7.6	-----	8	-----	-----	-----	-----	-----
Specific Conductance (EC)	GEN	uS/cm	-----	170	310	190	150	-----	88	-----	-----	-----	-----	-----
Antimony	METAL	mg/Kg	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Arsenic	METAL	mg/Kg	8.3	7.7	8.5	7.3	7.1	8.1	7.4	7.6	6.5	8.2	8.4	7.2
Barium	METAL	mg/Kg	210	210	193	136	125	214	168	141	91.6	163	205	75.6
Beryllium	METAL	mg/Kg	0.51	0.49	0.41	0.34	0.27	0.47	0.48	0.42	0.31	0.48	0.52	0.26
Cadmium	METAL	mg/Kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	METAL	mg/Kg	111	113	103	64.9	131	103	114	117	212	123	107	262
Chromium, Hexavalent (+6)	METAL	mg/Kg	0.27	0.29	0.2	0.25	0.034	0.11	0.069	0.1	0.069	0.049	0.07	0.093
Cobalt	METAL	mg/Kg	23.5	24	22.3	16.2	21	24.5	23.8	20.4	21	22.5	23.4	16.3
Copper	METAL	mg/Kg	43.9	43.9	40	25.4	27.1	42	44.6	33.5	21.8	39.8	44.1	19.3
Iron	METAL	mg/Kg	43,600	44,400	40,700	27,400	34,000	40,700	42,300	37,200	35,800	41,700	42,200	29,000
Lead	METAL	mg/Kg	8.7	8.3	8	8	6.8	8.2	8.3	9.2	5.3	10.8	8.3	5.1
Manganese	METAL	mg/Kg	809	1,010	761	522	550	848	522	602	512	681	814	426
Mercury	METAL	mg/Kg	<0.2	<0.2	<0.2	<0.2	0.21	<0.2	<0.2	<0.2	0.16	0.31	<0.2	<0.2
Molybdenum	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	METAL	mg/Kg	223	219	218	62.9	238	209	214	219	318	222	216	214
Selenium	METAL	mg/Kg	<5	0.56	<5	<5	<5	0.57	<5	<5	<5	<5	<5	<5

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Silver	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	METAL	mg/Kg	67.5	67.3	66.4	49.4	49.1	62.6	65.4	56.3	48.5	63.1	64.9	53.4
Zinc	METAL	mg/Kg	73.7	73.1	71.5	50.4	57.1	73.6	79.4	68.9	45.9	77	83.4	42.8
Chromium, Hexavalent (+6)	METAL	mg/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Antimony	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Arsenic	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Barium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Beryllium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cadmium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chromium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cobalt	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Copper	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Iron	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Lead	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Manganese	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mercury	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Molybdenum	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nickel	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Selenium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Silver	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Thallium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vanadium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Zinc	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4,4'-DDD	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
4,4'-DDE	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
4,4'-DDT	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Aldrin	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Alpha-BHC	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Alpha-Chlordane	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	53	2.5	94	<2.2	<1.7
Aroclor-1016	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Aroclor-1221	PES	ug/Kg	<79	<81	<79	<78	<82	<83	<89	<78	<71	<81	<88	<69
Aroclor-1232	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Aroclor-1242	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Aroclor-1248	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Aroclor-1254	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Aroclor-1260	PES	ug/Kg	<39	<40	<40	<39	<41	<42	<44	<39	<35	<41	<44	<35
Beta-BHC	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Delta-BHC	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Dieldrin	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Endosulfan I	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Endosulfan II	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Endosulfan Sulfate	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Endrin	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Endrin Aldehyde	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Endrin Ketone	PES	ug/Kg	<3.9	<4	<4	<3.9	<4.1	<4.2	<4.4	<3.9	<3.5	<4.1	<4.4	<3.5
Gamma-BHC	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Gamma-Chlordane	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	57	2.4	100	<2.2	<1.7
Heptachlor	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Heptachlor Epoxide	PES	ug/Kg	<2	<2	<2	<2	<2.1	<2.1	<2.2	<2	<1.8	<2	<2.2	<1.7
Methoxychlor	PES	ug/Kg	<20	<20	<20	<20	<21	<21	<22	<20	<18	<20	<22	<17
Toxaphene	PES	ug/Kg	<200	<200	<200	<200	<210	<210	<220	<200	<180	<200	<220	<170
1,2,4-Trichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,3-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,4-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
2.2'-oxybis(1-Chloropropane)	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4.5-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4.6-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4-Dichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4-Dimethylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4-Dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.4-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2.6-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Chloronaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Chlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methyl-4.6-dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methylnaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3.3'-Dichlorobenzidine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Bromophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chloro-3-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chloroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Chlorophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acenaphthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acenaphthylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(a)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(a)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Benzo(b)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(g,h,i)perylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzo(k)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzyl Butyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Chloroethoxy)methane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Chloroethyl)ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bis(2-Ethylhexyl)phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbazole	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chrysene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Di-n-Butylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Di-n-Octylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibenzo(a,h)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibenzofuran	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Diethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dimethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fluorene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorobutadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachlorocyclopentadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hexachloroethane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Indeno(1,2,3-cd)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Isophorone	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N-Nitrosodi-n-propylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
N-Nitrosodiphenylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Naphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nitrobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pentachlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Phenanthrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Phenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,1-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,2,2-Tetrachloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1,2-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,1-Dichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloroethene (total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1,2-Dichloropropane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Butanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2-Hexanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4-Methyl-2-Pentanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Acetone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromodichloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromoform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bromomethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbon Disulfide	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carbon Tetrachloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chlorobenzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloroform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
cis-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dibromochloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ethyl Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Methylene Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00007	SBL00008			SBL00009	SBL00010	SBL00011	SBL00012		SBL00013		
			5.75	5.75	10.75	20.75	5.75	5.75	6	0	0.5	0	2.5	3
Styrene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tetrachloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Toluene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
trans-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Trichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vinyl Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Xylenes (Total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
Alkalinity Total(as CaCO3)	CATAN	mg/Kg	-----	-----	-----	-----	-----	920	910	830	440	440	50	480	810	390
Ammonia-Nitrogen	CATAN	mg/Kg	-----	-----	-----	-----	-----	2.5	2.2	2.4	0.95	1.5	0.76	1.4	2	0.61
Chloride	CATAN	mg/Kg	-----	-----	-----	-----	-----	0.43	1.2	13	1.5	<0.23	7.2	<0.25	7.2	8.5
Nitrogen, Nitrate (as N)	CATAN	mg/Kg	34	59	0.21	6	5.7	0.62	2.2	0.22	8.9	62	85	29	0.89	0.11
Sulfate	CATAN	mg/Kg	-----	-----	-----	-----	-----	1.4	12	30	8.2	33	66	97	12	15
Nitrogen, Nitrate (as N)	CATAN	mg/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Formaldehyde	GEN	mg/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<1.1	<1.2	<1.2	<1.2	-----	-----
Sulfide	GEN	mg/Kg	-----	-----	-----	-----	-----	8.8	3.2	7.9	4.9	7.5	1.9	5.7	6	6
TPH as Diesel	GEN	mg/Kg	<11	<12	21	<12	<11	18	25	<11	<11	<11	<12	<12	<11	<11
TPH as Kerosene	GEN	mg/Kg	<11	<12	<12	<12	<11	<12	<12	<11	<11	<11	<12	<12	<11	<11
pH	GEN	pH	-----	-----	-----	-----	-----	8.7	8.4	8.3	8.1	8	8	8	8.2	8.1
Specific Conductance (EC)	GEN	uS/cm	-----	-----	-----	-----	-----	76	150	180	180	460	660	320	130	89
Antimony	METAL	mg/Kg	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Arsenic	METAL	mg/Kg	7.1	8.1	8.1	8.5	8.2	8.1	8.1	8.8	7	7.3	6.7	7.8	4.2	7.5
Barium	METAL	mg/Kg	127	154	132	191	149	168	155	184	104	150	140	201	89.6	151
Beryllium	METAL	mg/Kg	0.38	0.43	0.4	0.54	0.44	0.34	0.44	0.54	0.23	0.41	0.35	0.44	<5	0.34
Cadmium	METAL	mg/Kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	METAL	mg/Kg	112	149	165	109	142	118	121	108	218	97.3	113	106	72	115
Chromium, Hexavalent (+6)	METAL	mg/Kg	<0.23	0.034	0.076	0.063	0.071	0.061	0.11	0.087	0.12	0.088	0.16	0.15	0.12	0.082
Cobalt	METAL	mg/Kg	18.3	23.2	20.8	22.2	19.8	22.1	19.6	22.7	20.2	23.4	20.8	23.3	11.7	21.3
Copper	METAL	mg/Kg	31.4	33.8	30.6	42.5	32.5	31.9	35.2	43	23.2	40.8	31.7	43.7	18	32.1
Iron	METAL	mg/Kg	35.700	39.800	37.700	44.000	37.800	35.300	38.800	45.200	34.100	38.000	34.700	41.200	21.000	36.400
Lead	METAL	mg/Kg	8.8	7.3	7.9	8.3	8.9	8.6	8.6	8.4	5.5	8	6.7	8.3	4.1	7.1
Manganese	METAL	mg/Kg	616	598	594	733	475	882	510	730	499	609	578	737	617	590
Mercury	METAL	mg/Kg	0.36	1	0.1	<0.2	0.21	0.42	0.14	0.12	<0.2	<0.2	0.35	<0.2	0.43	0.2
Molybdenum	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	METAL	mg/Kg	194	277	253	205	230	215	223	211	301	184	228	213	109	228
Selenium	METAL	mg/Kg	<5	0.62	<5	<5	<5	<5	0.51	0.69	<5	<5	<5	0.72	<5	0.49

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
Silver	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	METAL	mg/Kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	METAL	mg/Kg	55.7	57.6	56.5	66.9	57.7	56.5	60	66.6	48.1	57.8	50.8	63.9	34.7	53.5
Zinc	METAL	mg/Kg	130	62.5	60.6	77.4	67.3	62.8	65.7	76.9	49.3	67.4	60.9	83.4	54.3	62.8
Chromium, Hexavalent (+6)	METAL	mg/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Antimony	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Arsenic	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Barium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Beryllium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cadmium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chromium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cobalt	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Copper	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Iron	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Lead	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Manganese	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Mercury	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Molybdenum	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nickel	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Selenium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Silver	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Thallium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vanadium	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Zinc	METAL	ug/L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4,4'-DDD	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
4,4'-DDE	PES	ug/Kg	<3.7	<3.9	<3.9	1.2	<3.6	1.3	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
4,4'-DDT	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Aldrin	PES	ug/Kg	<1.9	<2	<1.9	-----	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Alpha-BHC	PES	ug/Kg	<1.9	<2	11	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
Alpha-Chlordane	PES	ug/Kg	40	<2	<1.9	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	230	<1.8
Aroclor-1016	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Aroclor-1221	PES	ug/Kg	<75	<79	<78	<78	<72	<76	<79	<76	<71	<76	<79	<82	<71	<72
Aroclor-1232	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Aroclor-1242	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Aroclor-1248	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Aroclor-1254	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Aroclor-1260	PES	ug/Kg	<37	<39	<39	<39	<36	<38	<40	<38	<35	<38	<40	<41	<35	<36
Beta-BHC	PES	ug/Kg	<1.9	<2	<1.9	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Delta-BHC	PES	ug/Kg	<1.9	<2	1.4	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Dieldrin	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Endosulfan I	PES	ug/Kg	<1.9	<2	<1.9	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Endosulfan II	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Endosulfan Sulfate	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Endrin	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Endrin Aldehyde	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Endrin Ketone	PES	ug/Kg	<3.7	<3.9	<3.9	<3.9	<3.6	<3.8	<4	<3.8	<3.5	<3.8	<4	<4.1	<3.5	<3.6
Gamma-BHC	PES	ug/Kg	<1.9	<2	1.8	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Gamma-Chlordane	PES	ug/Kg	37	<2	<1.9	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	260	<1.8
Heptachlor	PES	ug/Kg	<1.9	<2	<1.9	<2	<1.8	<1.9	-----	<1.9	<1.8	<1.9	<2	<2.1	6.6	<1.8
Heptachlor Epoxide	PES	ug/Kg	<1.9	<2	<1.9	<2	<1.8	<1.9	<2	<1.9	<1.8	<1.9	<2	<2.1	<1.8	<1.8
Methoxychlor	PES	ug/Kg	<19	<20	<19	<20	<18	<19	<20	<19	<18	<19	<20	<21	<18	<18
Toxaphene	PES	ug/Kg	<190	<200	<190	<200	<180	<190	<200	<190	<180	<190	<200	<210	<180	<180
1,2,4-Trichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
1,2-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
1,3-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
1,4-Dichlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,2'-oxybis(1-Chloropropane)	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,4,5-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
2,4,6-Trichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,4-Dichlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,4-Dimethylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,4-Dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
2,4-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2,6-Dinitrotoluene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2-Chloronaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2-Chlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2-Methyl-4,6-dinitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
2-Methylnaphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
2-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
2-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
3,3'-Dichlorobenzidine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
3-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
4-Bromophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
4-Chloro-3-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
4-Chloroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
4-Chlorophenyl Phenyl Ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
4-Methylphenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
4-Nitroaniline	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
4-Nitrophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
Acenaphthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Acenaphthylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Benzo(a)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Benzo(a)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Benzo(b)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Benzo(g,h,i)perylene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
Benzo(k)fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Benzyl Butyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Bis(2-Chloroethoxy)methane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Bis(2-Chloroethyl)ether	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Bis(2-Ethylhexyl)phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	37	65	45	51	-----	-----
Carbazole	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Chrysene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<360	-----	-----
Di-n-Butylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	130	160	130	150	-----	-----
Di-n-Octylphthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Dibenzo(a,h)anthracene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Dibenzofuran	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Diethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Dimethyl Phthalate	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Fluoranthene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Fluorene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Hexachlorobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Hexachlorobutadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Hexachlorocyclopentadiene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Hexachloroethane	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Indeno(1,2,3-cd)pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Isophorone	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
N-Nitrosodi-n-propylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
N-Nitrosodiphenylamine	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Naphthalene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Nitrobenzene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Pentachlorophenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<860	<960	<990	<1,000	-----	-----
Phenanthrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Phenol	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----
Pyrene	SVOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<350	<380	<400	<410	-----	-----

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
1,1,1-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,1,2,2-Tetrachloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,1,2-Trichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,1-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,1-Dichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,2-Dichloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,2-Dichloroethene (total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
1,2-Dichloropropane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
2-Butanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
2-Hexanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
4-Methyl-2-Pentanone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Acetone	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	4	32	<12	<12	-----	-----
Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Bromodichloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Bromoform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Bromomethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Carbon Disulfide	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Carbon Tetrachloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Chlorobenzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Chloroethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Chloroform	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Chloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
cis-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Dibromochloromethane	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Ethyl Benzene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Methylene Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Styrene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Tetrachloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Toluene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----

Table C-1

Dog Pen Data, December 1994

Lab_chem	PCLASS	Units	SBL00014		SBL00015			SBL00016			SBL00017		SBL00018		SBL00019	
			0	2.5	0	5	6.5	0	0	5	2.5	5	2.5	5	0	2.5
trans-1,3-Dichloropropene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Trichloroethene	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Vinyl Chloride	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----
Xylenes (Total)	VOC	ug/Kg	-----	-----	-----	-----	-----	-----	-----	-----	<11	<11	<12	<12	-----	-----

Table C-2
LEHR Environmental Restoration
June 1996 Analytic Results for Dog Pens Area

	Sample # (Analysis)	Sample Description	Location	Lab Results	MDA
LEHR-S-321		Soil	E-1		
	Ac-228			0.46	0.17
	Bi-212				0.34
	Bi-214			0.510	0.086
	Co-60				0.042
	Cs-137			0.065	0.039
	K-40			11.9	0.44
	Pb-210				0.97
	Pb-212			0.578	0.067
	Pb-214			0.608	0.087
	Ra-223				0.75
H	Ra-226			1.90	0.32
	Th-234				0.89
	Tl-208			0.147	0.046
	U-235 (GAMMA)				0.19
	Sr-89, 90				0.44
LEHR-S-322		Soil	G-5		
	Ac-228			0.51	0.18
	Bi-212				0.36
L	Bi-214			0.342	0.11
	Co-60				0.057
	Cs-137				0.058
	K-40			10.8	0.58
	Pb-210				1.3
	Pb-212			0.500	0.075
	Pb-214			0.488	0.096
	Ra-223				0.84
L	Ra-226			0.55	0.26
	Th-234				1.2
	Tl-208			0.137	0.062
	U-235 (GAMMA)				0.23
	Sr-89, 90			0.56	0.40
LEHR-S-323		Soil	H-16		
	Ac-228			0.56	0.11
L	Bi-212			0.28	0.23
	Bi-214			0.348	0.074
	Co-60				0.036
L	Cs-137			0.029	0.029
	K-40			10.3	0.4
	Pb-210				3.5
	Pb-212			0.447	0.055
L	Pb-214			0.438	0.061
	Ra-223				0.54
	Ra-226			1.05	0.24
	Th-234				1.3
	Tl-208			0.151	0.032
	U-235 (GAMMA)				0.18
	Sr-89, 90			0.47	0.37

Table C-2
LEHR Environmental Restoration
June 1996 Analytic Results for Dog Pens Area

	Sample # (Analysis)	Sample Description	Location	Lab Results	MDA
LEHR-S-324		Soil	M-1		
L	Ac-228			0.44	0.18
	Bi-212			0.42	0.29
	Bi-214			0.74	0.094
	Co-60				0.05
	Cs-137			0.058	0.051
	K-40			12.1	0.44
	Pb-210				1.1
	Pb-212			0.466	0.066
	Pb-214			0.92	0.087
	Ra-223				0.82
	Ra-226			1.48	0.32
	Th-234				1.1
	Tl-208			0.161	0.048
	U-235 (GAMMA)				0.20
L	Sr-89, 90			0.41	0.41
LEHR-S-325		Soil	N-5		
	Ac-228			0.476	0.11
	Bi-212				0.20
	Bi-214			0.397	0.064
	Co-60				0.027
	Cs-137			0.058	0.026
	K-40			10	0.33
	Pb-210				3.2
L	Pb-212			0.427	0.050
	Pb-214			0.531	0.056
	Ra-223				0.51
	Ra-226			0.95	0.23
	Th-234				1.3
	Tl-208			0.122	0.029
	U-235 (GAMMA)				0.17
	Sr-89, 90				0.38
LEHR-S-326		Soil	N-16		
	Ac-228			0.46	0.18
	Bi-212			0.42	0.29
	Bi-214			0.519	0.082
	Co-60				0.049
	Cs-137				0.046
H	K-40			12.5	0.45
L	Pb-210			0.98	0.91
	Pb-212			0.493	0.073
	Pb-214			0.556	0.082
	Ra-223				0.73
	Ra-226			0.97	0.068
	Th-234				0.94
L	Tl-208			0.119	0.045
	U-235 (GAMMA)				0.19
	Sr-89, 90				0.43

Table C-2
LEHR Environmental Restoration
June 1996 Analytic Results for Dog Pens Area

	Sample # (Analysis)	Sample Description	Location	Lab Results	MDA
LEHR-S-327		Soil	O-16		
	Ac-228			0.56	0.18
	Bi-212				0.32
	Bi-214			0.52	0.090
	Co-60				0.050
	Cs-137			0.075	0.047
	K-40			11.9	0.51
H	Pb-210			1.11	1.1
	Pb-212			0.494	0.070
	Pb-214			0.593	0.084
	Ra-223				0.87
	Ra-226			1.01	0.32
	Th-234				1.1
	Tl-208			0.156	0.050
	U-235 (GAMMA)				0.22
	Sr-89, 90				0.38
LEHR-S-328		Soil	P-13		
L	Ac-228			0.44	0.20
	Bi-212			0.47	0.25
	Bi-214			0.55	0.10
	Co-60				0.044
H	Cs-137			0.076	0.043
	K-40			10.3	0.53
	Pb-210				1.1
	Pb-212			0.577	0.073
	Pb-214			0.67	0.097
	Ra-223				0.86
	Ra-226			1.0	0.33
	Th-234				1.0
	Tl-208			0.132	0.054
	U-235 (GAMMA)				0.23
	Sr-89, 90			0.42	0.37
LEHR-S-329		Soil	P-8		
	Ac-228			0.45	0.18
	Bi-212				0.36
H	Bi-214			0.84	0.082
	Co-60				0.045
	Cs-137			0.055	0.041
L	K-40			9.4	0.52
	Pb-210				1.0
	Pb-212			0.521	0.076
H	Pb-214			0.99	0.089
	Ra-223				0.80
	Ra-226			1.6	0.23
	Th-234				0.96
	Tl-208			0.147	0.048
	U-235 (GAMMA)				0.20
	Sr-89, 90				0.39

Table C-2
LEHR Environmental Restoration
June 1996 Analytic Results for Dog Pens Area

	Sample # (Analysis)	Sample Description	Location	Lab Results	MDA
LEHR-S-373		Soil	R-2		
	Ac-228			0.474	0.12
	Bi-212			0.35	0.20
	Bi-214			0.410	0.060
	Co-60				0.020
	Cs-137				0.031
	K-40			11.1	0.39
	Pb-210				3.4
	Pb-212			0.496	0.051
	Pb-214			0.502	0.061
	Ra-223				0.48
	Ra-226			1.04	0.44
	Th-234				1.3
	Tl-208			0.150	0.032
	U-235 (GAMMA)				0.17
	Sr-89, 90			3.09	0.66
LEHR-S-374		Soil	R-11		
	Ac-228			0.59	0.17
H	Bi-212			0.49	0.27
	Bi-214			0.456	0.084
	Co-60				0.051
	Cs-137				0.045
	K-40			12.2	0.45
	Pb-210				0.97
H	Pb-212			0.604	0.072
	Pb-214			0.492	0.090
	Ra-223				0.76
	Ra-226				0.47
	Th-234				0.96
H	Tl-208			0.190	0.047
	U-235 (GAMMA)				0.21
	Sr-89, 90			1.25	0.82
LEHR-S-376		Soil	U-8		
H	Ac-228			0.60	0.12
	Bi-212			0.34	0.22
	Bi-214			0.371	0.080
	Co-60				0.028
	Cs-137				0.030
	K-40			12.0	0.42
	Pb-210				3.9
	Pb-212			0.517	0.059
	Pb-214			0.523	0.068
	Ra-223				0.53
	Ra-226				0.47
	Th-234				1.4
	Tl-208			0.180	0.033
	U-235 (GAMMA)				0.20
H	Sr-89, 90			3.25	0.84

Table C-3
LEHR Environmental Restoration
July 1996 Analytic Results for Dog Pens Area

Sample # (Analysis)		Sample Description	Location	Lab Results	MDA
LEHR-S-363		Soil	A-15		
	Ac-228			0.45	0.16
	Bi-212			0.37	0.26
	Bi-214			0.394	0.094
	Co-60				0.049
	Cs-137				0.045
	K-40			11.4	0.41
	Pb-210				1.0
	Pb-212			0.539	0.073
	Pb-214			0.43	0.088
	Ra-223				0.65
	Ra-226				0.34
	Th-234				0.97
	Tl-208			0.161	0.045
	U-235 (GAMMA)				0.22
	Sr-89, 90			1.24	0.85
LEHR-S-364		Soil	C-16		
L	Ac-228			0.27	0.17
	Bi-212			0.38	0.19
	Bi-214			0.317	0.071
	Co-60				0.036
	Cs-137				0.030
L	K-40			10.0	0.44
	Pb-210				0.93
L	Pb-212			0.339	0.059
L	Pb-214			0.394	0.068
	Ra-223				0.65
	Ra-226				0.46
	Th-234				0.91
	Tl-208			0.126	0.041
	U-235 (GAMMA)				0.17
	Sr-89, 90			4.4	0.97
LEHR-S-365		Soil	I-13		
	Ac-228			0.459	0.11
L	Bi-212			0.23	0.20
	Bi-214			0.356	0.059
	Co-60				0.026
	Cs-137			0.096	0.029
	K-40			11.1	0.33
L/H	Pb-210			3.3	3.0
	Pb-212			0.470	0.048
	Pb-214			0.440	0.058
	Ra-223				0.49
	Ra-226			0.49	0.49
	Th-234				1.2
	Tl-208			0.139	0.033
	U-235 (GAMMA)				0.17
	Sr-89, 90				0.93

Table C-3
LEHR Environmental Restoration
July 1996 Analytic Results for Dog Pens Area

Sample # (Analysis)		Sample Description	Location	Lab Results	MDA
LEHR-S-366		Soil	J-9		
	Ac-228			0.46	0.20
	Bi-212			0.41	0.34
	Bi-214			0.417	0.096
	Co-60				0.055
	Cs-137				0.049
	K-40			12.7	0.55
	Pb-210				1.1
H	Pb-212			0.603	0.081
	Pb-214			0.512	0.10
	Ra-223				0.81
H	Ra-226			1.08	0.44
	Th-234				1.1
	Tl-208			0.147	0.054
	U-235 (GAMMA)				0.23
	Sr-89, 90				0.88
LEHR-S-367		Soil	K-6		
	Ac-228			0.45	0.19
	Bi-212			0.34	0.30
	Bi-214			0.31	0.099
	Co-60				0.043
	Cs-137				0.054
	K-40			12.6	0.56
	Pb-210				1.3
	Pb-212			0.485	0.074
	Pb-214			0.436	0.090
	Ra-223				0.80
	Ra-226				0.49
	Th-234				1.2
H	Tl-208			0.171	0.051
	U-235 (GAMMA)				0.21
	Sr-89, 90			2.06	0.92
LEHR-S-368		Soil	K-9		
	Ac-228			0.445	0.12
H	Bi-212			0.50	0.20
	Bi-214			0.394	0.065
	Co-60				0.019
	Cs-137				0.027
	K-40			11.6	0.39
	Pb-210				3.4
	Pb-212			0.468	0.052
	Pb-214			0.423	0.058
	Ra-223				0.50
	Ra-226			0.41	0.41
	Th-234				1.3
L	Tl-208			0.116	0.036
	U-235 (GAMMA)				0.17
L	Sr-89, 90			0.96	0.82

Table C-3
LEHR Environmental Restoration
July 1996 Analytic Results for Dog Pens Area

Sample # (Analysis)		Sample Description	Location	Lab Results	MDA
LEHR-S-369		Soil	M-16		
	Ac-228			0.49	0.17
	Bi-212				0.32
L	Bi-214			0.303	0.087
	Co-60				0.044
	Cs-137			0.069	0.035
H	K-40			13.0	0.38
	Pb-210				1.0
	Pb-212			0.553	0.076
	Pb-214			0.453	0.087
	Ra-223				0.86
	Ra-226			0.94	0.32
	Th-234				0.99
	Tl-208			0.169	0.044
	U-235 (GAMMA)				0.21
	Sr-89, 90				0.41
LEHR-S-370		Soil	O-1		
	Ac-228			0.48	0.19
	Bi-212			0.39	0.27
	Bi-214			0.355	0.082
	Co-60				0.047
	Cs-137				0.046
	K-40			10.9	0.46
	Pb-210				1.1
	Pb-212			0.461	0.068
	Pb-214			0.473	0.078
	Ra-223				0.72
	Ra-226			0.53	0.49
	Th-234				1.0
	Tl-208			0.123	0.048
	U-235 (GAMMA)				0.20
	Sr-89, 90			1.22	0.88
LEHR-S-371		Soil	P-1		
	Ac-228			0.433	0.12
	Bi-212			0.46	0.18
	Bi-214			0.38	0.062
	Co-60				0.021
	Cs-137				0.025
	K-40			10.6	0.30
	Pb-210				3.5
	Pb-212			0.477	0.049
	Pb-214			0.46	0.056
	Ra-223				0.50
	Ra-226				0.34
	Th-234				1.2
	Tl-208			0.137	0.029
	U-235 (GAMMA)				0.17
H	Sr-89, 90			5.66	0.93

Table C-3
LEHR Environmental Restoration
July 1996 Analytic Results for Dog Pens Area

Sample # (Analysis)		Sample Description	Location	Lab Results	MDA
LEHR-S-372		Soil	Q-6		
H	Ac-228			0.58	0.17
	Bi-212			0.32	0.29
	Bi-214			0.409	0.082
	Co-60				0.044
H	Cs-137			0.159	0.043
	K-40			12.1	0.49
	Pb-210				1.1
	Pb-212			0.578	0.065
	Pb-214			0.502	0.083
	Ra-223				0.79
	Ra-226				0.48
	Th-234				1.1
	Tl-208			0.159	0.047
	U-235 (GAMMA)				0.19
	Sr-89, 90			3.06	0.82
LEHR-S-375		Soil	T-16		
	Ac-228			0.48	0.20
	Bi-212				0.35
H	Bi-214			0.443	0.090
	Co-60				0.052
L	Cs-137			0.052	0.044
	K-40			10.3	0.50
	Pb-210				1.2
	Pb-212			0.569	0.067
	Pb-214			0.473	0.083
	Ra-223				0.68
L	Ra-226			0.37	0.28
	Th-234				1.1
	Tl-208			0.162	0.051
	U-235 (GAMMA)				0.21
	Sr-89, 90				0.63
LEHR-S-377		Soil	V-4		
	Ac-228			0.51	0.20
	Bi-212				0.35
	Bi-214			0.44	0.098
	Co-60				0.029
	Cs-137				0.045
	K-40			11.2	0.56
	Pb-210				1.1
	Pb-212			0.520	0.083
H	Pb-214			0.532	0.095
	Ra-223				0.92
	Ra-226			0.37	0.29
	Th-234				1.1
	Tl-208			0.137	0.052
	U-235 (GAMMA)				0.22
	Sr-89, 90			2.23	0.82

Table C-4
LEHR Environmental Restoration
1996 Analytic Results for Dog Pen Area

Pesticides and PCBs by CLP

Location Date	UNITS	LEHR-S-363	LEHR-S-364	LEHR-S-365	LEHR-S-366	LEHR-S-367	LEHR-S-368
Chlordane	ug/kg	15,000	670	1,900	200	330	79

Table C-4
LEHR Environmental Restoration
1996 Analytic Results for Dog Pen Area

Pesticides and PCBs by CLP

Location Date	UNITS	LEHR-S-369		LEHR-S-370	LEHR-S-371	LEHR-S-372	LEHR-S-373		LEHR-S-374	
Chlordane	ug/kg	31	IJ	170	200	170	14	IJ	39	IJ

Table C-4
LEHR Environmental Restoration
1996 Analytic Results for Dog Pen Area
Analytic Results of LFI Site Characterization 1996
Pesticides and PCBs by CLP

Location Date	UNITS	LEHR-S-375	LEHR-S-376	LEHR-S-377	
Chlordane	ug/kg	170	150	25	IJ

APPENDIX D

LFI SAMPLE COLLECTION DATA LOG

Appendix D. Sample Locations and Field Observations, LEHR Facility — Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
Southwest Trenches						
7/23/96	T1, 11.25 ft N from S end of T1	LEHR-S-331	2-3	• Interstitial soil composite • Interstitial to low quantity of lab refuse = glass shards, plastic syringe covers, glass pipette • (cl) - silty clay, brown, low moisture, low plasticity	Full suite of radionuclides[a] Metals Hexavalent Chromium (Kerosene) pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e] Misc. parameters[f]
7/23/96	T1, 11.25 ft N from S end of T1	LEHR-S-332	3	• Native soil immediately below S-331. • (cl) - clay with silt, low moisture, low to medium plasticity, numerous roots up to 1/4 in diameter	Full suite of radionuclides[a] Metals Hexavalent Chromium (Kerosene) pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e] Misc. parameters[f]
7/23/96	T1, 11.25 ft N from S end of T1	LEHR-S-333	5.5 - 6	• Native soil below sample S-332; 2.5 ft below S-332 • (cl) - clay with varying amounts of silt and varying colors (dark brown to very dark brown), medium plasticity, large tree roots	Full suite of radionuclides[a] Metals Hexavalent Chromium (Kerosene) pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e] Misc. parameters[f]
7/24/96	T2, 23 ft E from W end	LEHR-S-334	3	• Bones = 0.5” to 1” each, off-white, rounded end, except one end that was straight out • Wood = 2x4 or 3x4 redwood	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/24/96	T2, 23 ft E from W end	LEHR-S-335	3	• Interstitial soil around waste (S-334) • (cl) - Silty clay, brown, low moisture, low to medium plasticity, low dilatancy, low toughness, low to medium dry strength, roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/24/96	T2, 23 ft E from W end	LEHR-S-336	3.5	• Native soil immediately below waste • (cl) - Silty clay, brown, low moisture, low to medium plasticity, low dilatancy, roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/24/96	T2, 23 ft E from W end	LEHR-S-337	6	• Native soil 2.5 ft below S-336 • (sm) - Silty sand with medium to high organic material, low to medium toughness, low dilatancy, 60% very fine sand, 30% silt, 10% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/25/96	26 ft E from W end of T2	LEHR-S-338	6 - 7	• (gw) - 0.25” to 0.5”, grey, angular to subangular, little to no fines • Backfill of disposal trench (interstitial to waste)	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/25/96	26 ft E from W end of T2	LEHR-S-339	6 - 7	• Bones similar to those verified as non-human • Gathered from gravel backfill in T2	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/25/96	26 ft E from W end of T2	LEHR-S-340	6.75	• Sludge: black, heavy organic odor, clay-like, fibers (? hair) that are 0.75" long and light in color, fibers = 20 - 30% of material	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/25/96	26 ft E from W end of T2	LEHR-S-341	6.75 - 7	• Soil is from immediately below S-340 (sludge) • (sm) - Silty sand, brown, slightly moist, 60% very fine sand, 30% silt, 10% clay, and roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/25/96	26 ft E from W end T2	LEHR-S-342	3 - 6	• Bags = clear plastic bags, no contents, some staining (dark brown)	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/25/96	26 ft E from W end of T2	LEHR-S-343	9	• Soil is 2.5 ft below sample S-341 • (cl) - Silty clay, brown to dark brown, low moisture, medium plasticity, 10-30% silt varies with depth, roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/26/96	14 ft S of N end of T4	LEHR-S-344	2.5	• (gw) - Well graded gravel, no fines, light color, angular to subangular • Gravel is backfill to disposal trench	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/26/96	14 ft S of N end of T4	LEHR-S-345	3	• Soil immediately below gravel fill in S-344 • (ml) - Silty, brown to dark brown, moist, low plasticity, medium dilatancy, roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/26/96	14 ft S of N end of T4	LEHR-S-346	5.5 - 6	• Sample is from 2.5 ft below S-345 • (ml/sm) - Silt grading into silty sand • Silty sand is brown, 70% very fine sand, 10% silt, 20% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/26/96	30 ft W of E end of T5	LEHR-S-347	2 - 2.5	• Gravel from disposal trench	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/26/96	30 ft W of E end of T5	LEHR-S-348	2.5 - 3	• (sm) • Soil immediately beneath S-347	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/26/96	30 ft W of E end of T5	LEHR-S-349	5.5 - 6	• (sm) • Soil 2.5 ft below sample S-348	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/29/96	Grid “7-9”; SE end of T2	LEHR-S-350	0.5 - 1	• Gravel clump at surface • Originally cemented together with caliche • (gp) - 0.25” to 0.5”, light grey, granite or granodiorite, cemented together with caliche, 15% fines, 70-75% gravel	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/29/96	Grid “7-9”; SE end of T2	LEHR-S-351	1	• Soil immediately below S-350 (hot spot from surface survey) • (ml) - Silt, brown, moist, low to medium toughness, low dry strength, medium dilatancy, 80% silt, 20% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/29/96	Grid “7-9”; SE end of T2	LEHR-S-352 LEHR-S-353 (FD)	3.5	• Soil from 2.5 feet below S-351 • ml grading into sw • (ml) - Brown, moist, low to medium toughness; low dry strength, medium dilatancy, 80% silt, 20% clay • (sw) - Very fine sand, dark brown, 90% sand, 10% silt, sand = quartz, potassium feldspar, mafics	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/29/96	T6, 10 ft S of intersection of T2 & T6	LEHR-S-354	6 - 8	• Gravel within disposal trench • (gw) - Grey to black, little fines, in some areas the fines are (?stained) red	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/29/96	T6, 10 ft S of intersection of T2 & T6	LEHR-S-355	6 - 8	• Bones from within gravel (S-354)	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/29/96	T6, 10 ft S of intersection of T2 & T6	LEHR-S-356	12	• Soil immediately below gravel • (ml) - Clayey silt, reddish brown, medium plastic, medium toughness, medium dilatancy, low-medium dry strength, 60-65% silt, 35-40% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/30/96	T6, 10 ft S of intersection of T2 & T6	LEHR-S-357	14.4	• Soil 2.5 ft below S-356 • (ml) - Clayey silt, reddish brown, medium plastic, medium toughness, medium dry strength, medium - low dilatancy, 55-60% silt, 40-45% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/30/96	T6, 20 ft S of intersection of T2 & T6	LEHR-S-358	6 - 7	• Sorbant white powder, friable and chunky	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/30/96	T6, 35 ft S of intersection of T2 & T6	LEHR-S-359	12	• Gravel with LEHR wastes, wastes include a sump pump, bones, capsules, plastic sheeting, plastic tubs • (gw) - Well-graded gravel, 0.25” to 0.5” diameter subangular to angular grey granite or granodiorite, some silt or sand fines mixed in, 15% fines, 85% gravel	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/30/96	T6, 35 ft S of T2 & T6 intersection	LEHR-S-360	12	• Soil from immediately below gravel S-359 • (ml) - Clayey silt, dark brown, slight moisture, medium plasticity, low to medium dilatancy, medium to high dry strength, low to medium toughness, 60-65% silt, 40-45% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
7/30/96	T6, 35 ft S of intersection of T2 & T6	LEHR-S-361	14.5	• Soil from 2.5 ft below S-359. • (ml) - Clayey silt, dark brown, slight moisture, medium plasticity, low to medium dilatancy, low to medium toughness, 60-65% silt, 40-45% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
7/31/96	T6, 35 ft S of intersection of T2 & T6	LEHR-S-362	12	• Wood was among debris within gravel • Other debris included plastic sheeting, plastic tubs, sump pumps, cast iron valves	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/02/96	T3, 4 ft E from W end of T3	LEHR-S-378	2.5	• Material interstial to waste is bagged cans and a few bones and a small amount of absorbant	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/02/96	T3, 4 ft E from W end of T3	LEHR-S-379	3	• Soil is immediately below S-378 • (sm) - Silty sand, yellow brown, 85-90%very fine sand, 10-15% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/02/96	T3, 4 ft E from W end of T3	LEHR-S-380	5	• Soil is 2 ft below S-379 • (sm) - Silty sand, light brown, well graded, fine sand, 85% sand, 15% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/02/96	T3, 28 ft E from W end of T3	LEHR-S-381	2.5	• (gp) - 0.25” to 0.5” light grey granitic, angular to subangular and tree roots	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/02/96	T3, 28 ft E from W end of T3	LEHR-S-382	8	• Soil is immediately below gravel • Silty sand, yellow brown, very fine sand and silt, 85-90% very fine sand, 10-15% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/02/96	T3, 28 ft E from W end of T3	LEHR-S-383	10.5	• Soil is 2 ft below S-382 • (sm) - Silty sand, light brown, fine to medium, grained sand, 75-80% sand, 15-20% silt, $\leq$5% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-6; South end of T6	LEHR-S-465	12	• Sample is immediately below gravel waste • (cl) - Soil is yellow brown silty clay, low to medium toughness, low to medium dilatancy, low to medium dry strength, 55-60% clay, 40-45% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-6; South end of T6	LEHR-S-466	17.5 - 19	• (cl) - Silty clay, yellow brown, low to medium toughness, low dilatancy, medium dry strength, 55-60% clay, 40-45% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/22/96	SB-6; South end of T6	LEHR-S-467	25 - 27	• (cl) - Clay, yellow brown, low to medium toughness, medium to low dilatancy, medium dry strength	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-6; South end of T6	LEHR-S-468	9 - 10.5	• (gp) - Waste gravel, 0.5” diameter, angular with bones, plastic	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-6; South end of T6	LEHR-S-469	29 - 30.5	• (cl) - Clay, yellow brown, no silt, low to medium toughness, medium to low dilatancy, medium dry strength	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-7; Intersection of T2 & T6	LEHR-S-470	5 - 6.5	• (gp) - Waste gravel with some soil slough	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-7; Intersection of T2 & T6	LEHR-S-471	6.5 - 8.0	• (ml) - Clayey silt, reddish yellow, no dry strength, low toughness, medium dilatancy	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/22/96	SB-7; Intersection of T2 & T6	LEHR-S-472	15 - 16.5	• (ml) - Clayey silt, reddish yellow, mottled with ochre-red (Fe or organics), no dry strength, medium dilatancy, low toughness	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-7; Intersection of T2 & T6	LEHR-S-473	21 - 22.5	• (cl) - Sandy clay, yellow brown, moist, low toughness, low to medium dry strength, medium to low dilatancy, 20-25% very fine sand, 75-80% clay (almost an sc)	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/22/96	SB-7; Intersection of T2 & T6	LEHR-S-474	29 - 30.5	• (cl) - Clay, yellow, medium to high toughness, low dilatancy, high dry strength, 100% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-475	4 - 6	• (ml) - Light brown silt with 5-10% clay, no dry strength, high dilatancy, no toughness, no plasticity, dry 90-95% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-476	6 - 7.5	• (cl) - Clay, dark brown/black, medium-high dry strength, low dilatancy, low-medium toughness, 100% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-477	13 - 15	• (ml) - Silt, brown, 10% clay, no dry strength, medium dilatancy, no toughness, little to no plasticity, dry, 90% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-478 LEHR-S-479 (FD)	15 - 17	• (cl) - Clay, dark yellow brown, “modeling clay”, 100% clay, medium-high dry strength, low dilatancy, medium toughness, medium plasticity, pedogenic structures and rhizoliths	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-480	25 - 26.5	• (cl) - Clay, dark yellow brown, 100% clay, medium-high dry strength, low dilatancy, medium toughness, medium plasticity	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/23/96	SB-8; 7.5 ft NW of T1	LEHR-S-481	29 - 30.5	• (cl) - Clay, dark yellow brown, 100% clay, medium-high dry strength, low dilatancy, medium-high toughness, medium-high plasticity	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SW corner of T6	LEHR-S-482	3	• Sandy clay, dark yellow brown, 20% sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/26/96	Soil sample; SW corner of T6	LEHR-S-483	3	• (ml) - Sandy silt, yellow brown, dense, slightly moist, 30-40% fine sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SW corner of T6	LEHR-S-484	3.5	• (ml) - Silt with sand, yellow brown, stiff, slightly moist, 20% fine sand, 10% clay, medium dry strength	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SW corner of T6	LEHR-S-485	3	• (ml) - Sandy silt, dark yellow brown, slightly moist, 30% fine sand, 5% clay, low to medium dry strength	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SW corner of T6	LEHR-S-486	3	• (ml) - Sandy silt, dark yellow brown, medium stiff, slightly moist, 40-50% fine sand, 50-60% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SE corner of T6	LEHR-S-487	4	• (sm) - Silty sand, yellow brown, medium loose, slightly moist, 20-30% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/26/96	Soil sample; SE corner of T6	LEHR-S-488	3	• (sm) - Silty sand, yellowish brown, medium dense, slightly moist, 80-85% fine sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/26/96	Soil sample; SE corner of T1	LEHR-S-489	3	• (sm) - Silty sand, yellow brown, stiff, slightly moist, 15% silt, 85% fine to medium grained sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/27/96	Soil sample; SE corner of T1	LEHR-S-490	4	• Shallow gravel trench 6” to 2.5’ above sample depth with plastic, glass, metal caps • (ml) - At 48”: sandy silt, yellowish brown, stiff, slightly moist, non-plastic, 30% fine sand, 5-10% clay, large roots, mottled	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/27/96	Soil sample; S edge of T5, 7.5 ft from E end	LEHR-S-491	3.5	• Large cobbles (to 6” diameter) 6” to 2’ below surface • (sm) - Silty sand, brown, medium dense, moderately moist, sand-silt mixture, 80% fine to medium grained sand, 20% silt, mostly in nodes and thin layers	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/27/96	Soil sample; S of Washdown Pad	LEHR-S-492	3.17	• (sp) - Sand, brownish grey, medium dense to loose, moderately moist, fine sand interbedded with thin silty sand/sandy silt layers and nodes	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/27/96	Soil sample; W of Washdown Pad	LEHR-S-493	3.17	• (sp) - Sand, brownish grey, loose, slightly moist, 90% fine sand, 10% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/27/96	Soil sample; E of Washdown Pad	LEHR-S-494	3 - 4.5	• (sp) - Sand, brownish grey, 90% sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/27/96	Soil sample; N of Washdown Pad	LEHR-S-495	3 - 4.5	• (ml) - Silt with sand, yellow brown, slightly moist, stiff, non-plastic, 75% silt, 25% fine sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/28/96	LEHR	LEHR-L-220		• Brass sleeves rinsate water • Rinsate made with 4 sleeves selected at random from cache of sleeves	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/28/96	LEHR	LEHR-L-221		• Brass sleeves rinsate water • Rinsate made with 3 sleeves selected at random from cache of sleeves	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/28/96	LEHR	LEHR-L-222		• Sample trowel rinsate water • Rinsate made with 4 trowels selected at random from cache of trowels	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
8/28/96	LEHR	LEHR-L-223		• Teflon tape rinsate water • Rinsate made with 5 pieces of teflon tape selected at random from 3 rolls of tape	Partial suite of radionuclides[b] Metals Hexavalent Chromium BTEX pH	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Anions[e]
OU - 4 Septic Tank Systems						
8/16/96	Below NW corner of septic tank 7	LEHR-S-428	7	• Sample is from immediately below NW corner of septic tank • (cl) - Dark brown silty clay, 70% clay, 30% silt, medium toughness, low to medium plasticity, low to medium dry strength, low to medium dilatancy	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate
8/16/96	Below NW corner of septic tank 7	LEHR-S-429	9.5 - 10	• Sample is from 2.5 to 3 ft below S-428 • (cl) - Dark brown silty clay, 70% clay, 30% silt	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/16/96	Below NW corner of septic tank 7	LEHR-S-430	12 - 12.5	• Sample is from 5 to 5.5 ft below S-428 and 2 to 2.5 ft below S-429 • (cl) - Silty clay dark brown, very stiff, very plastic, medium hardness, medium toughness	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate
8/19/96	W side of Admin Bldg, Septic Tank Trench	LEHR-S-431	7.5	• (ml) - Sandy silt, reddish brown, slightly moist, stiff, dense, non-plastic, 40% fine sand	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate
8/19/96	W side of Admin Bldg, Septic Tank Trench	LEHR-S-432	10	• (ml) - Sandy silt, reddish brown, slightly moist, dense, low plasticity, 30% fine sand, 10% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate
8/19/96	W side of Admin Bldg, Septic Tank Trench	LEHR-S-433 LEHR-S- 434 (FD)	13	• (cl) - Silty clay, brown, slightly moist, stiff, low to medium plasticity, 30-40% clay	Partial suite of radionuclides[b] Metals Hexavalent Chromium pH Anions	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate

Radium-Strontium Treatment Systems

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/06/96	T1, 7 ft S of N end of T1	LEHR-S-384 LEHR-S-385 (FD)	5.33	• Soil is from immediately below leach field • (ml) - Clayey silt, yellow brown to brown, low to medium plasticity, medium toughness, medium to low dilatancy, 60-65% silt, 40-45% clay	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/06/96	T1, 7 ft S of N end of T1	LEHR-S-386	8	• Soil is 2.5 ft below S-384 and S-385 • (cl) - Silty clay, dark brown, medium plasticity, medium to moderately high toughness, low dilatancy, 60-65% clay, 40-45% silt • Native material	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/06/96	T1, 7 ft S of N end of T1	LEHR-S-387	10.67	• (cl) - Silty clay, dark brown, medium plasticity, medium to moderately high toughness, low dilatancy, 60-65% clay, 40-45% silt • Soil is native • Sample is 5 ft below S-384 and S-385	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/06/96	T1, 17 ft S of N end of T1	LEHR-S-389	4.5	• Soil is immediately below leach line • (ml) - Clayey silt, yellow brown, medium plasticity, medium toughness, medium dilatancy, 65-70% silt, 30-35% clay	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/06/96	T1, 17 ft S of N end of T1	LEHR-S-390	7	• Soil is 2.5 ft below S-389 • (cl) - Silty clay, yellow brown, medium toughness, medium to high plasticity, low dilatancy, 65-70% clay, 30-35% silt	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/06/96	T1, 17 ft S of N end of T1	LEHR-S-391	9.5	• Soil is 5 ft below S-389 • Soil is native • (cl) - Silty clay, dark brown, medium to high plasticity, medium toughness, low dilatancy, 65-70% clay, 30-35% silt	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/06/96	T2, 3 ft W of E end of T2	LEHR-S-392	2.5	• 2.5 ft below ground surface • (cl) - Silty clay, dark brown, moist, medium plasticity, medium to high toughness, low dilatancy; clay 75-880%, silt 20-25%	Discarded	
8/06/96	T2, 3 ft W of E end of T2	LEHR-S-393	5	• 2.5 ft below S-392 • (cl) - Silty clay, moist, yellow brown to dark brown, medium plasticity, medium to high toughness, low dilatancy, 75-80% clay, 20-25% silt	Discarded	
8/07/96	T2, 3 ft W of E end of T2	LEHR-S-394	10.5	• 8.5 ft below S-392 and 5 ft below S-393 • (cl) - Silty clay, moist, yellow brown to dark brown, medium plasticity, medium to high toughness, low dilatancy, 80-90% clay, 10-15% silt	Discarded	
8/07/96	T2, 4 ft W of E end of T2	LEHR-S-395	13	• 11 ft below S-392, 7.5 ft below S-393, and 2.5 ft below S-394 • (cl) - Clay, moist, yellow brown, high plasticity, high toughness, no dilatancy, 100% clay (fat)	Discarded	
8/07/96	T2, 23 ft W of E end of T2	LEHR-S-396	5	• (cl) - Silty clay, moist, yellow brown, medium toughness, low dilatancy, medium plasticity, low to medium dry strength, 80-85% clay, 15-20% silt	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/07/96	T2, 23 ft W of E end of T2	LEHR-S-397	5	• (cl) - Silty clay, moist, yellow brown, medium toughness, low dilatancy, medium plasticity low to medium dry strength; 80-85% clay, 15-20% silt	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/07/96	T2, 17 ft W of E end of T2	LEHR-S-398	10	• (ml) - Clayey silt, brown, stiff, slightly moist, low to medium plasticity, 20% clay, 70% silt • 5 ft below S-396	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/07/96	T2, 17 ft W of E end of T2	LEHR-S-399 LEHR-S-400 (FD)	13	• (ml) - Silt with clay, brown, slightly moist, stiff, 10% clay 80% silt, low plasticity • Samples are 8 ft below S-396 and 3 ft below S-398	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/07/96	T2, 23 ft W of E end of T2	LEHR-S-401	10	• (ml) - Clayey silt, brown to yellow brown, stiff, medium plasticity, slightly moist, 20% clay, 70% silt • Sample is 5 ft below S-397	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/07/96	T2, 23 ft W of E end of T2	LEHR-S-402	13	• (ml) - Silt with clay, brown, slightly moist, stiff, low plasticity, 10% clay, 10% fine sand • Sample is 8 ft below S-397 and 3 ft below S-401	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/08/96	T2, 30 ft W of E end of T2	LEHR-S-403	5	• (cl) - Silty clay, dark yellow brown, moist, medium-high plasticity, medium dry strength, 85-90% clay, 10-15% silt	Discarded	
8/08/96	T2, 30 ft W of E end of T2	LEHR-S-404	10.5	• Sample is 5.5 ft below S-403 • (cl) - Silty clay, 80-85% clay, 15-20% silt	Discarded	

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/08/96	T2, 30 ft W of E end of T2	LEHR-S-405	13	• Sample is 8 ft below S-403 and below 2.5 ft S-404 • (cl) - Silty clay, 80-85% clay, 15-20% silt	Discarded	
8/08/96	T3, 5.5 ft S of N end of T3	LEHR-S-406	6	• (ch) - Dark brown, high plasticity, high toughness, medium dry strength, low dilatancy, 100% clay	Discarded	
8/08/96	T3, 15.5 ft S of N end of T3	LEHR-S-407	6	• (ch) - Dark brown, high plasticity, high toughness, medium dry strength, low dilatancy, 100% clay	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/09/96	T3, 5.5 ft S of N end of T3	LEHR-S-408	10	• (ml) - Clayey silt, brown, moderately moist, stiff, low to moderate plasticity, 20% clay, 10% fine sand	Discarded	
8/09/96	T3, 15.5 ft S of N end of T3	LEHR-S-409 LEHR-S-410 (FD)	10	• (ml) - Clayey silt, brown, moderately moist, stiff, low to medium plasticity, 20% clay, 10% fine sand	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/09/96	T3, 5.5 ft S of N end of T3	LEHR-S-411	13	• (cl) - Silty clay, brown, moderately moist, stiff, medium plasticity, 30% clay, 70% silt	Discarded	
8/09/96	T3, 15 ft S of N end of T3	LEHR-S-412	13	• (cl) - Silty clay, brown, moderately moist, stiff, medium plasticity, 30-35% clay, 65% silt	Partial suite of radionuclides[c] Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/12/96	T5, Immediately below E side of Ra distribution box	LEHR-S-413	6	• Soil is from immediately below Ra distribution box on East side • (ml) - Silt	Discarded	

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/12/96	T5, E side of Ra distribution box	LEHR-S-414 LEHR-S-415 (FD)	8.5	• Soil is from 2.5 ft below S-413, this places its origin to about 2.75 ft below E side of distribution box bottom • (gm) - Silty gravel, brown, moist to dry, loose, max particle size 0.5”, predominantly 0.125 to 0.25 in, rounded, 60-65% gravel, 35-40% silt (no plasticity to silt), 5% clay (medium plastic) • Gravel is backfill to domestic septic tank server pipe, and Ra distribution box	Discarded	
8/12/96	T5, E side of Ra distribution box	LEHR-S-416	11.5	• Deepest sample in vertical set from E side of box • Sample is from 5.5 ft below S-414 and 3 ft below S-415	Discarded	
8/12/96	T5, under broken pipe “T”	LEHR-S-417	6.5	• (ml) - Clayey silt, brown, moderately moist, stiff, low to medium plasticity, 20-30% clay, trace fine sand • Sample is from immediately below broken pipe, pipe is for domestic septic tank effluent and “tees” to Ra distribution box influent	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/12/96	T5, under broken pipe “T”	LEHR-S-418	9	• (ml) - clayey silt, brown, moderately moist, stiff, medium plasticity, 25-30% clay, trace fine sand • Sample is 2.5 ft below S-417	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/12/96	T5, under broken pipe “T”	LEHR-S-419	11.5	• (cl) - Clay, brown, slightly moist, stiff, medium plasticity, 30-40% clay, 50-60% silt • Sample is 5 ft below S-417 and 2.5 ft below S-418	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/12/96	T5, N side of Ra distribution box	LEHR-S-420	6	• (cl) - Clay, brown, moderately moist, stiff, medium to high plasticity, 40-50% clay, 50% silt • Sample is immediately below Ra distribution box's N side	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/12/96	T5, N side of Ra distribution box	LEHR-S-421	8.5	• (ml) - Clayey silt, brown, moderately moist, stiff, low plasticity, 20-30% clay, 70-80% silt • Sample is 2.5 ft below S-420	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/12/96	T4, Immediately below leach line; 7.5 ft E of W end of T4	LEHR-S-422	9.5	• Sample is immediately below leach line • (cl) - Silty clay, brown to yellow brown, slightly moist, brittle dry strength, low to medium plasticity, low to medium toughness, low to medium dilatancy • Soil is native	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/13/96	T4, Immediately below leach line; 7.5 ft E of W end of T4	LEHR-S-423	11	• Sample is 1.5 ft below S-422 • (cl) - Silty clay, brown to yellow brown, slightly moist, little moist, low dry strength, low to medium plasticity, low to medium toughness, low to medium dilatancy • Soil is native	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/13/96	T4, Immediately below leach line; 7.5 ft E of W end of T4	LEHR-S-424 LEHR-S-425 (FD)	14	• Sample is 4.5 ft below S-422 and 3 ft below S-423 • (cl) - Silty clay, same as S-423	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/13/96	T5, N side of Ra distribution box	LEHR-S-426	11	• Sample is 5 feet below S-420 and 2.5 ft below S-421 • (ml) - Clayey silt, same as S-421	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/13/96	Ra leach system distribution box	LEHR-S-427	6	• Sample is sediment from bottom of Ra leach system distribution box	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra leach system SB-1; 22.5 ft NW of T5	LEHR-S-435	8 - 10	• (gp) - Poorly graded gravel, 2” drain rock, rounded • Immediately below leach line at northern-most Ra dry well	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra leach system SB-1; 22.5 ft NW of T5	LEHR-S-436	10 - 12	• (cl) - Dark brown, silty clay, high plasticity, medium to high toughness, high dry strength, dry and stiff • Immediately below S-435.	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra leach system SB-1; 22.5 ft NW of T5	LEHR-S-437	18 - 20	• (cl) - Yellow brown clay, very tough and very moldable, moist, low dilatancy, low stiffness, “like modeling clay”	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra leach system SB-1; 22.5 ft NW of T5	LEHR-S-438	25 - 27	• (cl) - Yellow brown clay, very tough, medium stiffness, low dilatancy, low plasticity, mottled with organics (much stiffer than S-437, not moldable)	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/20/96	Ra leach system SB-1; 22.5 ft NW of T5	LEHR-S-439	29 - 30	• (cl) - Yellow brown clay, very tough, medium to high stiffness, low dilatancy, low plasticity, mottled with organics, slight moisture • Bottom of hole	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-440	6 - 8	• (gw) - Cobbles and gravel	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-441	8 - 10	• (cl) -Silty clay, dark brown, high plasticity, medium stiffness, medium to high toughness, low dilatancy, medium dry strength	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-442	15 - 17	• (gc) - Clayey gravel, dark brown to black, 45-50% clay, gravel 0.5” diameter, rounded, clay: high plasticity, medium stiffness, medium to high tough, low dilatancy, medium dry strength	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-443	17 - 19	• (cl) - Clay, dark yellow brown, very tough, low dilatancy, medium to high dry strength, medium stiffness, slightly moist	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-444	20 - 22	• (gc) - Clayey gravel, yellow brown clay matrix, gravel 4 mm to 1.5 cm, angular	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-445	22 - 24	• (ch) - Organic clay, dark black, high toughness, low dilatancy, medium to high strength	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-2, 11.25 ft W of T5	LEHR-S-446	28 - 30	• (ch) - Fat, black organic clay, high toughness, low dilatancy, medium to high strength	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-3; 52.5 ft S of T5	LEHR-S-447	7 - 10	• (gp) - Leach field cobbles, rounded cobbles in sand matrix	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-3; 52.5 ft S of T5	LEHR-S-448	12 - 14	• (cl) - Clay, dark yellow brown to yellow brown, medium toughness, high dry strength, low dilatancy, medium stiffness, 3-5% organic matter, organic matter size = 3-4 mm	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-3; 52.5 ft S of T5	LEHR-S-449	20 - 22	• (cl) - Clay, dark yellow brown to yellow brown, medium toughness, high dry strength, low dilatancy, medium stiffness, 12 - 14% organic matter, organic matter size = 1mm	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-3; 52.5 ft S of T5	LEHR-S-450	25 - 27	• (cl) - Clay, dark yellow brown to yellow brown - same as S-449 with increased organic matter; organic matter size = 1 - 5 mm	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/20/96	Ra/Sr leach system, SB-3; 52.5 ft S of T5	LEHR-S-451	29 - 31	• (cl) - Clay, dark yellow brown to yellow brown, same as S-449 and S-450	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-4; 120 ft S of T4	LEHR-S-452	10 - 12	• (gp) - Leach field gravel, to 2”, rounded	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/20/96	Ra/Sr leach system, SB-4; 120 ft S of T4	LEHR-S-453	12 - 14	• (cl) - Clay, yellow brown, silty clay, small roots, low dry strength, medium to low dilatancy, low toughness, low plasticity	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-4; 120 ft S of T4	LEHR-S-454 LEHR-S-455 (FD)	20 - 22	• (cl) - Clay, yellow brown, silty clay, small roots, 10-15% silt, trace of gravel, low dry strength, medium to low dilatancy, low toughness, low plasticity	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-4; 120 ft S of T4	LEHR-S-456	25 - 27	• (cl) - Clay, yellow brown	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/21/96	Ra/Sr leach system, SB-4; 120 ft S of T4	LEHR-S-457	29 - 31	• (cl) - Clay, yellow brown clay, low dry strength, medium to low dilatancy, low toughness, medium plasticity	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-5; 22.5 ft SW of T5	LEHR-S-458	6.5 - 8	• (gp) - Gravel, 2” diameter, drain rock	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-5; 22.5 ft SW of T5	LEHR-S-459	13 - 15	• (cl) - Dark yellow brown clay, medium to high toughness, low dilatancy, medium plasticity, moist, some mottling due to organics	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-5; 22.5 ft SW of T5	LEHR-S-460	19 - 20	• (cl) - Clay dark yellow brown, medium plasticity, medium to high toughness, increasing mottled organics, low dilatancy, moist	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/21/96	Ra/Sr leach system, SB-5; 22.5 ft SW of T5	LEHR-S-461 LEHR-S-462 (FD)	23 - 25	• (cl) - Clay, dark yellow brown (same as S-460), medium to high toughness, low dilatancy, medium plasticity, moist, some mottling due to organics	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/21/96	Ra/Sr leach system, SB-5; 22.5 ft SW of T5	LEHR-S-463	28.5 - 30	• (ch) - Fat clay, dark black, highly organic clay, mottled with dark yellow brown inorganic clay inclusions	Partial suite of radionuclides[c] Carbon-14 Gamma Emitters Hexavalent Chromium Metals BTEX	VOCs SVOCs Organochlorine pesticides and PCBs Formaldehyde Nitrate Anions pH
8/27/96	67.5 ft NW of SB-2	LEHR-S-496	0.83	• Surface soil sample	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/27/96	15 ft W of SB-1 & SB-2, between SB-1 & SB-2	LEHR-S-497	0.83	• Surface soil sample	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
8/27/96	22.5 ft W of SB-5	LEHR-S-498	0.83	• Surface soil sample	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted	
8/27/96	15 ft W of SB-4	LEHR-S-499	0.83	• Surface soil sample	Partial suite of radionuclides[c] Gamma Emitters Hexavalent Chromium Total Chromium	VOCs SVOCs Nitrate Anions pH
Dog Pens						
6/24/96	E-1 (E-1)	LEHR-S-321		• (sm), (cl), (gw) - brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	G-5 (F-5)	LEHR-S-322		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	H-16 (F-17)	LEHR-S-323		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	M-1 (I-1)	LEHR-S-324		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	N-5 (I-28)	LEHR-S-325		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	N-16 (I-17)	LEHR-S-326		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	O-16 (J-16)	LEHR-S-327		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	P-13 (J-20)	LEHR-S-328		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
6/24/96	P-8 (J-25)	LEHR-S-329		• (sm), (cl), (gw) - solid brown dirt; mixture of soil types	Partial suite of radionuclides[d]	
7/31/96	A-15 (C-15)	LEHR-S-363		• Brown soil	Partial suite of radionuclides[d]	

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted
7/31/96	C-15 (D-15)	LEHR-S-364	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	I-13 (G-13)	LEHR-S-365	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	J-9 (G-24)	LEHR-S-366	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	K-6 (H-6)	LEHR-S-367	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	K-9 (H-9)	LEHR-S-368	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	M-16 (I-16)	LEHR-S-369	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	O-1 (J-1)	LEHR-S-370	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	P-1 (J-32)	LEHR-S-371	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	Q-6 (M-6)	LEHR-S-372	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	R-2 (M-31)	LEHR-S-373	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	R-11 (M-22)	LEHR-S-374	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	T-16 (L-16)	LEHR-S-375	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	U-8 (K-8)	LEHR-S-376	•	Brown soil	Partial suite of radionuclides[d]
7/31/96	V-4 (K-29)	LEHR-S-377	•	Brown soil	Partial suite of radionuclides[d]

Table 1. Sample Locations and Field Observations, LEHR Facility, Davis, California

Date	Sample Location	Sample ID	Sample Depth (ft)	Field Observation	Analyses Conducted

Notes:

[a] Southwest Trenches Radionuclide Full Suite: Americium-241, Carbon-14; Actinium-228, Bismuth-212, Bismuth-214, Cobalt-60, Cesium-137, Potassium-40, Lead-210, Lead-212, Lead-214, Radium-223, Radium-226 (gamma), Thorium-234, Thallium-208, Uranium-235 (gamma), gross alpha, gross beta, Plutonium-241, Radium-226, Strontium-89/90, Thorium-228, Thorium-230, Thorim-232, Tritium (H-3), Uranium-233/4, Uranium-235, Uranium-238.

[b] Southwest Trenches Radionuclide Partial Suite: Carbon-14; Actinium-228, Bismuth-212, Bismuth-214, Cobalt-60, Cesium-137, Potassium-40, Lead-210, Lead-212, Lead-214, Radium-223, Radium-226 (gamma), Thorium-234, Thallium-208, Uranium-235 (gamma), gross alpha, gross beta, Radium-226, Strontium-89/90, Tritium (H-3).

[c] Radium-Strontium Treatment Systems Radionuclide Partial Suite: Americium-241, gross alpha, gross beta, Plutonium-241, Radium-226, Strontium-89/90, Tritium (H-3).

[d] Dog Pens Radionuclide Partial Suite: Actinium-228, Bismuth-212, Bismuth-214, Cobalt-60, Cesium-137, Potassium-40, Lead-210, Lead-212, Lead-214, Radium-223, Radium-226 (gamma), Thorium-234, Thallium-208, Uranium-235 (gamma), Strontium-89/90.

[e] Southwest Trenches Anions: Nitrate, Sulfate, Chloride, Sulfide

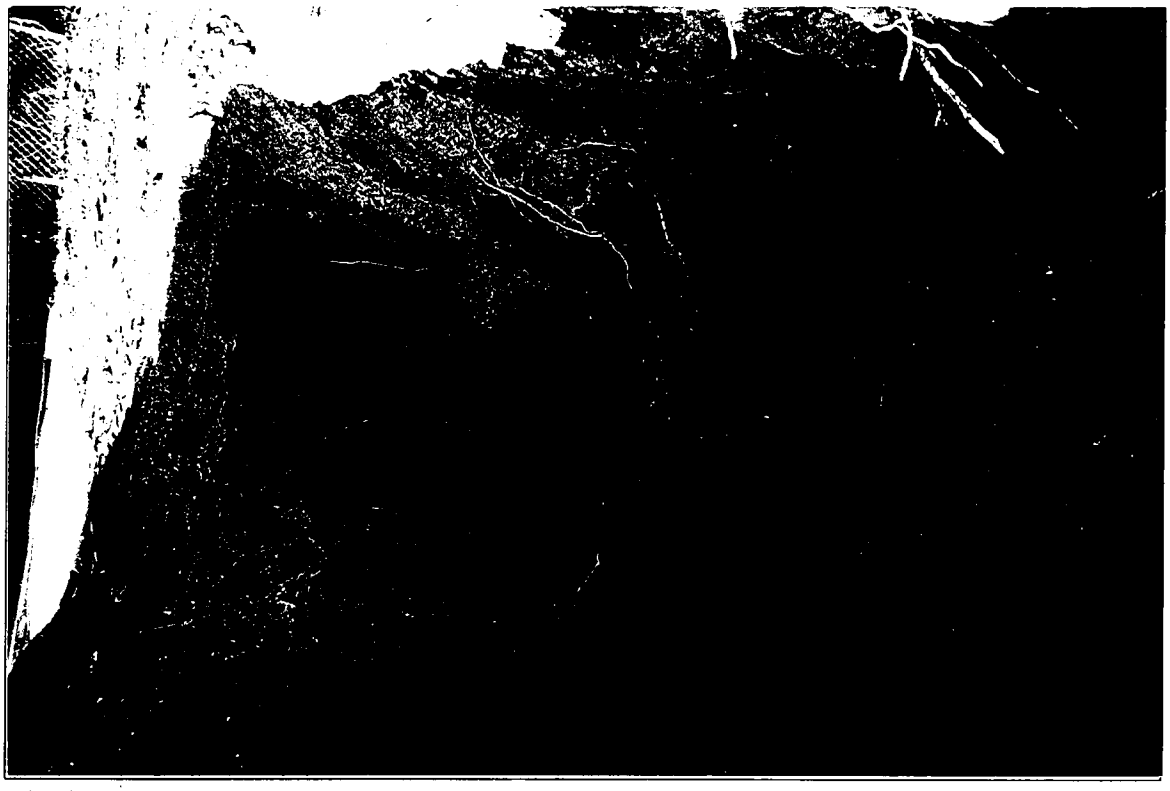
[f] Southwest Trenches Miscellaneous Parameters: Alkalinity, Conductivity, Ammonia Nitrogen, Total Nitrogen, Total Organic Carbon (TOC).

APPENDIX E

PHOTOGRAPHS OF LFI FIELD ACTIVITIES

7/26/96, Southwest Trenches
Trench T- 4: Disposal trench exposed by excavation of Tench T-4. View is north and also shows native soils excavated to a depth of 8 ft.

7/24/96, Southwest Trenches
Trench T-2: Recovered bag of sludge.



7/31/96, Southwest Trenches
Trench T- 6: termination point 40 feet south of intersection of Trenches T-2 and T-6. View is south. Deeper disposal trench is oriented north - south and is the trench which forms intersection with Trench T-6. Shallower disposal trench intersects the T-6 disposal trench at an oblique angle.

7/26/96, Southwest Trenches
Trench T-4: Disposal trench gravel sampled from Trench T-4.

7/31/96, Southwest Trenches

Trench T- 5: Intersected disposal trench. Disposal trench is about 1 foot below surface and measures 2 1/4 feet by 14 inches. View is north.

7/29/96, Southwest Trenches

Location T-9: Caliche cemented gravel proved to be the cause of radioactivity identified by radiation survey.

7/30/96, Southwest Trenches
Trench T- 6: Recovered sump pump is wrapped in wire mesh and plastic.

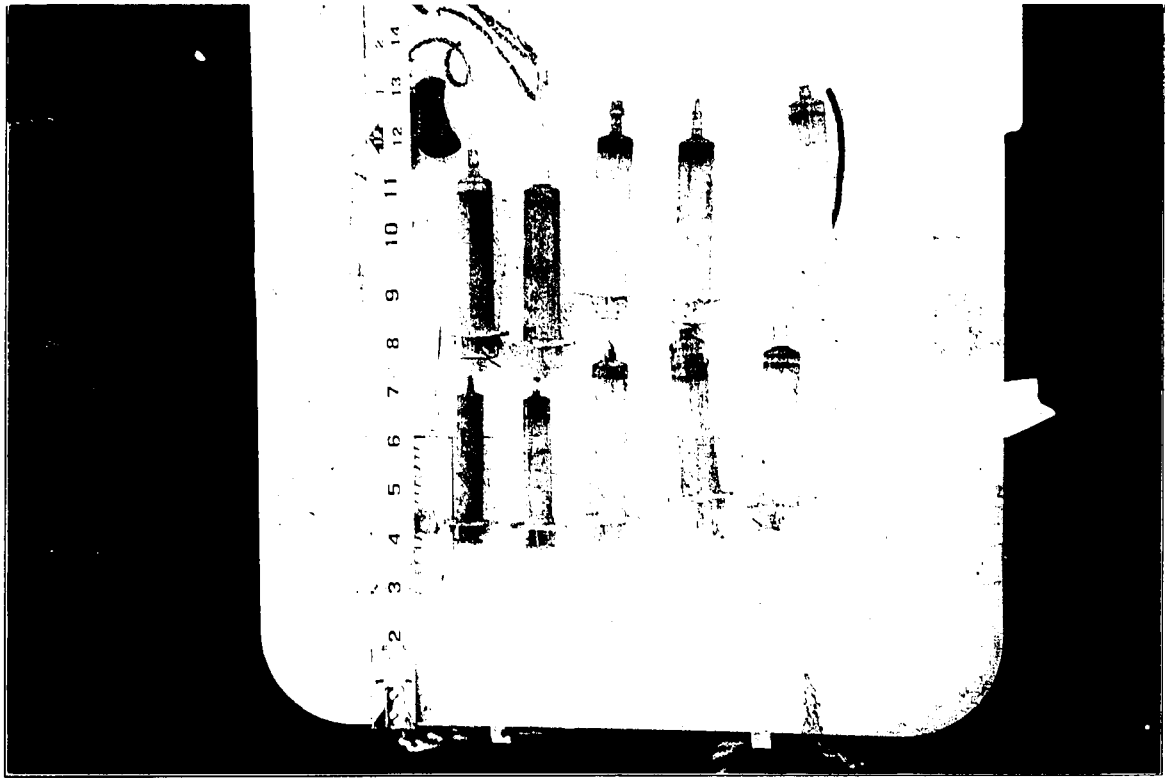
7/31/96, Southwest Trenches
Location T-6: Disposal wastes recovered from pit between 22 and 40 feet south of Trench T-6

8/02/96, Southwest Trenches

Trench T- 3: Disposal pit/trench gravel intersected by Trench T-3. Dimension of disposal pit/trench: 2.5 ft width by 5.5 ft depth. Depth to top of gravel is 2.5 ft bgs. Pit/trench contained gravel, syringes, and bones. View is south. Note: dense vegetation roots.

8/02/96, Southwest Trenches

Trench T-3: Plastic bottles recovered from shallow burial at west end of Trench T-3.



8/02/96, Southwest Trenches

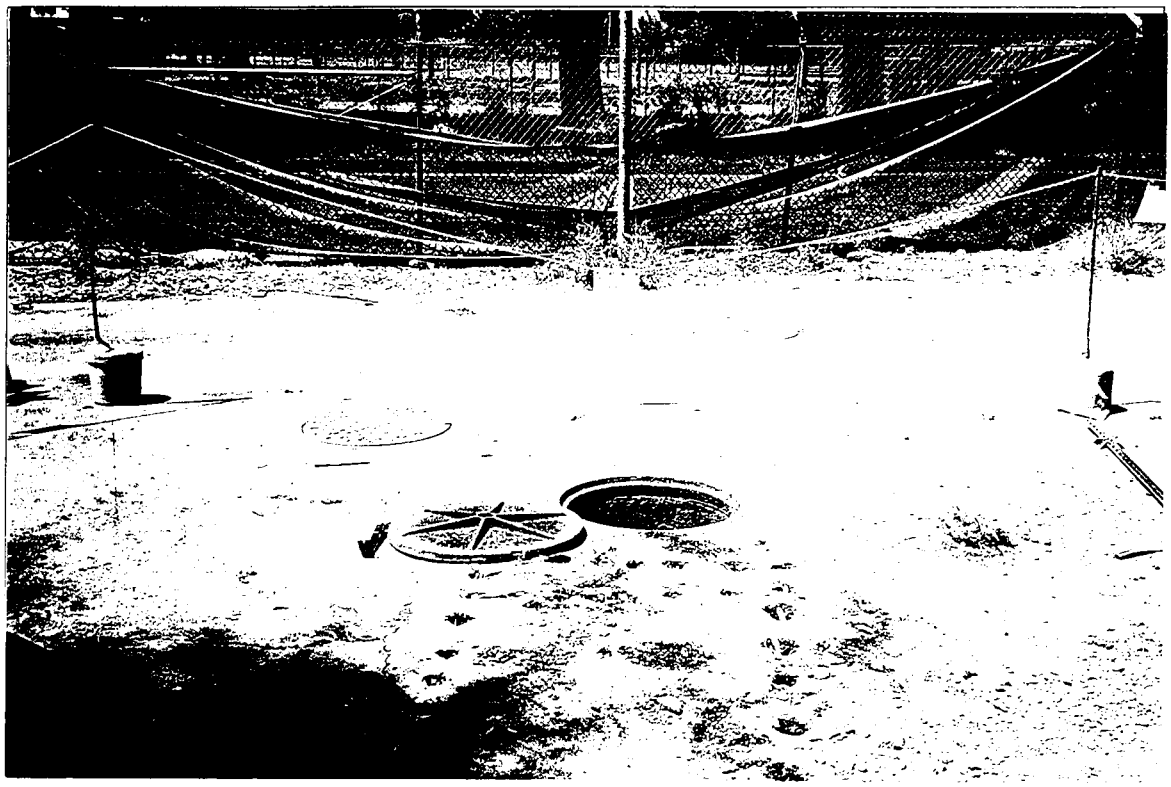
Trench T- 3: Syringes and bone recovered from intersected disposal pit/trench at east end of Trench T-3.

7/24/96, Southwest Trenches

Trench T-2: Shallow burial 23 feet from west end. Depth to gravel is 2 to 2.5 ft bgs.

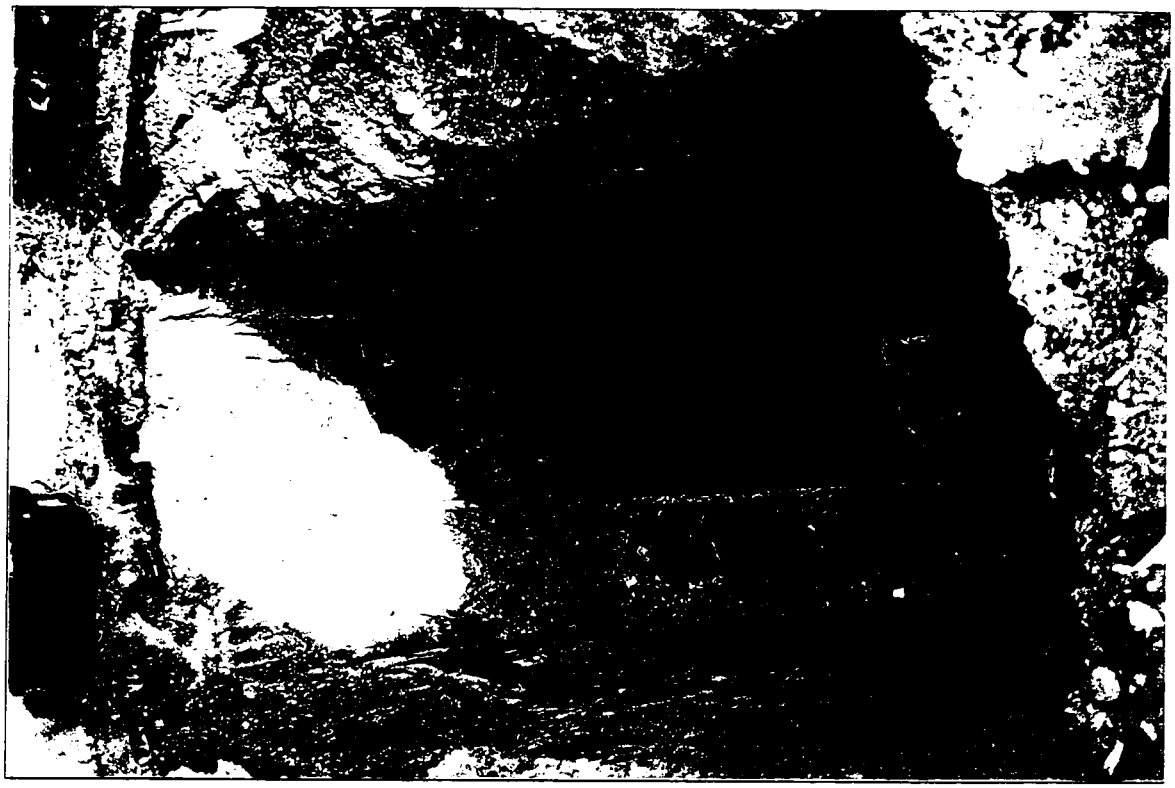
7/24/96, Southwest Trenches

Trench T- 2: Intersected disposal trench that runs north-south. View is north. Top of trench is 3 feet bgs. Arrow indicates recovered bag of sludge. Instrument is No. 1 probe.



Ra/Sr Leach System 8/9/96
Open manhole is lid to radium distribution box. It is at the west end of Trench T-5. Manhole cover to the southwest is lid to present sanitary sewer manway and manhole cover to the west is lid to the middle Ra dry well.

Ra/Sr Leach System 8/13/96
Radium Leach System: Sediment sample collection from the bottom of the radium distribution box. Sediment was loose and dry. Thickness of sediment on the bottom of the distribution box at time of sample collection was about 4 inches.



Ra/Sr Leach System 8/9/96

Trench T-5: View is west. A = Ra tank effluent line just short of connection with the radium distribution box. B = Domestic septic tank #2. C = Domestic septic tank effluent which tees into radium tanks effluent lines.

Ra/Sr Leach System 8/9/96

Trench T-5: A = Radium tank effluent line leadingto Radium distribution box. Line is 4 in. cast iron and is 5.5 ft bgs. B = Domestic septic tank #2. C = Domestic septic tank #2 effluent line that ties into radium tank effluent line. Effluent flow from domestic tank #2 is south into radium distribution box inlet and then west into box. Radium distribution box discharges to all three radium dry wells. Arrow indicates approximate location of union between the 2 lines. The septic tank effluent line was severely corroded at the tee. Sample set LEHR-S-417, 418, and 419 were collected below this point.

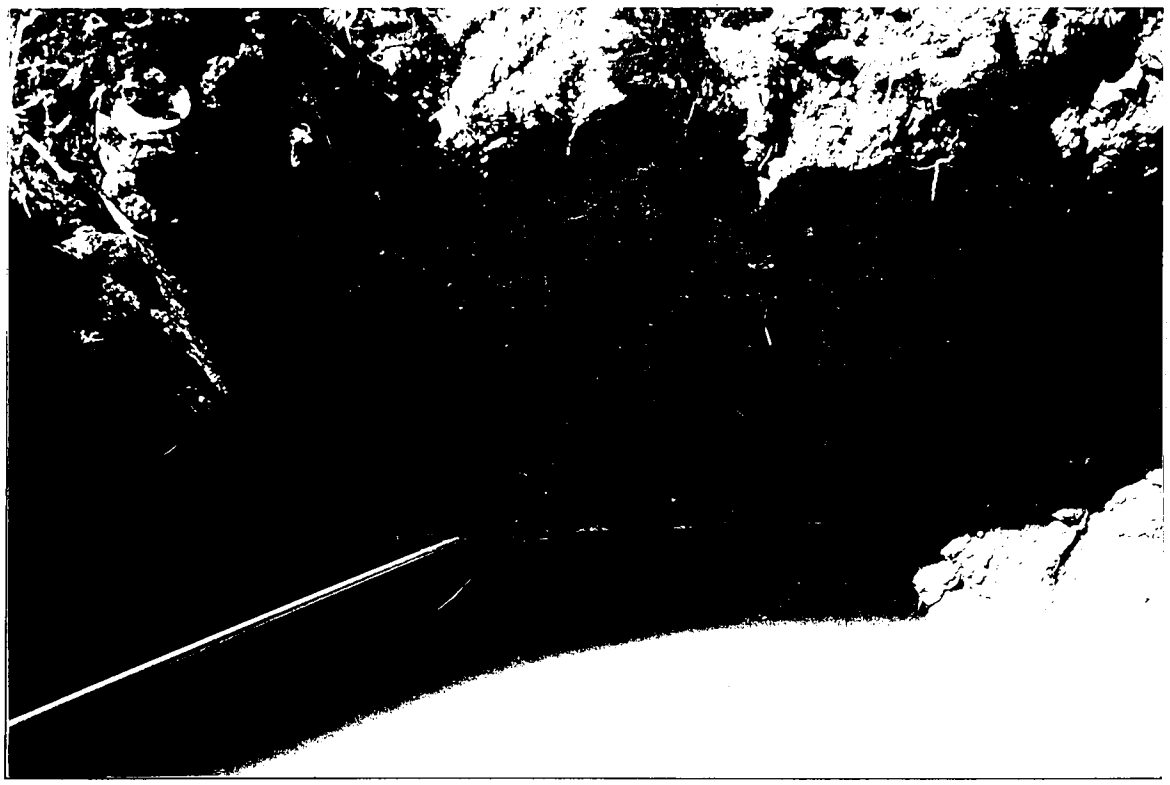
Ra/Sr Leach System 8/9/96

Trench T-4: View is south. A = Gravel and sand used to backfill leach line trench upon construction. B = Clay liner placed between backfill and leach line. C = Top of leach line, 6 ft bgs.

Ra/Sr Leach System 8/12/96

Trench T-4: Sample collection point for LEHR-S-424 and LEHR-S-425 within Trench T-4. Sample depth is 14 ft bgs.

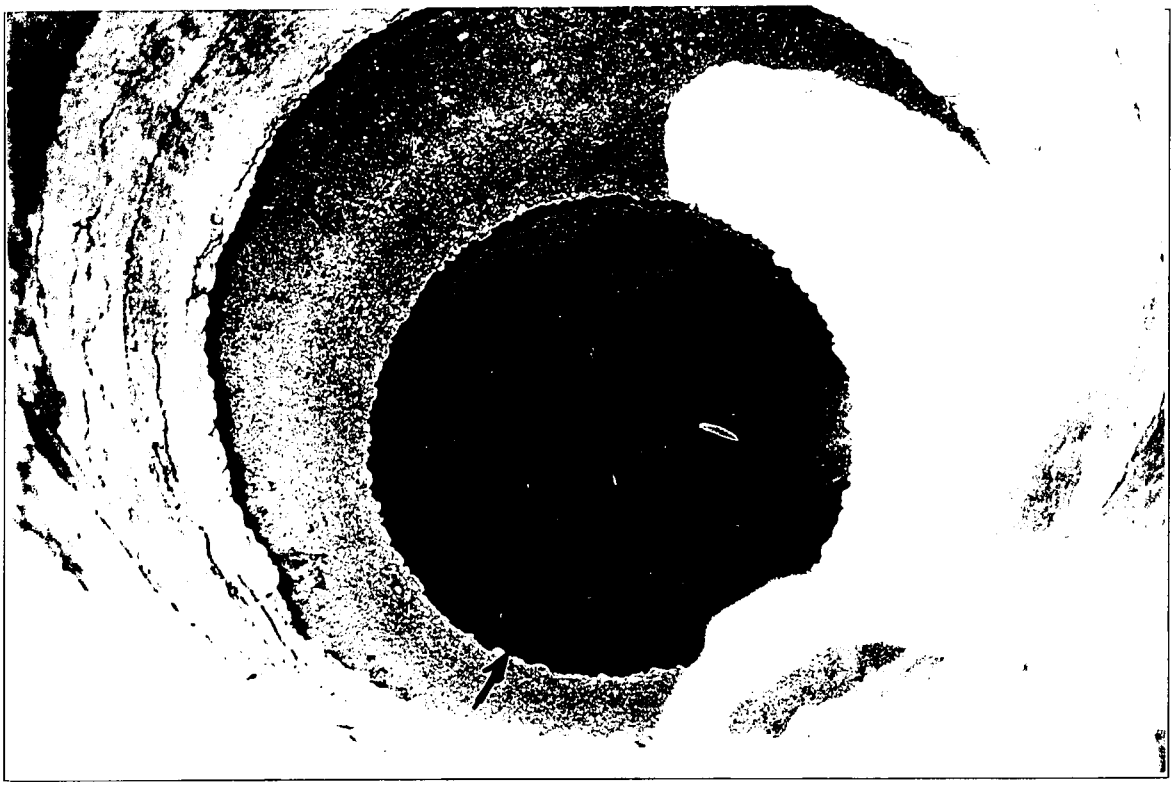
Ra/Sr Leach System 8/7/96
Trench T-2: Sewer pipe clean-out for radium septic tanks is located 16 feet from east end of Trench T-2. Initial excavating activities unearthed the pipe clean-out. View is north.



Ra/Sr Leach System 8/7/96
Trench T-2: One-half inch diameter pointer shows corroded opening in radium tank effluent pipe. A vertical sample set was collected below the hole for laboratory testing (LEHR-S-396, 398, and 399). Depth to corroded pipe is about 7 ft bgs.

Ra/Sr Leach System 8/6/96
Trench T-1: Completed backfill Trench T-1. View is north. Orange painted lines demarcate leach lines.

Ra/Sr Leach System 8/9/96
Trench T-1: Leach line perforated pipe in east sidewall of trench. Leach line located 7 feet from north end of Trench T-1. Depth to perforated pipe is 4 feet. Leach line diameter including drain rock is 2 feet.



Ra/Sr Leach System 8/9/96

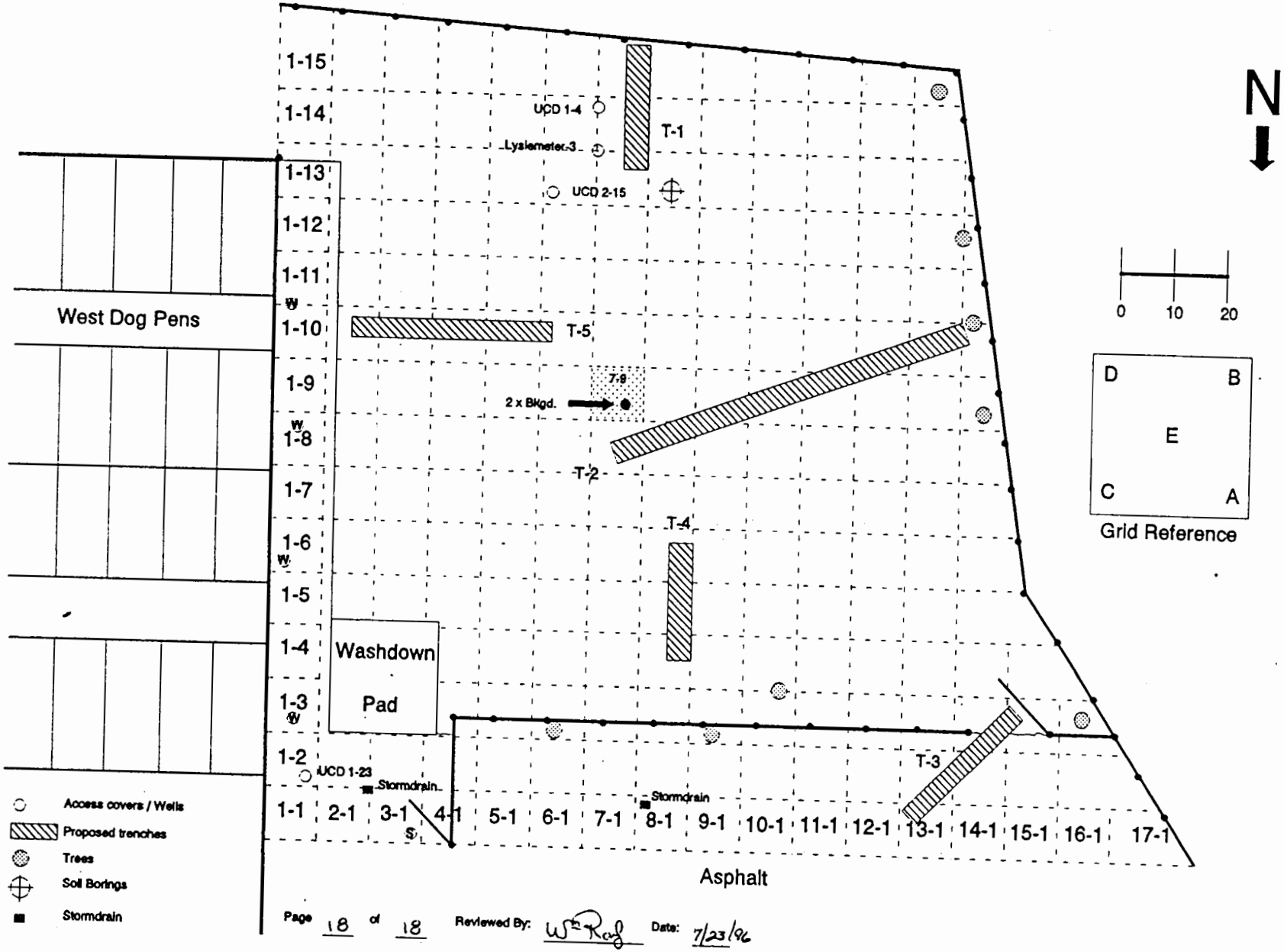
View into Radium leach system distribution box. Arrow indicates location of 4 inch cast iron influent leading from the radium tanks. The terra cotta pipes are box discharges that deliver effluent to each of the three Radium dry wells. Debris on bottom of box was sampled for laboratory testing (LEHR-S-427). Box depth is 6 ft. Box width is 2.5 ft. Box construction material is concrete.

8/01/96, Southwest Trenches

Trench T- 6: View is north near termination point of Trench T-6. Arrows indicate location of intersected east - west disposal trench and disposal trench extending beyond Trench T-6.

7/31/96, Southwest Trenches

Trench T-3. Disposal pit/trench gravel intersected by Trench T-3. Top of gravel is 2.5 ft. bgs. View is south.



Page 18 of 18 Reviewed By: W. Reid Date: 7/23/96

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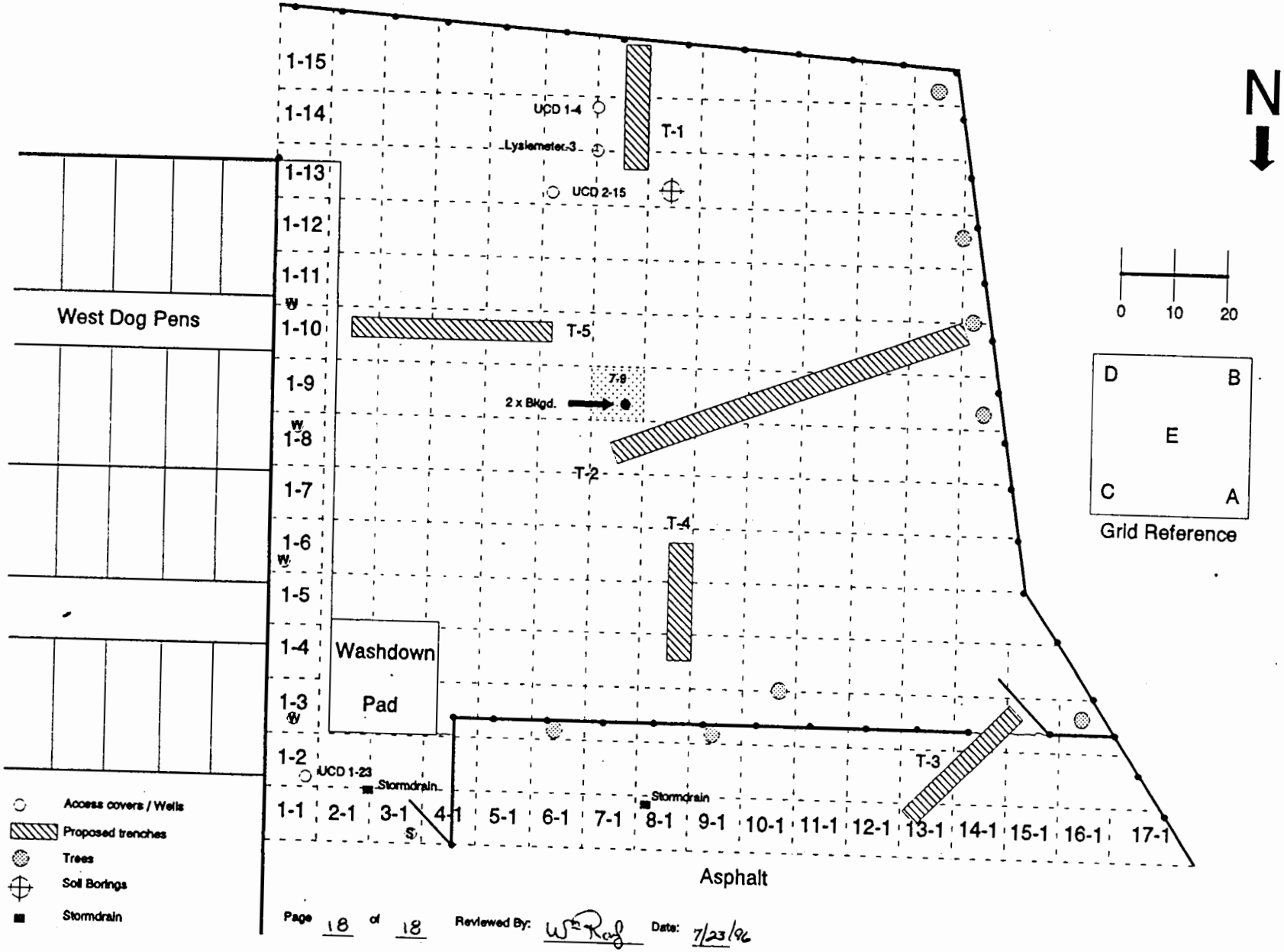
To Weiss Assoc.
Steve Long

APPENDIX F

SURFACE RADIATION SURVEY RAW DATA SHEETS



Page 18 of 18 Reviewed By: W. Reid Date: 7/23/96

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To Weiss Assoc.
Steve Long

INTERNATIONAL TECHNOLOGY CORPORATION

COPY

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-16-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2462	139061	Cs-137 @ 1 μCi	0392-0502

SURVEY DATA

Grid Location Reference	Grid # 1-1 (ccpm)	Grid # 1-2 (ccpm)	Grid # 1-3 (ccpm)	Grid # 1-4 (ccpm)	Grid # 1-5 (ccpm)	Grid # 1-6 (ccpm)	Grid # 1-7 (ccpm)	Grid # 1-8 (ccpm)
A	~~27~~ 306	NOA/BKGD	27	160	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	220	115	117	247	347	221	106	82
C	14	50	110	NOA/BKGD	NOA/BKGD	22	NOA/BKGD	NOA/BKGD
D	146	56	309	544	208	105	NOA/BKGD	NOA/BKGD
E	101	122	59	95	93	189	10	NOA/BKGD

Grid Location Reference	Grid # 1-9 (ccpm)	Grid # 1-10 (ccpm)	Grid # 1-11 (ccpm)	Grid # 1-12 (ccpm)	Grid # 1-13 (ccpm)	Grid # 1-14 (ccpm)	Grid # 1-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	10	N/A
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	76	21	
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	32	967	
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	523	
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	41	57	

Notes: READINGS ON CONTACT WITH ASPHALT SURFACE

 Reviewed By: [illegible] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D Brown / [illegible] Date: 7-16-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

	Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
7-16-96	Ludlum 2221/44-10	117370	118371	9/8/96	γ	2462 / 3147	138601 / 138601	Cs-137 @ 1 μCi	0392-0502
7-17-96	Ludlum 2221/44-10	117370	118371	9/8/96	γ	2432 / 3888	138649 / 138649	Cs-137 @ 1 μCi	0392-0502

Asphalt / Soil

SURVEY DATA

Grid Location Reference	Grid # 2-1 (ccpm)	Grid # 2-2 (ccpm)	Grid # 2-3 (ccpm)	Grid # 2-4 (ccpm)	Grid # 2-5 (ccpm)	Grid # 2-6 (ccpm)	Grid # 2-7 (ccpm)	Grid # 2-8 (ccpm)
A	NOA/BKGD	65	NOA/BKGD	182	540	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	8	NOA/BKGD	0	528	~~1179~~ 444 (7-16-96)	NOA/BKGD	NOA/BKGD	26
C	NOA/BKGD	NOA/BKGD	148	669	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	323	1044	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
E	NOA/BKGD	NOA/BKGD	175	1091	~~709~~ 1349 (7-16-96)	NOA/BKGD	NOA/BKGD	NOA/BKGD
					1349			

Grid Location Reference	Grid # 2-9 (ccpm)	Grid # 2-10 (ccpm)	Grid # 2-11 (ccpm)	Grid # 2-12 (ccpm)	Grid # 2-13 (ccpm)	Grid # 2-14 (ccpm)	Grid # 2-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	13	NOA/BKGD	42	
B	NOA/BKGD	NOA/BKGD	30	22	NOA/BKGD	NOA/BKGD	NOA/BKGD	N
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	46	NOA/BKGD	177	A
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	33	858	
E	10	NOA/BKGD	16	35	NOA/BKGD	NOA/BKGD	NOA/BKGD	

Notes: GRIDS 2-1 to 2-4 SURFACE IS ASPHALT & CONCRETE, BKGD & SOURCE RESPONSE IS LISTED FIRST. GRIDS ~~to~~ (7-16-96) 2-5 to 2-15 ARE COMPOSED OF SOIL / GRANITE, BKGD & SOURCE RESPONSE INFO IS LISTED 2ND. ABOVE. ALL READINGS ON CONTACT WITH SURFACE.

 Reviewed By: W. Ranf Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / DK Date: 7-17-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2432/3188	138699	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 3-1 (ccpm)	Grid # 3-2 (ccpm)	Grid # 3-3 (ccpm)	Grid # 3-4 (ccpm)	Grid # 3-5 (ccpm)	Grid # 3-6 (ccpm)	Grid # 3-7 (ccpm)	Grid # 3-8 (ccpm)
A	860	62	66	532	702	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	1357	104	239	1197	536	6	NOA/BKGD	NOA/BKGD
C	274	5	432	1226	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
D	NOA/BKGD	346	387	1302	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
E	321	106	521	621	343	NOA/BKGD	NOA/BKGD	NOA/BKGD

Grid Location Reference	Grid # 3-9 (ccpm)	Grid # 3-10 (ccpm)	Grid # 3-11 (ccpm)	Grid # 3-12 (ccpm)	Grid # 3-13 (ccpm)	Grid # 3-14 (ccpm)	Grid # 3-15 (ccpm)	Grid # (ccpm)
A	4	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	
B	NOA/BKGD	NOA/BKGD	16	NOA/BKGD	NOA/BKGD	NOA/BKGD	16	N/A
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	846	
D	27	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	106	127	
E	NOA/BKGD	31	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	

Notes: GRIDS 3-1 to 3-4 ARE COMPOSED OF ASPHALT & CONCRETE, THE REMAINING GRIDS ARE COMPOSED OF GRANITE / SOIL. BKGD & SOURCE RESPONSE INFO ABOVE IS LISTED AS ASPHALT BKGD FIRST & SOIL SECOND.

 Reviewed By: Wm Raf Date: 7/25/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / DK Date: 7-17-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2432 / 3188	138699	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 4-1 (ccpm)	Grid # 4-2 (ccpm)	Grid # 4-3 (ccpm)	Grid # 4-4 (ccpm)	Grid # 4-5 (ccpm)	Grid # 4-6 (ccpm)	Grid # 4-7 (ccpm)	Grid # 4-8 (ccpm)
A	973	NOA/BKGD	376	408	81	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	1030	NOA/BKGD	NOA/BKGD	27	37	58	NOA/BKGD	NOA/BKGD
C	NOA/BKGD	NOA/BKGD	186	125	NOA/BKGD	NOA/BKGD	26	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	107	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
E	NOA/BKGD	NOA/BKGD	69	254	69	NOA/BKGD	NOA/BKGD	NOA/BKGD

Grid Location Reference	Grid # 4-9 (ccpm)	Grid # 4-10 (ccpm)	Grid # 4-11 (ccpm)	Grid # 4-12 (ccpm)	Grid # 4-13 (ccpm)	Grid # 4-14 (ccpm)	Grid # 4-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	19	NOA/BKGD	NOA/BKGD	NOA/BKGD	27	
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	N
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	101	NOA/BKGD	A
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	87	36	
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	251	

Notes: GRIDS 4-1 to 4-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE COMPRISED OF SOIL – GRANITE.

 Reviewed By: [signature] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-17-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2432 / 3188	138699	Cs-137 @ 1 μCi	0392-0502
					ASPHALT / SOIL			

SURVEY DATA

Grid Location Reference	Grid # 5-1 (ccpm)	Grid # 5-2 (ccpm)	Grid # 5-3 (ccpm)	Grid # 5-4 (ccpm)	Grid # 5-5 (ccpm)	Grid # 5-6 (ccpm)	Grid # 5-7 (ccpm)	Grid # 5-8 (ccpm)
A	1031	NOA/BKGD	368	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	991	NOA/BKGD	66	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	111
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	27	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	26	114	NOA/BKGD	NOA/BKGD	NOA/BKGD
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	14	NOA/BKGD

Grid Location Reference	Grid # 5-9 (ccpm)	Grid # 5-10 (ccpm)	Grid # 5-11 (ccpm)	Grid # 5-12 (ccpm)	Grid # 5-13 (ccpm)	Grid # 5-14 (ccpm)	Grid # 5-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	144	180	
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	27	51	45	N
C	22	NOA/BKGD	77	NOA/BKGD	326	NOA/BKGD	559	A
D	36	40	NOA/BKGD	NOA/BKGD	316	NOA/BKGD	120	
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	228	38	~~879~~ 1133	

Notes: GRIDS 5-1 & 5-2 ARE COMPRISED OF ASPHALT. THE REMAINING GRIDS ARE SOIL / GRANITE. BKGD FOR ASPHALT IS LISTED FIRST FOLLOWED BY BKGD FOR SOIL.

 Reviewed By: [illegible] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: O. Brown / DM Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	234 / 2911	137941	Cs-137 @ 1 μCi	0392-0502

Asphalt / Soil

SURVEY DATA

Grid Location Reference	Grid # 6-1 (ccpm)	Grid # 6-2 (ccpm)	Grid # 6-3 (ccpm)	Grid # 6-4 (ccpm)	Grid # 6-5 (ccpm)	Grid # 6-6 (ccpm)	Grid # 6-7 (ccpm)	Grid # 6-8 (ccpm)
A	957	NOA/BKGD	NOA/BKGD	429	202	391	NOA/BKGD	NOA/BKGD
B	1079	NOA/BKGD	206	517	243	NOA/BKGD	132	25
C	NOA/BKGD	NOA/BKGD	407	348	145	NOA/BKGD	41	205
D	NOA/BKGD	NOA/BKGD	442	NOA/BKGD	NOA/BKGD	35	99	352
E	NOA/BKGD	NOA/BKGD	491	423	97	NOA/BKGD	177	153
								~~153~~

Grid Location Reference	Grid # 6-9 (ccpm)	Grid # 6-10 (ccpm)	Grid # 6-11 (ccpm)	Grid # 6-12 (ccpm)	Grid # 6-13 (ccpm)	Grid # 6-14 (ccpm)	Grid # 6-15 (ccpm)	Grid # (ccpm)
A	395	50	70	347	333	457	318	
B	296	459	275	265	351	424	539	N
C	265	162	242	270	599	155	478	A
D	543	357	312	278	352	469	238	
E	225	253	NOA/BKGD	208	313	119	338	

Notes: GRIDS 6-1 & 6-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL / GRAVEL

 Reviewed By: W. Ranf Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2311/2911	13794/	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 7-1 (ccpm)	Grid # 7-2 (ccpm)	Grid # 7-3 (ccpm)	Grid # 7-4 (ccpm)	Grid # 7-5 (ccpm)	Grid # 7-6 (ccpm)	Grid # 7-7 (ccpm)	Grid # 7-8 (ccpm)
A	1029	119 ~~NOA/BKGD~~	88	386	146	NOA/BKGD	7	NOA/BKGD
B	403	NOA/BKGD		231	289	NOA/BKGD	14	111
C	NOA/BKGD	NOA/BKGD	300	NOA/BKGD	16	NOA/BKGD	189	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	305	360	240	NOA/BKGD	289	106
E	221	NOA/BKGD	247	110	100	NOA/BKGD	251	164

Grid Location Reference	Grid # 7-9 (ccpm)	Grid # 7-10 (ccpm)	Grid # 7-11 (ccpm)	Grid # 7-12 (ccpm)	Grid # 7-13 (ccpm)	Grid # 7-14 (ccpm)	Grid # 7-15 (ccpm)	Grid # (ccpm)
A	71	261	50	13	49	361	156	
B	110	205	363	9	165	328	NOA/BKGD	N
C	358	234	NOA/BKGD	NOA/BKGD	NOA/BKGD	237	NOA/BKGD	A
D	145	279	105	400	424	82	NOA/BKGD	
E	600	466	NOA/BKGD	NOA/BKGD	39	15	NOA/BKGD	
*	3289							

Notes: * > 2 times BKGD. Grids 7-1 & 7-2 Are Comprised of Asphalt. Remaining Grids Are Soil / Gravel.

 Reviewed By: Wm Ray Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2311 / 2911 (Asphalt / Soil)	13794	Cs-137 @ 1 μCi	0392-0502

SURVEY DATA

Grid Location Reference	Grid # 8-1 (ccpm)	Grid # 8-2 (ccpm)	Grid # 8-3 (ccpm)	Grid # 8-4 (ccpm)	Grid # 8-5 (ccpm)	Grid # 8-6 (ccpm)	Grid # 8-7 (ccpm)	Grid # 8-8 (ccpm)
A	493	NOA/BKGD	NOA/BKGD	NOA/BKGD	13	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	27	NOA/BKGD	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	41	NOA/BKGD	NOA/BKGD	NOA/BKGD

Grid Location Reference	Grid # 8-9 (ccpm)	Grid # 8-10 (ccpm)	Grid # 8-11 (ccpm)	Grid # 8-12 (ccpm)	Grid # 8-13 (ccpm)	Grid # 8-14 (ccpm)	Grid # 8-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	551	118	179	192	NOA/BKGD	
B	NOA/BKGD	NOA/BKGD	494	157	575	127	NOA/BKGD	
C	225	342	11	66	327	NOA/BKGD	NOA/BKGD	N/A
D	NOA/BKGD	298	501	556	284	53	NOA/BKGD	
E	NOA/BKGD	107	NOA/BKGD	120	247	79	13	

Notes: GRIDS 8-1 & 8-2 ARE COMPRISED OF ASPHALT, THE REMAINING GRIDS ARE SOIL / GRAVEL.

 Reviewed By: W. Ramp Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2311 / 2911	13794	Cs-137 @ 1 μCi	0392-0502
					ASPHALT / SOIL			

SURVEY DATA

Grid Location Reference	Grid # 9-1 (ccpm)	Grid # 9-2 (ccpm)	Grid # 9-3 (ccpm)	Grid # 9-4 (ccpm)	Grid # 9-5 (ccpm)	Grid # 9-6 (ccpm)	Grid # 9-7 (ccpm)	Grid # 9-8 (ccpm)
A	NOA/BKGD	NOA/BKGD	38	21	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	NOA/BKGD	NOA/BKGD	82	NOA/BKGD	5	NOA/BKGD	NOA/BKGD	14
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	56	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	19	11	27
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD

Grid Location Reference	Grid # 9-9 (ccpm)	Grid # 9-10 (ccpm)	Grid # 9-11 (ccpm)	Grid # 9-12 (ccpm)	Grid # 9-13 (ccpm)	Grid # 9-14 (ccpm)	Grid # 9-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	111	347	301	428	NOA/BKGD	NOA/BKGD	
B	31	NOA/BKGD	44	127	149	55	55	N
C	NOA/BKGD	NOA/BKGD	160	662	38	NOA/BKGD	NOA/BKGD	A
D	NOA/BKGD	NOA/BKGD	58	245	333	77	61	
E	NOA/BKGD	17	498	279	173	NOA/BKGD	250	

Notes: GRIDS 9-1 & 9-2 ARE COMPRISED OF ASPHALT. THE REMAINING GRIDS ARE SOIL / GRAVEL.

 Reviewed By: [illegible] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2311 / 2911	13794 /	Cs-137 @ 1 μCi	0392-0502
					ASPHALT / SOIL			

SURVEY DATA

Grid Location Reference	Grid # 10-1 (ccpm)	Grid # 10-2 (ccpm)	Grid # 10-3 (ccpm)	Grid # 10-4 (ccpm)	Grid # 10-5 (ccpm)	Grid # 10-6 (ccpm)	Grid # 10-7 (ccpm)	Grid # 10-8 (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	43	NOA/BKGD	48	NOA/BKGD	138
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	102	NOA/BKGD
D	27	NOA/BKGD	NOA/BKGD	NOA/BKGD	37	NOA/BKGD	158	267
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	64	NOA/BKGD	NOA/BKGD	NOA/BKGD	117

Grid Location Reference	Grid # 10-9 (ccpm)	Grid # 10-10 (ccpm)	Grid # 10-11 (ccpm)	Grid # 10-12 (ccpm)	Grid # 10-13 (ccpm)	Grid # 10-14 (ccpm)	Grid # 10-15 (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	77	349	112	105	
B	168 ~~NOA/BKGD~~	38	NOA/BKGD	61	419	326	41	N
C	NOA/BKGD	NOA/BKGD	504	446	349	262	NOA/BKGD	A
D	NOA/BKGD	NOA/BKGD	350	460	341	292	33	
E	NOA/BKGD	38	201	302	608	77	213	

Notes: GRIDS 10-1 & 10-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL / GRAVEL

 Reviewed By: Wm Ray Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2311 / 2911	13794	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 11-1 (ccpm)	Grid # 11-2 (ccpm)	Grid # 11-3 (ccpm)	Grid # 11-4 (ccpm)	Grid # 11-5 (ccpm)	Grid # 11-6 (ccpm)	Grid # 11-7 (ccpm)	Grid # 11-8 (ccpm)
A	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	27	NOA/BKGD	NOA/BKGD	290
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	51	NOA/BKGD	36	NOA/BKGD	228
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	14	NOA/BKGD	14	277	327
D	NOA/BKGD	16	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	71	116
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	37	41	NOA/BKGD	42	465

Grid Location Reference	Grid # 11-9 (ccpm)	Grid # 11-10 (ccpm)	Grid # 11-11 (ccpm)	Grid # 11-12 (ccpm)	Grid # 11-13 (ccpm)	Grid # 11-14 (ccpm)	Grid # 11-15 (ccpm)	Grid # (ccpm)
A	180	26	523	197	457	613	519	
B	NOA/BKGD	NOA/BKGD	539	667	303	137	555	
C	NOA/BKGD	NOA/BKGD	233	507	503	709	505	N/A
D	14	296	715	371	107	288	679	
E	47	NOA/BKGD	223	401	455	469	586	

Notes: GRIDS 11-1 & 11-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL / GRAVEL

 Reviewed By: Wm Ray Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-18-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463 / 2844	139738	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 12-1 (ccpm)	Grid # 12-2 (ccpm)	Grid # 12-3 (ccpm)	Grid # 12-4 (ccpm)	Grid # 12-5 (ccpm)	Grid # 12-6 (ccpm)	Grid # 12-7 (ccpm)	Grid # 12-8 (ccpm)
A	170	133	NOA/BKGD	128	402	NOA/BKGD	318	712
B	183	65	NOA/BKGD	216	364	296	120	NOA/BKGD
C	NOA/BKGD	99	148	138	272	120	644	170
D	NOA/BKGD	99	NOA/BKGD	254	242	126	NOA/BKGD	82
E	103	205	NOA/BKGD	100	208	10	70	496

Grid Location Reference	Grid # 12-9 (ccpm)	Grid # 12-10 (ccpm)	Grid # 12-11 (ccpm)	Grid # 12-12 (ccpm)	Grid # 12-13 (ccpm)	Grid # 12-14 (ccpm)	Grid # 12-15 (ccpm)	Grid # (ccpm)
A	224	342	470	350	NOA/BKGD	128	561	
B	164	NOA/BKGD	330	535	NOA/BKGD	272	424	N
C	438	424	362	158	150	261	455	A
D	60	218	448	186	236	366	596	
E	NOA/BKGD	300	212	516	252	206	538	

Notes: GRIDS 12-1 & 12-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL/GRAVEL

 Reviewed By: [illegible] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-19-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463 / 2644	139738	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 13-1 (ccpm)	Grid # 13-2 (ccpm)	Grid # 13-3 (ccpm)	Grid # 13-4 (ccpm)	Grid # 13-5 (ccpm)	Grid # 13-6 (ccpm)	Grid # 13-7 (ccpm)	Grid # 13-8 (ccpm)
A	23	69	NOA/BKGD	50	344	256	NOA/BKGD	NOA/BKGD
B	15	39	200	NOA/BKGD	100	120	NOA/BKGD	NOA/BKGD
C	95	219	NOA/BKGD	196	334	80	NOA/BKGD	114
D	NOA/BKGD	99	47	90	120	34	NOA/BKGD	58
E	69	31	NOA/BKGD	228	174	456	NOA/BKGD	116

Grid Location Reference	Grid # 13-9 (ccpm)	Grid # 13-10 (ccpm)	Grid # 13-11 (ccpm)	Grid # 13-12 (ccpm)	Grid # 13-13 (ccpm)	Grid # 13-14 (ccpm)	Grid # 13-15 (ccpm)	Grid # (ccpm)
A	90	NOA/BKGD	160	NOA/BKGD	NOA/BKGD	41	292	
B	NOA/BKGD	32	NOA/BKGD	30	NOA/BKGD	414	250	N
C	53	54	80	NOA/BKGD	NOA/BKGD	166	202	A
D	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	298	214	412	
E	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	26	NOA/BKGD	65	

Notes: GRIDS 13-1 & 13-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL/GRAVEL.

 Reviewed By: [illegible] Date: 7/23/91

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-19-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463/2944	139738	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 14-1 (ccpm)	Grid # 14-2 (ccpm)	Grid # 14-3 (ccpm)	Grid # 14-4 (ccpm)	Grid # 14-5 (ccpm)	Grid # 14-6 (ccpm)	Grid # 14-7 (ccpm)	Grid # 14-8 (ccpm)
A	123	NOA/BKGD	116	NOA/BKGD	81	NOA/BKGD	NOA/BKGD	67
B	NOA/BKGD	NOA/BKGD	NOA/BKGD	NOA/BKGD	29	254	140	324
C	115	147	NOA/BKGD	NOA/BKGD	53	74	NOA/BKGD	NOA/BKGD
D	NOA/BKGD	209	NOA/BKGD	NOA/BKGD	108	160	298	326
E	101	17	NOA/BKGD	346	NOA/BKGD	NOA/BKGD	62	12

Grid Location Reference	Grid # 14-9 (ccpm)	Grid # 14-10 (ccpm)	Grid # 14-11 (ccpm)	Grid # 14-12 (ccpm)	Grid # 14-13 (ccpm)	Grid # 14-14 (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A	52	NOA/BKGD	NOA/BKGD	NOA/BKGD	24	494		
B	280	216	162	136	192	572		
C	NOA/BKGD	NOA/BKGD	NOA/BKGD	38	360	230	N	A
D	160	28	32	125	302	342		
E	136	NOA/BKGD	NOA/BKGD	58	236	260		

Notes: GRIDS 14-1 & 14-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL / GRAVEL.

 Reviewed By: Wm Ranf Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / DB Date: 7-19-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463 / 2844	139738	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 15-1 (ccpm)	Grid # 15-2 (ccpm)	Grid # 15-3 (ccpm)	Grid # 15-4 (ccpm)	Grid # 15-5 (ccpm)	Grid # 15-6 (ccpm)	Grid # 15-7 (ccpm)	Grid # (ccpm)
A	NOA / BKGD	17	NOA / BKGD	NOA / BKGD	106	266	90	
B	NOA / BKGD	NOA / BKGD	NOA / BKGD	17	476	372	172	
C	NOA / BKGD	55	152	132	258	268	504	N
D	65	NOA / BKGD	NOA / BKGD	185	158	226	522	A
E	NOA / BKGD	137	12	20	98	214	470	

Grid Location Reference	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A								
B				N				
C					A			
D								
E								

Notes: GRIDS 15-1 & 15-2 ARE COMPRISED OF ASPHALT. REMAINING GRIDS ARE SOIL / GRAVEL.

Page 15 of 18 Reviewed By: [signature] Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-19-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463/2844	139738	Cs-137 @ 1 μCi	0392-0502

ASPHALT / SOIL

SURVEY DATA

Grid Location Reference	Grid # 16-1 (ccpm)	Grid # 16-2 (ccpm)	Grid # 16-3 (ccpm)	Grid # 16-4 (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A	NOA/BKGD	NOA/BKGD	46	278				
B	NOA/BKGD	23	148	648		N	A	
C	NOA/BKGD	NOA/BKGD	68	308				
D	14	197	520	596				
E	NOA/BKGD	121	238	503				

Grid Location Reference	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A								
B				N	A			
C								
D								
E								

Notes: GRIDS 16-1 & 16-2 ARE COMPRISED OF ASPHALT. 16-3 & 16-4 ARE SOIL / GRAVEL

 Reviewed By: W. Ruf Date: 7/23/96

INTERNATIONAL TECHNOLOGY CORPORATION

SURVEY INFORMATION WORKSHEET

Project Name: University of California, Davis LEHR D&D
Project Number: 191226 Task/Phase: 01504000
Surveyed By: D. Brown / [illegible] Date: 7-19-96

SOUTHWEST TRENCHES SURFACE RADIATION SURVEY

INSTRUMENT INFORMATION

Manufacturer Inst./Probe	Inst. Serial #	Probe Serial #	Cal. Due	Type	Bkgd. (cpm)	SOURCE RESPONCE (cpm)	Source Type/Activity	Serial #
Ludlum 2221/44-10	117370	118371	9/8/96	γ	2463 / 2844	139738	Cs-137 @ 1 μCi	0392-0502
					ASPHALT / SOIL			

SURVEY DATA

Grid Location Reference	Grid # 17-1 (ccpm)	Grid # 17-2 (ccpm)	Grid # 17-3 (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A	NOA/BKG	31	232					
B	NOA/BKG	192	180		N			
C	NOA/BKG	214	272			A		
D	222	250	510					
E	NOA/BKG	278	140					

Grid Location Reference	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)	Grid # (ccpm)
A								
B				N				
C					A			
D								
E								

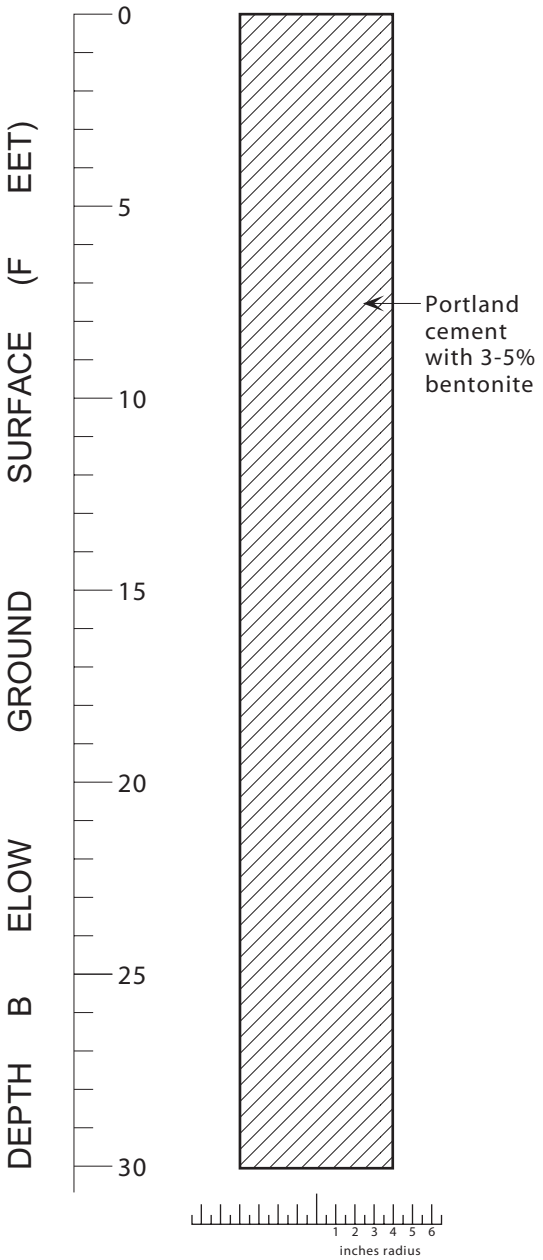
Notes: GRID 17-1, LOCATIONS A, C, E ARE ASPHALT. B & D ON GRAVEL.
17-2, LOCATION A IS ON ASPHALT B-E ON GRAVEL.
17-3 ALL LOCATIONS ARE ON SOIL.

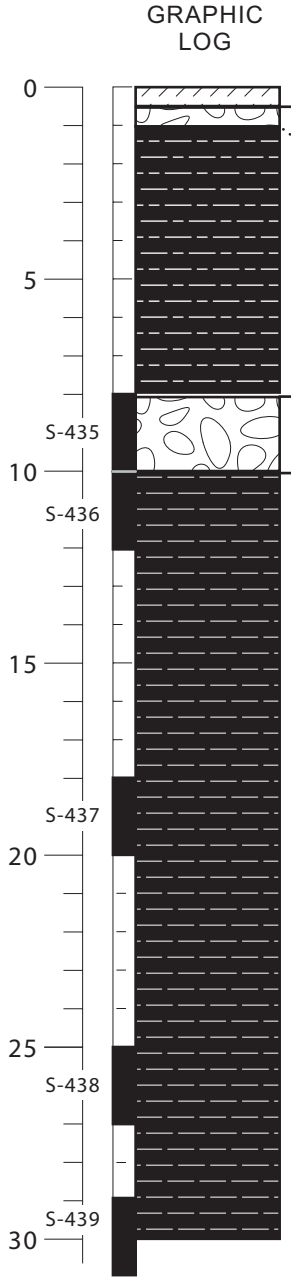
 Reviewed By: [illegible] Date: 7/25/96

APPENDIX G

LFI SOIL BORING LOGS

SOIL BORING SB-1





DESCRIPTION

Asphaltic concrete

GRAVEL (GP)

Silty CLAY(CL); dark brown; medium to high toughness; high dry strength; low dilatancy; stiff; dry;

GRAVEL (GP); leach field cobbles

CLAY (CL); dark brown; medium to high toughness; high dry strength; low dilatancy; stiff; dry

Silty CLAY (CL); yellow brown; moist; very tough and moldable; low dilatancy; low stiffness

Silty CLAY (CL); yellow brown; mottled with organics; dry; hard; increased stiffness as compared to CL above

Silty CLAY (CL); yellow brown; mottled with organics; slightly moist; hard; less stiff as compared to CL above

EXPLANATION

Contact (dotted where approximate)

S-435 Location and Sample ID of drive sample sealed for chemical analysis

Logged By: Schaal, William, IT Corporation

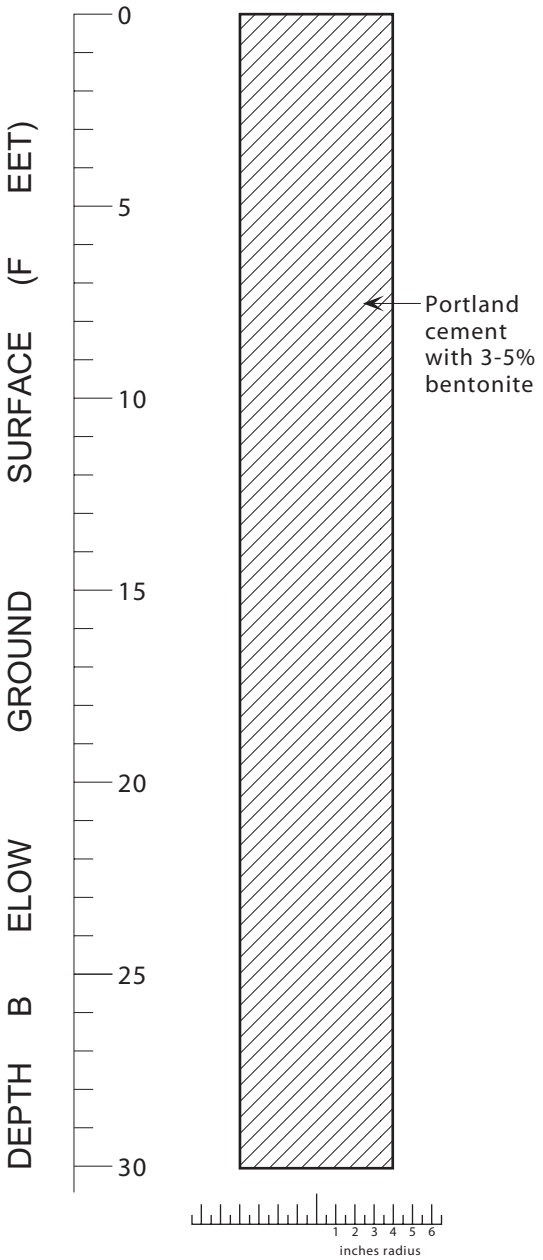
Drilling Method: Sonic

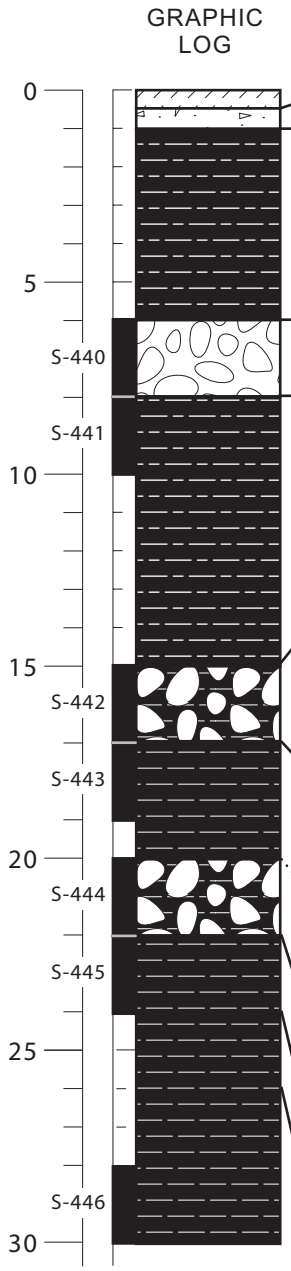
Date Drilled: August 20, 1996

Type of Sampler: Grab

Boring Log Details - Soil Boring SB-1

SOIL BORING SB-2





DESCRIPTION

Asphaltic concrete

Roadbase

Silty CLAY (CL); dark brown; medium stiffness; dry; high plasticity; medium to high toughness; low dilatancy; medium dry strength

GRAVEL (GP); 2" diameter cobbles, drain rock

Silty CLAY (CL); very dark brown; medium stiffness; dry; high plasticity; medium to high toughness; low dilatancy; medium dry strength

Clayey GRAVEL (GC); dark brown black; clay is same as above, 40-50% clay; gravel is 0.5'' diameter rounded.

CLAY (CL); dark yellow brown; low to medium stiffness; slightly moist; medium to high dry strength; very tough; low dilatancy

Clayey GRAVEL (GC); yellow brown; gravel is up to 0.5" diameter and angular

CLAY (CH); dark black; highly organic; high toughness; medium to high strength; low dilatancy

CLAY (CL); yellow brown; mottled; with organics

CLAY (CH); dark black; fat, highly organic; high toughness; medium to high strength; low dilatancy

EXPLANATION

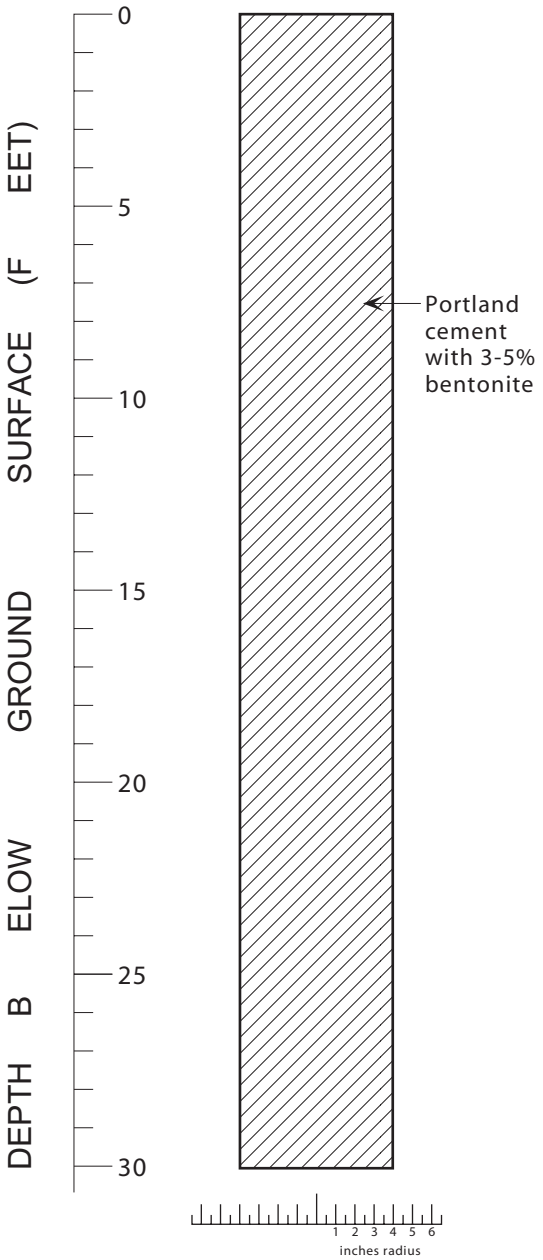
Contact (dotted where approximate)

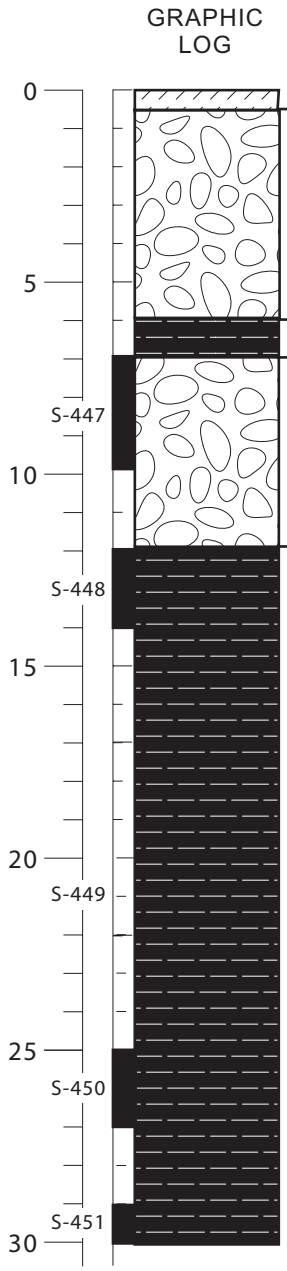
S-440 Location and Sample ID of sample sealed for chemical analysis

Logged By: Schaal, William; IT Corporation
Drilling Method: Sonic
Date Drilled: August 20, 1996
Type of Sampler: Grab

Boring Log Details - Soil Boring SB-2

SOIL BORING SB-3





DESCRIPTION

Asphaltic concrete

GRAVEL (GP); trench backfill

CLAY (CL)

GRAVEL (GP); 2" diameter; rounded; (leach field backfill)

CLAY (CL); dark to medium yellow brown; 3-5% organic matter; medium toughness; high dry strength; low dilatancy; medium stiffness; 3-5% organic matter

Increasing organic matter content with depth; 12-15%; decreasing organic particle size with depth

Increasing organic matter size with depth

EXPLANATION

Contact (dotted where approximate)

S-437 Location of drive sample sealed for chemical analysis

Logged By: Schaal, William, IT Corporation

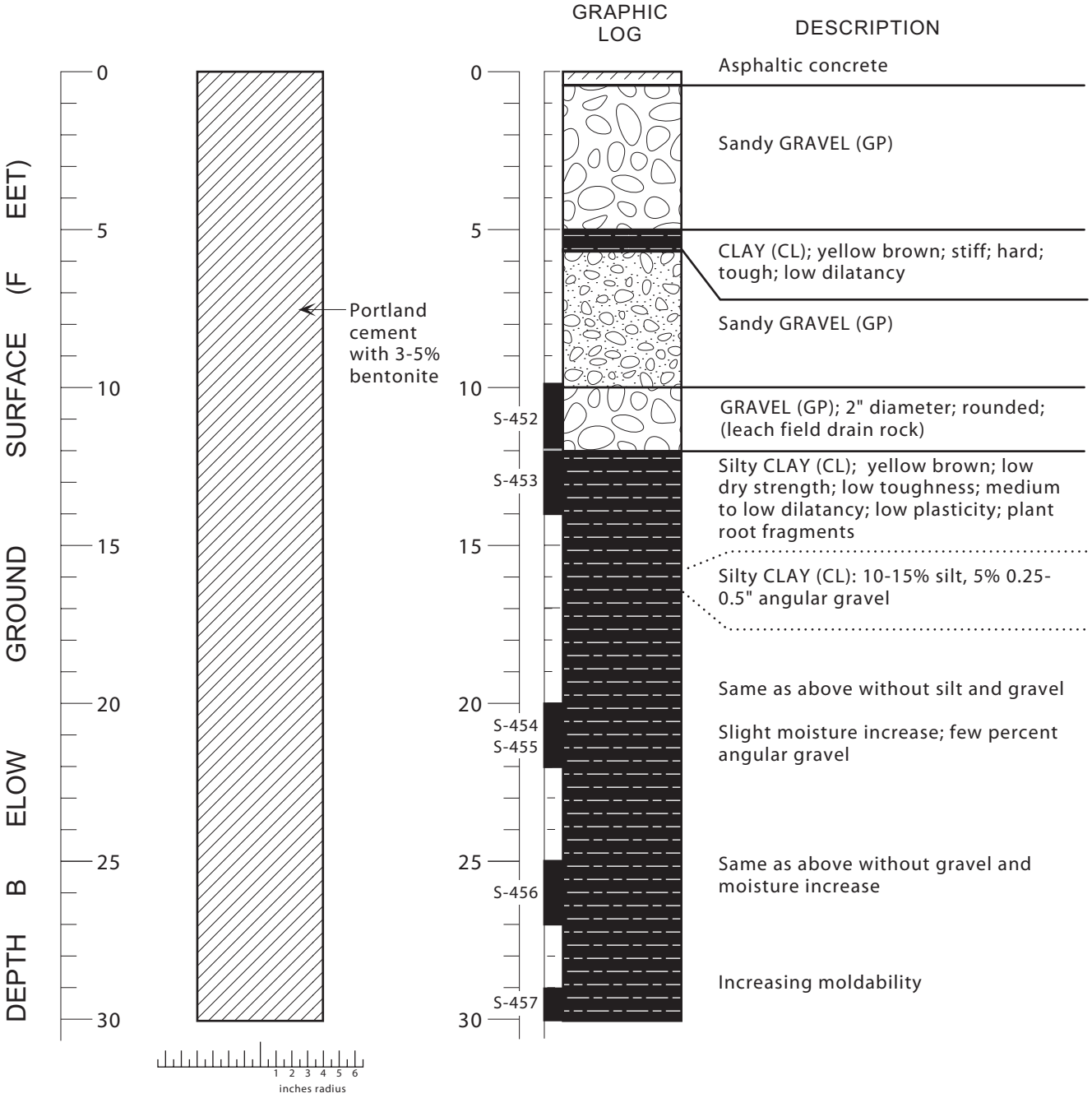
Drilling Method: Sonic

Date Drilled: August 20, 1996

Type of Sampler: Split Spoon

Boring Log Details - Soil Boring SB-3

SOIL BORING SB-4



EXPLANATION

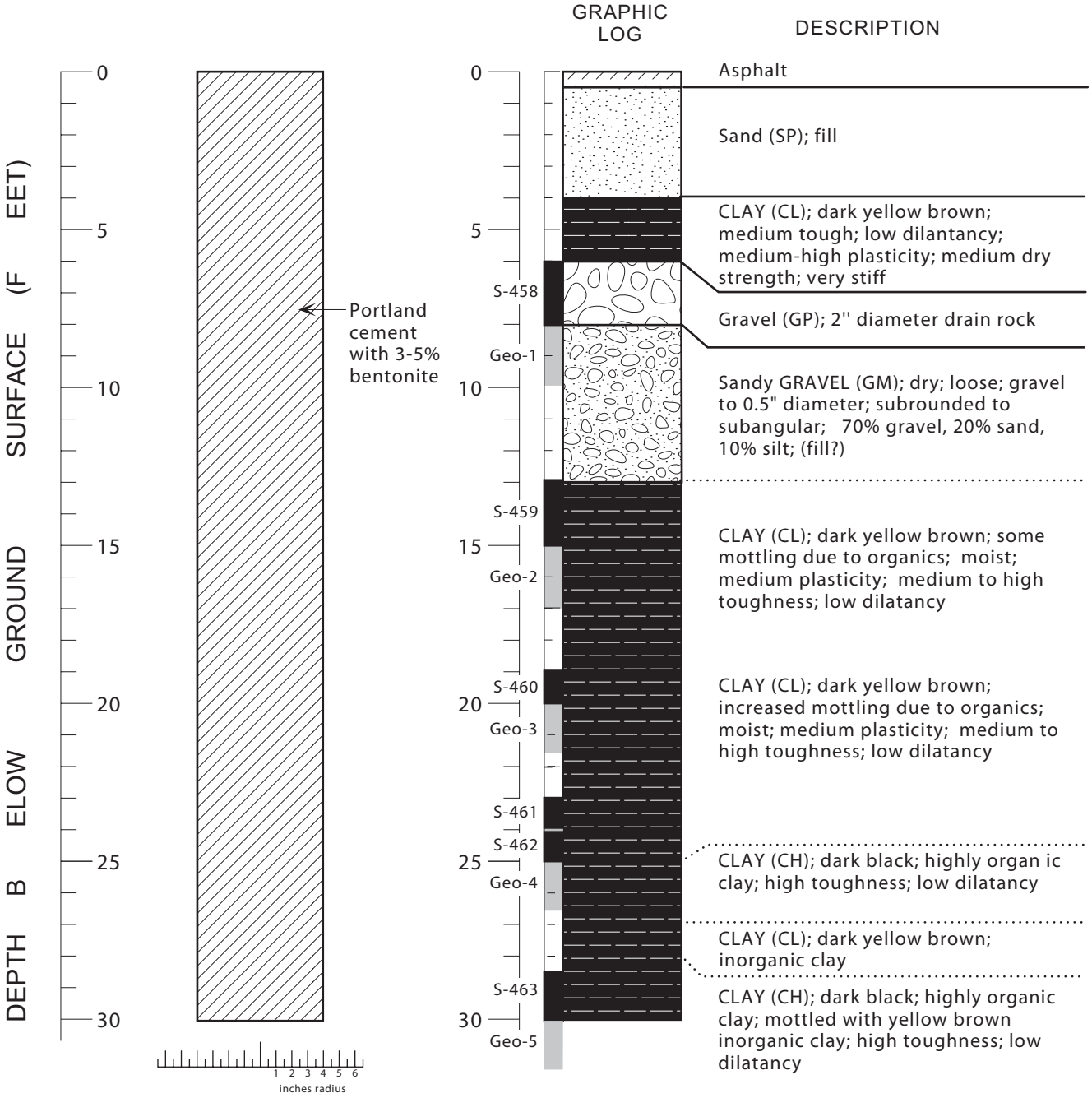
Contact (dotted where approximate)

S-437 Location and sample ID of sample sealed for chemical analysis

Logged By: Schaal, William; IT Corporation
Drilling Method: Sonic
Date Drilled: August 20, 1996
Type of Sampler: Grab

Boring Log Details - Soil Boring SB-4

SOIL BORING SB-5



EXPLANATION

Contact (dotted where approximate)

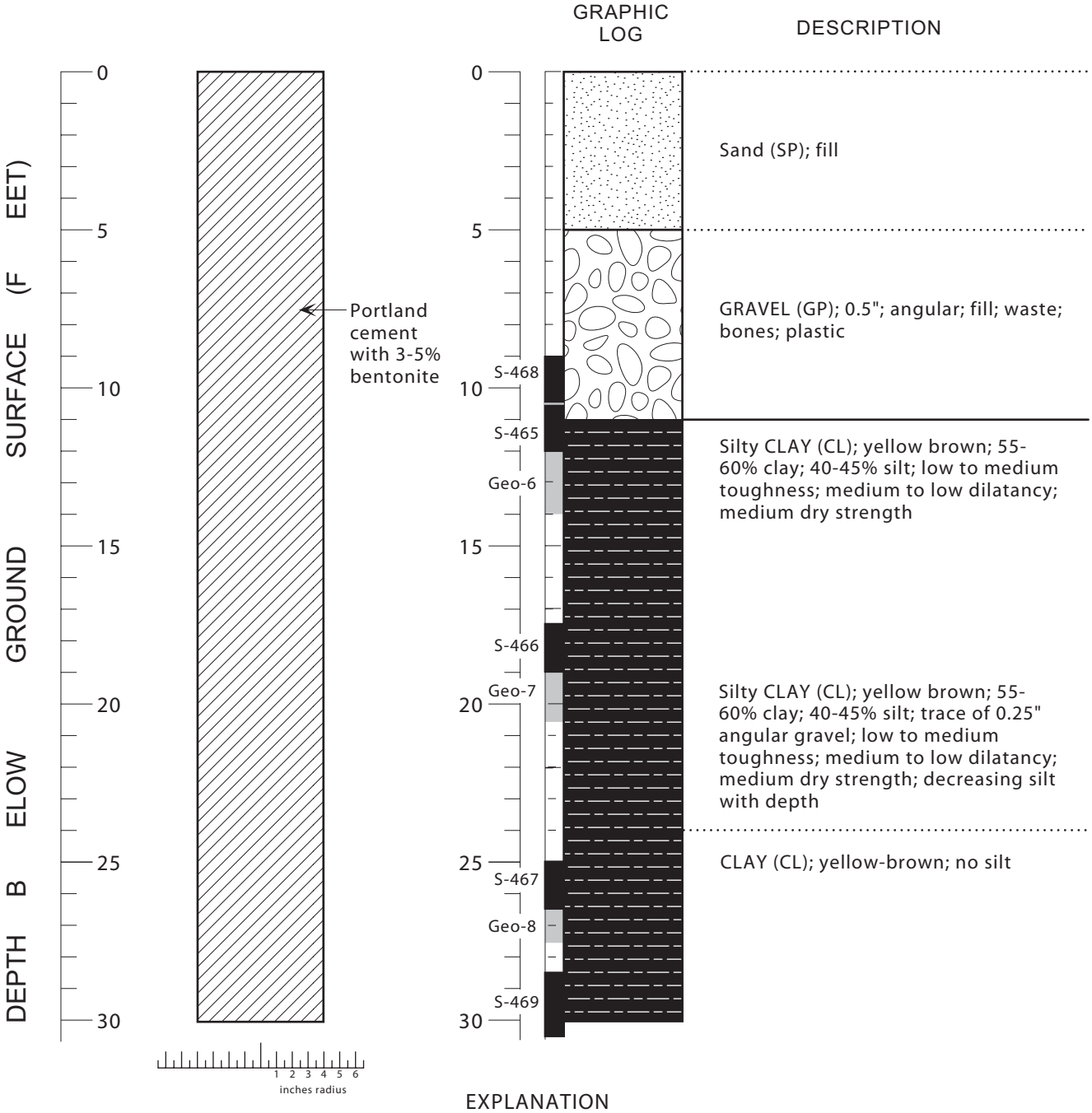
S-437 Location and sample ID of drive sample sealed for chemical analysis

Geo-2 Geotechnical Sample

Logged By: Schaal, William; IT Corporation
Drilling Method: Sonic
Date Drilled: August 20, 1996
Type of Sampler: Split spoon for geotechnical samples; Grab for lab analysis

Boring Log Details - Soil Boring SB-5

SOIL BORING SB-6



EXPLANATION

Contact (dotted where approximate)

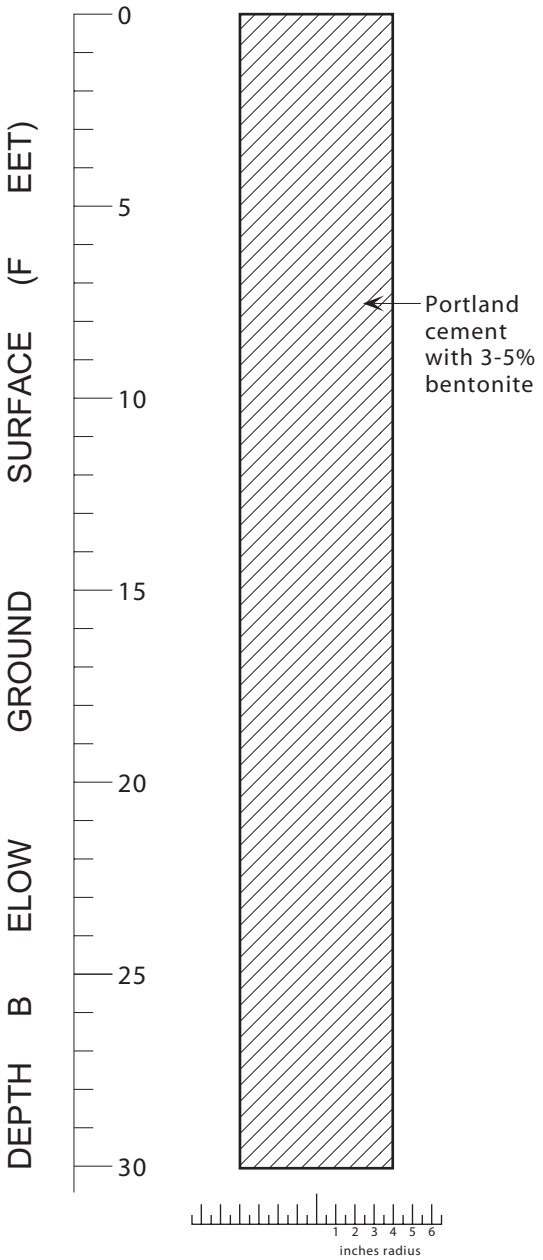
S-437 — Location and Sample ID of sample sealed for chemical analysis

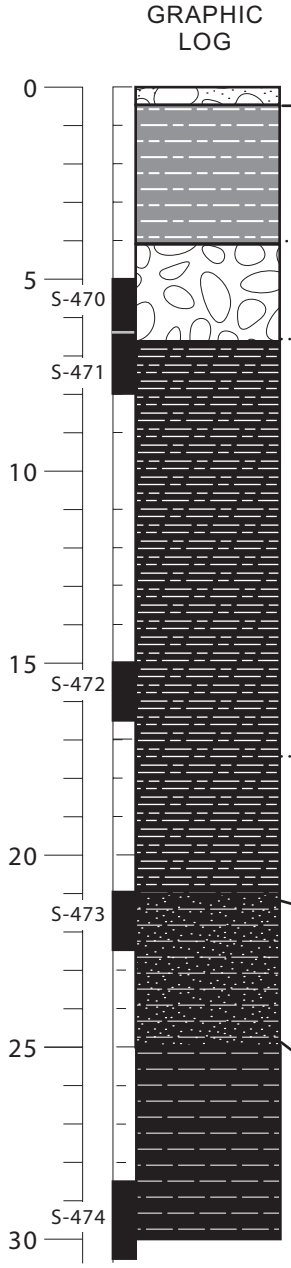
Geo-6 — Geotechnical Sample

Logged By: Schaal, William; IT Corporation
Drilling Method: Sonic
Date Drilled: August 20, 1996
Type of Sampler: Split Spoon for geotechnical samples; Grab for laboratory samples

Boring Log Details - Soil Boring SB-6

SOIL BORING SB-7





DESCRIPTION

Sandy GRAVEL (GP); fill

Clayey SILT (ML); 70% silt; 30% clay; slightly moist; low plasticity; no dry strength; medium dilatancy; no toughness

GRAVEL (GC); some silt mixed in slough; (waste)

Clayey SILT (ML) ; reddish yellow; no dry strength; medium dilatancy; low toughness

Clayey SILT (ML) ; reddish yellow; mottled with ocher red possibly due to iron or organics; no dry strength; medium dilatancy; low toughness

Silty CLAY (CL); reddish yellow; mottled with ocher red; 80-85% clay; 15-20% silt; sticky; no dry strength; medium dilatancy; low toughness

Sandy CLAY (CL); yellow brown; 20-25% very fine sand;75-80% clay; medium stiff; moist; low toughness; low to medium dry strength; medium to low dilatancy

CLAY (CL); yellow; medium to high toughness; high dry strength; low dilatancy; 100% clay

EXPLANATION

Contact (dotted where approximate)

S-437 Location and sample ID of sample sealed for chemical analysis

Logged By: Schaal, William; IT Corporation

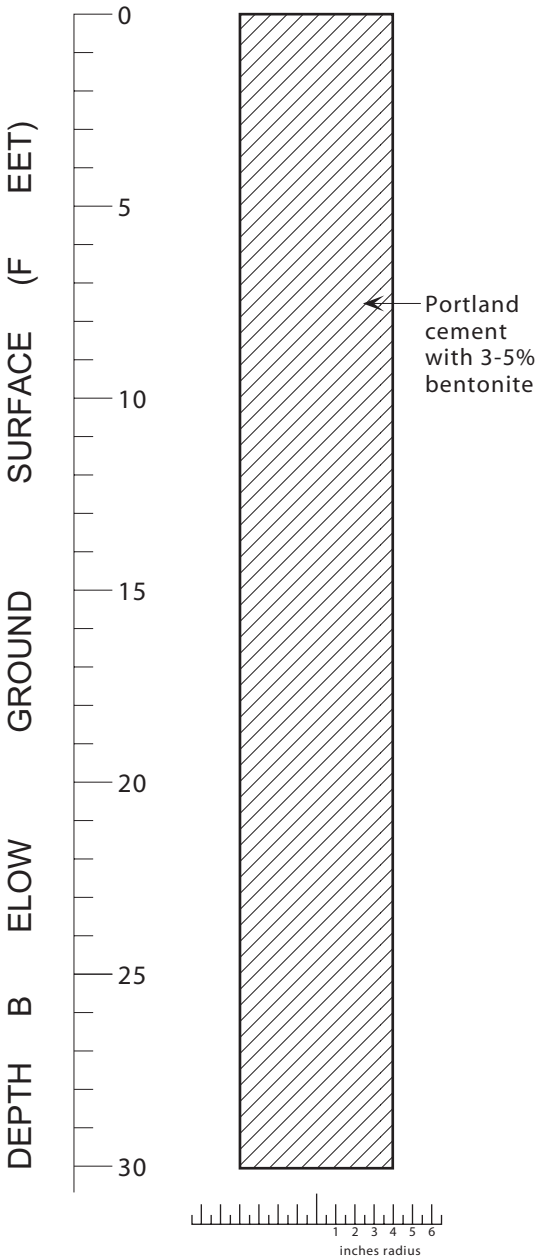
Drilling Method: Sonic

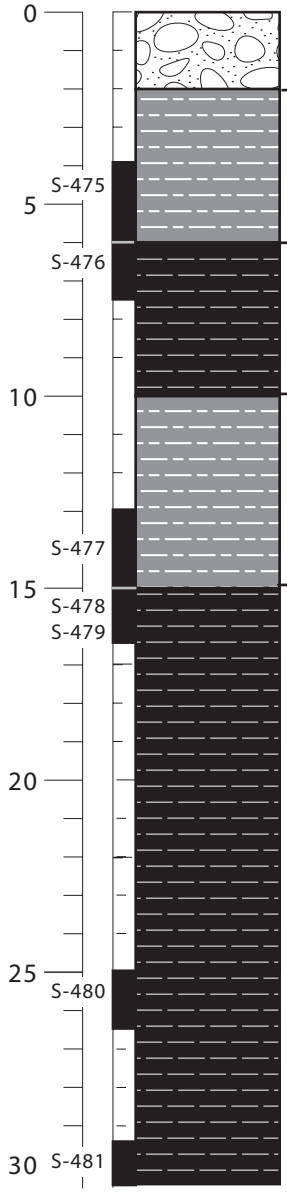
Date Drilled: August 22, 1996

Type of Sampler: Grab

Boring Log Details - Soil Boring SB-7

SOIL BORING SB-8





DESCRIPTION

Sandy GRAVEL (GP); fill

SILT (ML); slightly moist; 90-95% silt; 5-10% clay; low plasticity; no dry strength; low toughness; high dilatancy

CLAY (CL); dark brown, black; organics (?); color lightens with depth; medium to high dry strength; low dilatancy; low to medium toughness

SILT (ML); brown; 90% silt, 10% clay; little to no plasticity; no dry strength; medium dilatancy; low toughness; dry

CLAY(CL); dark yellow brown; medium plasticity; medium to high dry strength; low dilatancy; medium toughness; 100% "mottling" clay; pedogenic structures and rhizoliths

CLAY (CL); dark yellow brown; increasing plasticity and toughness

EXPLANATION

Contact (dotted where approximate)

S-437 Location and sample ID of sample sealed for chemical analysis

Logged By: Schaal, William; IT Corporation
Drilling Method: Sonic
Date Drilled: August 23, 1996
Type of Sampler: Grab

Boring Log Details - Soil Boring SB-8

APPENDIX H

LFI GEOPHYSICAL LOGS

COMPANY: BATTELLE MEMORIAL INSTITUTE
PACIFIC NORTHWEST LABORATORIE

WELL: SB-5

FIELD: LEHR SITE

COUNTY: SOLANO STATE: CALIFORNIA

Schlumberger

INDUCTION RESISTIVITY GAMMA RAY LOG

COUNTY: SOLANO
Field: LEHR SITE
Location: RA/SR LEACH SYSTEM AREA
Well: SB-5
Company: BATTELLE MEMORIAL INSTITU

LOCATION: RA/SR LEACH SYSTEM AREA

Elev.: K.B. / G.L. APPROX. 55 F / D.F.

Permanent Datum: GROUND LEVEL — Elev.: APPROX. 55 F
Log Measured From: GROUND LEVEL — 0 F above Perm. Datum
Drilling Measured From: GROUND LEVEL

API Serial No.	SECTION	TOWNSHIP	RANGE

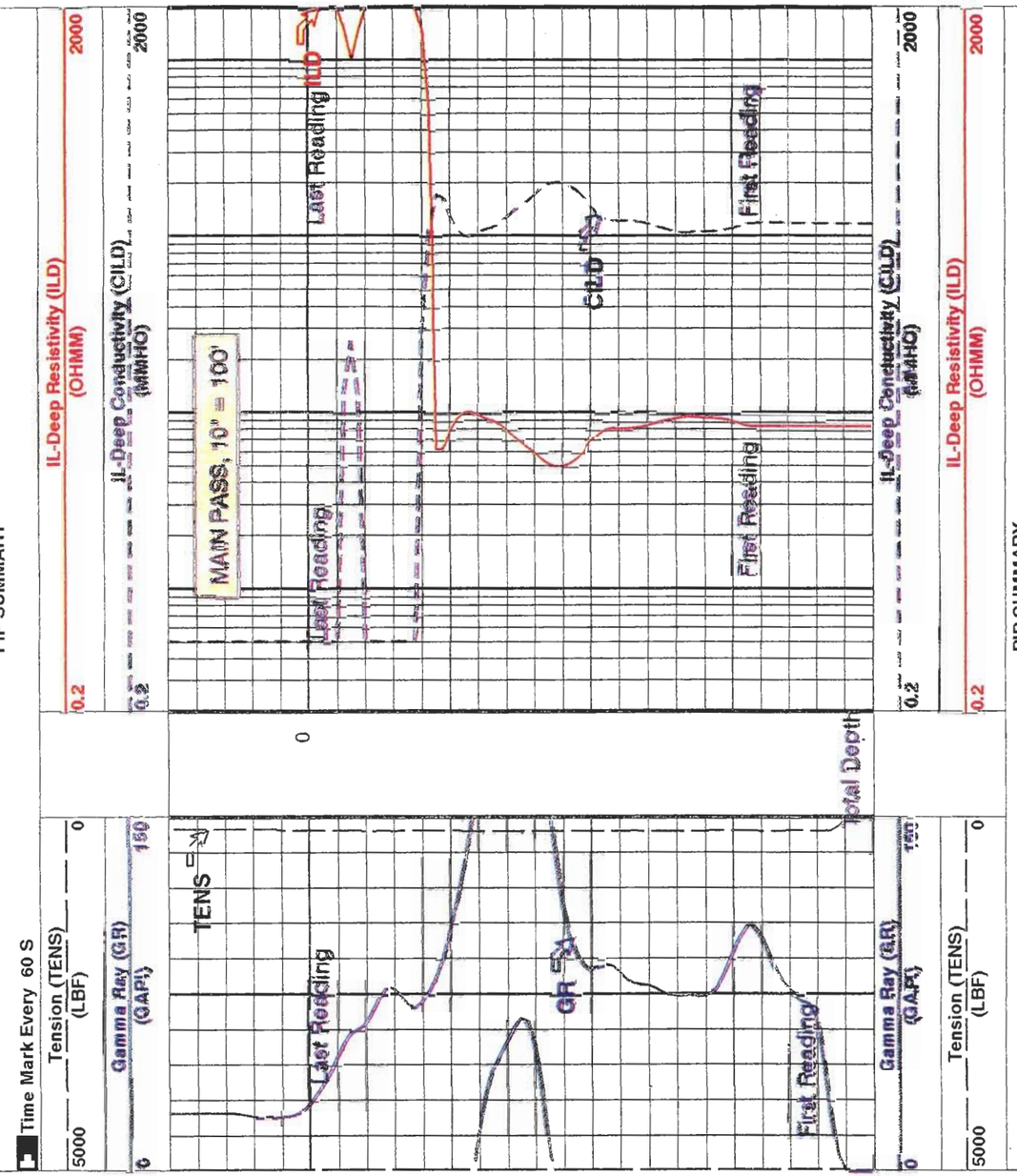
Logging Date	9/5/96		
Run Number	1		
Depth Driller	38 F		
Schlumberger Depth	38 F		
Bottom Log Interval	35 F		
Top Log Interval	0 F		
Casing Driller Size @ Depth	3.000 IN @ 38 F	@	
Casing Schlumberger	38 F		
Bit Size	4.500 IN		
Type Fluid In Hole	AIR		
MUD Density / Viscosity			
MUD Fluid Loss / PH			
MUD Source Of Sample			
RM @ Measured Temperature	@	@	
RMF @ Measured Temperature	@	@	
RMC @ Measured Temperature	@	@	
Source RMF / RMC			
RM @ MRT / RMF @ MRT	@ @	@ @	
Maximum Recorded Temperatures			
Circulation Stopped / Time			
Logger On Bottom / Time	9/5/96 10:28		
Unit Number / Location	3038 BAKERSFIELD E.S.		
Recorded By	R. COLDEWEY		
Witnessed By	W. SCHAAL		

-10.0 FT 40.0 FT 5-SEP-1996 14:27

DEFAULT IRTJ .015 FN:11 FIELD

OP System Version: 7C0-428
MBM

PIP SUMMARY



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
DESP	Despike Yes/No	NO
DO	Depth Offset	0.0 FT
DORL	Depth Offset Repeat Analysis	0.0 FT
DSEC	Deep Sonde Error Correction	4.85079 MM/M
PP	Playback Processing	NORMAL
SBR	Shoulder Bed Resistivity	1 OHMM

Format: S10 Vertical Scale: 10" per 100'

Graphics File Created: 5-SEP-1996 14:27

APPENDIX I

LFI ANALYTIC RESULTS

APPENDIX I TABLES

Table I-1. Data Validation Qualifiers
Table I-2. South West Trenches – Volatile Organics by CLP
Table I-3. South West Trenches – Semivolatile Organics by CLP
Table I-4. South West Trenches – Pesticides and PCBs by CLP
Table I-5. South West Trenches – Metals by CLP
Table I-6. South West Trenches – Radiochemical Analyses
Table I-7. South West Trenches – Cations/Anions
Table I-8. South West Trenches – General Chemistry
Table I-9. Rinseate for South West Trenches – Volatile Organics by CLP
Table I-10. Rinseate for South West Trenches – Semivolatile Organics by CLP
Table I-11. Rinseate for South West Trenches – Pesticides and PCBs by CLP
Table I-12. Rinseate for South West Trenches – Metals by CLP
Table I-13. Rinseate for South West Trenches – Radiochemical Analyses
Table I-14. Rinseate for South West Trenches – Cations/Anions
Table I-15. Rinseate for South West Trenches – General Chemistry
Table I-16. Radium/Strontium Area – Volatile Organics by CLP
Table I-17. Radium/Strontium Area – Semivolatile Organics by CLP
Table I-18. Radium/Strontium Area – Pesticides and PCBs by CLP
Table I-19. Radium/Strontium Area – Metals by CLP
Table I-20. Radium/Strontium Area – Radiochemical Analyses
Table I-21. Radium/Strontium Area – Cations/Anions
Table I-22. Radium/Strontium Area – General Chemistry
Table I-23. Septic Tank Areas – Volatile Organics by CLP
Table I-24. Septic Tank Areas – Semivolatile Organics by CLP
Table I-25. Septic Tank Areas – Pesticides and PCBs by CLP
Table I-26. Septic Tank Areas – Metals by CLP

Table I-27. Septic Tank Areas – Radiochemical Analyses

Table I-28. Septic Tank Areas – Cations/Anions

Table I-29. Septic Tank Areas – General

TABLE I-1

DATA VALIDATION QUALIFIERS

TABLE I-1
DATA VALIDATION QUALIFIERS

The following definitions provide brief explanations of the qualifiers assigned by the data validation team in the data review process:

FLAG	DATA QUALIFIER DEFINITION
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
c	Calibration failure; poor or unstable response.
d	Laboratory duplicate imprecision
e	Laboratory duplicate control sample imprecision
f	Field duplicate imprecision
h	Holding time violation
k	Serial dilution imprecision
l	Laboratory control sample recovery failure
m	Matrix spike/matrix spike duplicate recovery failure
o	Calibration blank contamination (metals/inorganics only)
p	Preparation blank contamination (metals/inorganics only)
r	Linearity failure in initial calibration
s	Surrogate spike recovery failure (GC organics and GC/MS organics only)
z	Method blank contamination

J:\DOE\1180\REPORTS\LFI\FLAGLIST.DOC

TABLE I-2

SOUTH WEST TRENCHES – VOLATILE ORGANICS BY CLP

Table I-2
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
1,1,1-Trichloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,1,2-Trichloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,1-Dichloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,1-Dichloroethene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,2-Dichloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,2-Dichloroethene (total)		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
1,2-Dichloropropane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
2-Butanone		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
2-Hexanone		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
4-Methyl-2-Pentanone		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Acetone		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Benzene		ug/kg	<11	IU	NA	<11	IU	<12	IU	<1.1	UJsIU	NA
Bromodichloromethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Bromoform		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Bromomethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Carbon Disulfide		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Carbon Tetrachloride		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Chlorobenzene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Chloroethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Chloroform		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Chloromethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
cis-1,3-Dichloropropene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Dibromochloromethane		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Ethylbenzene		ug/kg	<11	IU	NA	<11	IU	<12	IU	<1.1	UJsIU	NA
m,p-Xylenes		ug/kg	NA		NA	NA		NA		<1.1	UJsIU	NA
Methylene Chloride		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA

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South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
o-Xylene		ug/kg	NA		NA	NA		NA		<1.1	UJsIU	NA
Styrene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Tetrachloroethene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Toluene		ug/kg	<11	IU	NA	<11	IU	<12	IU	<1.1	UJsIU	NA
trans-1,3-Dichloropropene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Trichloroethene		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Vinyl Chloride		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA
Xylenes (Total)		ug/kg	<11	IU	NA	<11	IU	<12	IU	NA		NA

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
1,1,1-Trichloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,1,2,2-Tetrachloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,1,2-Trichloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,1-Dichloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,1-Dichloroethene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,2-Dichloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,2-Dichloroethene (total)		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
1,2-Dichloropropane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
2-Butanone		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
2-Hexanone		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
4-Methyl-2-Pentanone		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Acetone		ug/kg	NA		NA		NA	<9.7	IU	3	UzIJB	820	UJsIJB
Benzene		ug/kg	<1.1	UJsIU	<1.1	UJsIU	NA	<0.91	IU	<10	IU	<0.98	UJsIU
Bromodichloromethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Bromoform		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Bromomethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Carbon Disulfide		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Carbon Tetrachloride		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Chlorobenzene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Chloroethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Chloroform		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Chloromethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
cis-1,3-Dichloropropene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Dibromochloromethane		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Ethylbenzene		ug/kg	<1.1	UJsIU	<1.1	UJsIU	NA	<0.91	IU	<10	IU	<0.98	UJsIU
m,p-Xylenes		ug/kg	<1.1	UJsIU	<1.1	UJsIU	NA	<0.91	IU	NA		<0.98	UJsIU
Methylene Chloride		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU

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LEHR Environmental Restoration
South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
o-Xylene		ug/kg	<1.1	UJsIU	<1.1	UJsIU	NA	<0.91	IU	NA		<0.98	UJsIU
Styrene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Tetrachloroethene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Toluene		ug/kg	<1.1	UJsIU	<1.1	UJsIU	NA	<0.91	IU	<10	IU	1.7	Jsl
trans-1,3-Dichloropropene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Trichloroethene		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Vinyl Chloride		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU
Xylenes (Total)		ug/kg	NA		NA		NA	<9.7	IU	<10	IU	<1,200	UJsIU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342	LEHR-S-343	
1,1,1-Trichloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,1,2,2-Tetrachloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,1,2-Trichloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,1-Dichloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,1-Dichloroethene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,2-Dichloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,2-Dichloroethene (total)		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
1,2-Dichloropropane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
2-Butanone		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
2-Hexanone		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
4-Methyl-2-Pentanone		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Acetone		ug/kg	NA	1,200	UzIJB	NA	NA		NA	NA	
Benzene		ug/kg	NA	<1,200	UJsIU	NA	<1.1	UJsIU	NA	<1.1	UJsIU
Bromodichloromethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Bromoform		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Bromomethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Carbon Disulfide		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Carbon Tetrachloride		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Chlorobenzene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Chloroethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Chloroform		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Chloromethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
cis-1,3-Dichloropropene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Dibromochloromethane		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Ethylbenzene		ug/kg	NA	<1,200	UJsIU	NA	<1.1	UJsIU	NA	<1.1	UJsIU
m,p-Xylenes		ug/kg	NA	NA		NA	<1.1	UJsIU	NA	<1.1	UJsIU
Methylene Chloride		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342	LEHR-S-343	
o-Xylene		ug/kg	NA	NA		NA	<1.1	UJsIU	NA	<1.1	UJsIU
Styrene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Tetrachloroethene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Toluene		ug/kg	NA	<1,200	UJsIU	NA	<1.1	UJsIU	NA	<1.1	UJsIU
trans-1,3-Dichloropropene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Trichloroethene		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Vinyl Chloride		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	
Xylenes (Total)		ug/kg	NA	<1,200	UJsIU	NA	NA		NA	NA	

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South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
1,1,1-Trichloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,1,2,2-Tetrachloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,1,2-Trichloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,1-Dichloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,1-Dichloroethene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,2-Dichloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,2-Dichloroethene (total)		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
1,2-Dichloropropane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
2-Butanone		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
2-Hexanone		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
4-Methyl-2-Pentanone		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Acetone		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Benzene		ug/kg	<1	UJsIU	<1	UJsIU	<1.1	UJsIU	<0.97	IU	<1	UJsIU	<0.98	IU
Bromodichloromethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Bromoform		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Bromomethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Carbon Disulfide		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Carbon Tetrachloride		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Chlorobenzene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Chloroethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Chloroform		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Chloromethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
cis-1,3-Dichloropropene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Dibromochloromethane		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Ethylbenzene		ug/kg	<1	UJsIU	<1	UJsIU	<1.1	UJsIU	<0.97	IU	<1	UJsIU	<0.98	IU
m,p-Xylenes		ug/kg	<1	UJsIU	<1	UJsIU	<1.1	UJsIU	<0.97	IU	<1	UJsIU	<0.98	IU
Methylene Chloride		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	

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South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
o-Xylene		ug/kg	<1	UJsIU	<1	UJsIU	<1.1	UJsIU	<0.97	IU	<1	UJsIU	<0.98	IU
Styrene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Tetrachloroethene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Toluene		ug/kg	<1	UJsIU	<1	UJsIU	<1.1	UJsIU	<0.97	IU	<1	UJsIU	<0.98	IU
trans-1,3-Dichloropropene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Trichloroethene		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Vinyl Chloride		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	
Xylenes (Total)		ug/kg	NA		NA		NA		<9.9	IU	NA		NA	

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
1,1,1-Trichloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,1-Dichloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,1-Dichloroethene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloropropane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
2-Butanone		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
2-Hexanone		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Acetone		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Benzene		ug/kg	<0.98	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1	UJsIUH	<1.2	UJsIU
Bromodichloromethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Bromoform		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Bromomethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Carbon Disulfide		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Carbon Tetrachloride		ug/kg	<10	IU	<11	IU	4	IJ	<11	IU	<10	IU	<12	IU
Chlorobenzene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Chloroethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Chloroform		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Chloromethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Dibromochloromethane		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Ethylbenzene		ug/kg	<0.98	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1	UJsIUH	<1.2	UJsIU
m,p-Xylenes		ug/kg	<0.98	UJsIU	<1.1	UJsIU	<1.2	IU	<1.1	UJsIU	<1	UJsIUH	<1.2	UJsIU
Methylene Chloride		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU

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South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
o-Xylene		ug/kg	<0.98	UJsIU	<1.1	UJsIU	<1.2	IU	<1.1	UJsIU	<1	UJsIUH	<1.2	UJsIU
Styrene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Tetrachloroethene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Toluene		ug/kg	<0.98	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1	UJsIUH	<1.2	UJsIU
trans-1,3-Dichloropropene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Trichloroethene		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Vinyl Chloride		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU
Xylenes (Total)		ug/kg	<10	IU	<11	IU	<12	IU	<11	IU	<10	IU	<12	IU

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South West Trenches
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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358		LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
1,1,1-Trichloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,1,2-Trichloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,1-Dichloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,1-Dichloroethene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,2-Dichloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
1,2-Dichloropropane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
2-Butanone		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
2-Hexanone		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	75	Jsl
4-Methyl-2-Pentanone		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Acetone		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	41	UJsl
Benzene		ug/kg	<1.1	UJsIU	<0.97	UJsIU	1	Jsl	<1.1	UJhIUH	<1.1	UJhIUH	<9.9	UJsIU
Bromodichloromethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Bromoform		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Bromomethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Carbon Disulfide		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Carbon Tetrachloride		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Chlorobenzene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Chloroethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Chloroform		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Chloromethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	IU
Dibromochloromethane		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Ethylbenzene		ug/kg	<1.1	UJsIU	<0.97	UJsIU	<0.99	UJsIU	<1.1	UJhIUH	<1.1	UJhIUH	1,200	IJ
m,p-Xylenes		ug/kg	<1.1	UJsIU	<0.97	UJsIU	<0.99	UJsIU	<1.1	UJhIUH	<1.1	UJhIUH	810	
Methylene Chloride		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358		LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
o-Xylene		ug/kg	<1.1	UJsIU	<0.97	UJsIU	<0.99	UJsIU	<1.1	UJhIUH	<1.1	UJhIUH	360	
Styrene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	800	IJ
Tetrachloroethene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Toluene		ug/kg	<1.1	UJsIU	<0.97	UJsIU	<0.99	UJsIU	<1.1	UJhIUH	<1.1	UJhIUH	490	JsIE
trans-1,3-Dichloropropene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Trichloroethene		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Vinyl Chloride		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	<9.9	UJsIU
Xylenes (Total)		ug/kg	<11	IU	<9.8	IU	<10	IU	<11	IU	<11	IU	6,200	

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
1,1,1-Trichloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1-Dichloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1-Dichloroethene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloropropane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
2-Butanone		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
2-Hexanone		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Acetone		ug/kg	NA	3	UJzIJB	<11	IU	4	UJzIJB	<11	IU	<11	IU
Benzene		ug/kg	NA	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	IU	<1.1	IU
Bromodichloromethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Bromoform		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Bromomethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Carbon Disulfide		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Carbon Tetrachloride		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chlorobenzene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloroethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloroform		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloromethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Dibromochloromethane		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Ethylbenzene		ug/kg	NA	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	IU	<1.1	IU
m,p-Xylenes		ug/kg	NA	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	IU	<1.1	IU
Methylene Chloride		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
o-Xylene		ug/kg	NA	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	IU	<1.1	IU
Styrene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Tetrachloroethene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Toluene		ug/kg	NA	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	IU	<1.1	IU
trans-1,3-Dichloropropene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Trichloroethene		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Vinyl Chloride		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Xylenes (Total)		ug/kg	NA	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
1,1,1-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,1-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,1-Dichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
1,2-Dichloropropane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
2-Butanone		ug/kg	<11	IU	<11	IU	6	IJ	<11	IU	<10	IU	4	IJ
2-Hexanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Acetone		ug/kg	<11	IU	5	UJzIJB	38	UJzIB	<11	IU	4	UJzIJB	32	UJzIB
Benzene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	IU	<1.2	IU	<1	IU	<1.2	UJsIU
Bromodichloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Bromoform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Bromomethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Carbon Disulfide		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Carbon Tetrachloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Chlorobenzene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Chloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Chloroform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Chloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Dibromochloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Ethylbenzene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	IU	<1.2	IU	<1	IU	<1.2	UJsIU
m,p-Xylenes		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	IU	<1.2	IU	<1	IU	<1.2	UJsIU
Methylene Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
o-Xylene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	IU	<1.2	IU	<1	IU	<1.2	UJsIU
Styrene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Tetrachloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Toluene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	IU	<1.2	IU	<1	IU	<1.2	UJsIU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Trichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Vinyl Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU
Xylenes (Total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU	<12	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
1,1,1-Trichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,1-Dichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,1-Dichloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloropropane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
2-Butanone		ug/kg	<11	IU	4	IJ	<11	IU	3	IJ	<12	IU	<11	IU
2-Hexanone		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Acetone		ug/kg	6	UJzIJB	21	UJzIB	6	UJzIJB	10	UJzIJB	9	UJzIJB	4	UzIJB
Benzene		ug/kg	NA		NA		NA		NA		NA		<1.1	UJIIU
Benzene		ug/kg	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.1	IU	<1.3	IU	<11	IU
Bromodichloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Bromoform		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Bromomethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Carbon Disulfide		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Carbon Tetrachloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Chlorobenzene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Chloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Chloroform		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Chloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Dibromochloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Ethylbenzene		ug/kg	NA		NA		NA		NA		NA		<1.1	IU
Ethylbenzene		ug/kg	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.1	IU	<1.3	IU	<11	UJsIU

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
m,p-Xylenes		ug/kg	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.1	IU	<1.3	IU	NA	
m,p-Xylenes		ug/kg	NA		NA		NA		NA		NA		<1.1	UJsIU
Methylene Chloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
o-Xylene		ug/kg	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.1	IU	<1.3	IU	NA	
o-Xylene		ug/kg	NA		NA		NA		NA		NA		<1.1	UJsIU
Styrene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Tetrachloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Toluene		ug/kg	NA		NA		NA		NA		NA		<1.1	IU
Toluene		ug/kg	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.1	IU	<1.3	IU	<11	UJIIU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Trichloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Vinyl Chloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU
Xylenes (Total)		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU	<11	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
1,1,1-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Butanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Hexanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Acetone		ug/kg	<12	IU	5	UJzIJB	4	UJzIJB	7	UJzIJB	<12	IU	4	UJzIJB
Benzene		ug/kg	<1.2	UJIIU	<1.1	UJIIU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Benzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromodichloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromoform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromomethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chlorobenzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Ethylbenzene		ug/kg	<1.2	IU	<1.1	IU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Ethylbenzene		ug/kg	<12	UJIIU	<11	UJIIU	<12	IU	<12	IU	<12	IU	<12	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
m,p-Xylenes		ug/kg	<1.2	UJsIU	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Methylene Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
o-Xylene		ug/kg	<1.2	UJsIU	<1.1	UJsIU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Styrene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Tetrachloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Toluene		ug/kg	<12	UJiIU	<11	UJiIU	<12	IU	<12	IU	<12	IU	<12	IU
Toluene		ug/kg	<1.2	IU	<1.1	IU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Trichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
1,1,1-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,1-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,1-Dichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,2-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
1,2-Dichloropropane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
2-Butanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
2-Hexanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Acetone		ug/kg	<11	IU	<11	IU	4	UJzIJ	3	UJzIJ	<11	IU	5	UJzIJ
Benzene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU
Bromodichloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Bromoform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Bromomethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Carbon Disulfide		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Carbon Tetrachloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Chlorobenzene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Chloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Chloroform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Chloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Dibromochloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Ethylbenzene		ug/kg	<1.1	IU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU	<1.1	UJsIU
m,p-Xylenes		ug/kg	<1.1	IU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU
Methylene Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
o-Xylene		ug/kg	<1.1	IU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU
Styrene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Tetrachloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Toluene		ug/kg	<1.1	IU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU	<1.1	UJIIU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Trichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Vinyl Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU
Xylenes (Total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<10	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
1,1,1-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,1-Dichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
1,2-Dichloropropane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
2-Butanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
2-Hexanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Acetone		ug/kg	<11	IU	4	UJzIJ	3	UJzIJ	4	UJzIJ	<11	IU	<11	IU
Benzene		ug/kg	<1.1	UJsIU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Bromodichloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Bromoform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Bromomethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Carbon Disulfide		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Carbon Tetrachloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chlorobenzene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloroethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloroform		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Chloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Dibromochloromethane		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Ethylbenzene		ug/kg	<1.1	UJsIU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
m,p-Xylenes		ug/kg	<1.1	UJIIU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Methylene Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
o-Xylene		ug/kg	<1.1	UJ|IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Styrene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Tetrachloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Toluene		ug/kg	<1.1	UJ|IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Trichloroethene		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Vinyl Chloride		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU
Xylenes (Total)		ug/kg	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU	<11	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
1,1,1-Trichloroethane		ug/kg	<11	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<11	IU
1,1-Dichloroethane		ug/kg	<11	IU	<11	IU
1,1-Dichloroethene		ug/kg	<11	IU	<11	IU
1,2-Dichloroethane		ug/kg	<11	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<11	IU
1,2-Dichloropropane		ug/kg	<11	IU	<11	IU
2-Butanone		ug/kg	<11	IU	<11	IU
2-Hexanone		ug/kg	<11	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<11	IU
Acetone		ug/kg	5	UJzIJ	5	UJzIJ
Benzene		ug/kg	<1.1	IU	<1.1	IU
Bromodichloromethane		ug/kg	<11	IU	<11	IU
Bromoform		ug/kg	<11	IU	<11	IU
Bromomethane		ug/kg	<11	IU	<11	IU
Carbon Disulfide		ug/kg	<11	IU	<11	IU
Carbon Tetrachloride		ug/kg	<11	IU	<11	IU
Chlorobenzene		ug/kg	<11	IU	<11	IU
Chloroethane		ug/kg	<11	IU	<11	IU
Chloroform		ug/kg	<11	IU	<11	IU
Chloromethane		ug/kg	<11	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU
Dibromochloromethane		ug/kg	<11	IU	<11	IU
Ethylbenzene		ug/kg	<1.1	IU	<1.1	IU
m,p-Xylenes		ug/kg	<1.1	IU	<1.1	IU
Methylene Chloride		ug/kg	<11	IU	4	IJ

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
o-Xylene		ug/kg	<1.1	IU	<1.1	IU
Styrene		ug/kg	<11	IU	<11	IU
Tetrachloroethene		ug/kg	<11	IU	<11	IU
Toluene		ug/kg	5	UJsIJ	<1.1	IU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU
Trichloroethene		ug/kg	<11	IU	<11	IU
Vinyl Chloride		ug/kg	<11	IU	<11	IU
Xylenes (Total)		ug/kg	<11	IU	<11	IU

TABLE I-3

SOUTH WEST TRENCHES – SEMIVOLATILE ORGANICS BY CLP

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
1,2,4-Trichlorobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
1,2-Dichlorobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
1,3-Dichlorobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
1,4-Dichlorobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,2'-oxybis(1-Chloropropane)		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,4,5-Trichlorophenol		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
2,4,6-Trichlorophenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,4-Dichlorophenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,4-Dimethylphenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,4-Dinitrophenol		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
2,4-Dinitrotoluene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2,6-Dinitrotoluene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2-Chloronaphthalene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2-Chlorophenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2-Methyl-4,6-dinitrophenol		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
2-Methylnaphthalene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2-Methylphenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
2-Nitroaniline		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
2-Nitrophenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
3,3'-Dichlorobenzidine		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
3-Nitroaniline		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
4-Bromophenyl Phenyl Ether		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
4-Chloro-3-Methylphenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
4-Chloroaniline		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
4-Chlorophenyl Phenyl Ether		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
4-Methylphenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
4-Nitroaniline		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
4-Nitrophenol		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
Acenaphthene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Acenaphthylene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Anthracene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzo(a)anthracene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzo(a)pyrene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzo(b)fluoranthene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzo(g,h,i)perylene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzo(k)fluoranthene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Benzyl Butyl Phthalate		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Bis(2-Chloroethoxy)methane		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Bis(2-Chloroethyl)ether		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Bis(2-Ethylhexyl)phthalate		ug/kg	100	IJ	NA	<370	IU	<390	IU	<370	IU	NA
Carbazole		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Chrysene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Di-n-Butylphthalate		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Di-n-Octylphthalate		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Dibenzo(a,h)anthracene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Dibenzofuran		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Diethyl Phthalate		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Dimethyl Phthalate		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Fluoranthene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Fluorene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Hexachlorobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Hexachlorobutadiene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Hexachlorocyclopentadiene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Hexachloroethane		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
Indeno(1,2,3-cd)pyrene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Isophorone		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
N-Nitrosodi-n-propylamine		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Naphthalene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Nitrobenzene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Pentachlorophenol		ug/kg	<910	IU	NA	<890	IU	<950	IU	<910	IU	NA
Phenanthrene		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Phenol		ug/kg	<370	IU	NA	<370	IU	<390	IU	<370	IU	NA
Pyrene		ug/kg	<370	IU	NA	<370	IU	33	IJ	<370	IU	NA

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
1,2,4-Trichlorobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
1,2-Dichlorobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
1,3-Dichlorobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
1,4-Dichlorobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,4,5-Trichlorophenol		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
2,4,6-Trichlorophenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,4-Dichlorophenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,4-Dimethylphenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,4-Dinitrophenol		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
2,4-Dinitrotoluene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2,6-Dinitrotoluene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2-Chloronaphthalene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2-Chlorophenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
2-Methylnaphthalene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	18,000	
2-Methylphenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
2-Nitroaniline		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
2-Nitrophenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
3,3'-Dichlorobenzidine		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
3-Nitroaniline		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
4-Bromophenyl Phenyl Ether		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
4-Chloro-3-Methylphenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
4-Chloroaniline		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
4-Methylphenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
4-Nitroaniline		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU

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Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
4-Nitrophenol		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	<6,400	IU
Acenaphthene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	26,000	IE
Acenaphthylene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Anthracene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	26,000	IE
Benzo(a)anthracene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	16,000	
Benzo(a)pyrene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	4,300	
Benzo(b)fluoranthene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	4,600	
Benzo(g,h,i)perylene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	490	IJ
Benzo(k)fluoranthene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	4,300	
Benzyl Butyl Phthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Bis(2-Chloroethoxy)methane		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Bis(2-Chloroethyl)ether		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	3,500	
Carbazole		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	11,000	
Chrysene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	14,000	
Di-n-Butylphthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Di-n-Octylphthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Dibenzo(a,h)anthracene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	360	IJ
Dibenzofuran		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	26,000	IE
Diethyl Phthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Dimethyl Phthalate		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Fluoranthene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	130,000	IE
Fluorene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	34,000	IE
Hexachlorobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Hexachlorobutadiene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Hexachlorocyclopentadiene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Hexachloroethane		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU

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Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
Indeno(1,2,3-cd)pyrene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	700	IJ
Isophorone		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
N-Nitrosodi-n-propylamine		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Naphthalene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	2,800	
Nitrobenzene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Pentachlorophenol		ug/kg	<900	IU	<880	IU	NA	<800	IU	<800	IU	660	IJ
Phenanthrene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	190,000	IE
Phenol		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	<2,600	IU
Pyrene		ug/kg	<370	IU	<360	IU	NA	<330	IU	<330	IU	58,000	IE

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL		LEHR-S-340-QC		LEHR-S-340-QCDL		LEHR-S-341		LEHR-S-342		LEHR-S-343	
1,2,4-Trichlorobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
1,2-Dichlorobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
1,3-Dichlorobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
1,4-Dichlorobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,4,5-Trichlorophenol		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
2,4,6-Trichlorophenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,4-Dichlorophenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,4-Dimethylphenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,4-Dinitrophenol		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
2,4-Dinitrotoluene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2,6-Dinitrotoluene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2-Chloronaphthalene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2-Chlorophenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
2-Methylnaphthalene		ug/kg	22,000	IJ	17,000		25,000	IJ	<380	IU	<1,100	IU	<380	IU
2-Methylphenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
2-Nitroaniline		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
2-Nitrophenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
3,3'-Dichlorobenzidine		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
3-Nitroaniline		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
4-Bromophenyl Phenyl Ether		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
4-Chloro-3-Methylphenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
4-Chloroaniline		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
4-Methylphenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
4-Nitroaniline		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU

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Location Date	Background Level	UNITS	LEHR-S-340DL		LEHR-S-340-QC		LEHR-S-340-QCDL		LEHR-S-341		LEHR-S-342		LEHR-S-343	
4-Nitrophenol		ug/kg	<160,000	IU	<6,400	IU	<160,000	IU	<920	IU	<2,700	IU	<910	IU
Acenaphthene		ug/kg	48,000	IJ	30,000	IE	50,000	IJ	<380	IU	<1,100	IU	<380	IU
Acenaphthylene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Anthracene		ug/kg	32,000	IJ	24,000	IE	29,000	IJ	<380	IU	<1,100	IU	<380	IU
Benzo(a)anthracene		ug/kg	19,000	IJ	13,000		16,000	IJ	<380	IU	<1,100	IU	<380	IU
Benzo(a)pyrene		ug/kg	5,300	IJ	3,200		3,600	IJ	<380	IU	<1,100	IU	<380	IU
Benzo(b)fluoranthene		ug/kg	4,100	IJ	3,200		3,500	IJ	<380	IU	<1,100	IU	<380	IU
Benzo(g,h,i)perylene		ug/kg	<66,000	IU	450	IJ	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Benzo(k)fluoranthene		ug/kg	7,000	IJ	3,300		3,900	IJ	<380	IU	<1,100	IU	<380	IU
Benzyl Butyl Phthalate		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Bis(2-Chloroethoxy)methane		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Bis(2-Chloroethyl)ether		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<66,000	IU	4,100		4,500	IJ	<380	IU	<1,100	IU	<380	IU
Carbazole		ug/kg	7,500	IJ	10,000		6,800	IJ	<380	IU	<1,100	IU	<380	IU
Chrysene		ug/kg	18,000	IJ	12,000		14,000	IJ	<380	IU	<1,100	IU	<380	IU
Di-n-Butylphthalate		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Di-n-Octylphthalate		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Dibenzo(a,h)anthracene		ug/kg	<66,000	IU	290	IJ	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Dibenzofuran		ug/kg	39,000	IJ	26,000	IE	40,000	IJ	<380	IU	<1,100	IU	<380	IU
Diethyl Phthalate		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Dimethyl Phthalate		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Fluoranthene		ug/kg	150,000		92,000	IE	130,000		<380	IU	<1,100	IU	<380	IU
Fluorene		ug/kg	58,000	IJ	34,000	IE	59,000	IJ	<380	IU	<1,100	IU	<380	IU
Hexachlorobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Hexachlorobutadiene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Hexachlorocyclopentadiene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Hexachloroethane		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU

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Location Date	Background Level	UNITS	LEHR-S-340DL		LEHR-S-340-QC		LEHR-S-340-QCDL		LEHR-S-341		LEHR-S-342		LEHR-S-343	
Indeno(1,2,3-cd)pyrene		ug/kg	<66,000	IU	580	IJ	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Isophorone		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
N-Nitrosodi-n-propylamine		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Naphthalene		ug/kg	<66,000	IU	3,100		<66,000	IU	<380	IU	<1,100	IU	<380	IU
Nitrobenzene		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Pentachlorophenol		ug/kg	<160,000	IU	630	IJ	<160,000	IU	<920	IU	<2,700	IU	<910	IU
Phenanthrene		ug/kg	260,000		170,000	IE	240,000		<380	IU	<1,100	IU	<380	IU
Phenol		ug/kg	<66,000	IU	<2,600	IU	<66,000	IU	<380	IU	<1,100	IU	<380	IU
Pyrene		ug/kg	110,000		41,000	IE	85,000		<380	IU	<1,100	IU	<380	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
1,2,4-Trichlorobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
1,2-Dichlorobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
1,3-Dichlorobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
1,4-Dichlorobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,4,5-Trichlorophenol		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
2,4,6-Trichlorophenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,4-Dichlorophenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,4-Dimethylphenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,4-Dinitrophenol		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
2,4-Dinitrotoluene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2,6-Dinitrotoluene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2-Chloronaphthalene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2-Chlorophenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
2-Methylnaphthalene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2-Methylphenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
2-Nitroaniline		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
2-Nitrophenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
3,3'-Dichlorobenzidine		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
3-Nitroaniline		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
4-Bromophenyl Phenyl Ether		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
4-Chloro-3-Methylphenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
4-Chloroaniline		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
4-Methylphenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
4-Nitroaniline		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU

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Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
4-Nitrophenol		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
Acenaphthene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Acenaphthylene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Anthracene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzo(a)anthracene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzo(a)pyrene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzo(b)fluoranthene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzo(g,h,i)perylene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzo(k)fluoranthene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Benzyl Butyl Phthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Bis(2-Chloroethoxy)methane		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Bis(2-Chloroethyl)ether		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Carbazole		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Chrysene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Di-n-Butylphthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Di-n-Octylphthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Dibenzo(a,h)anthracene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Dibenzofuran		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Diethyl Phthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Dimethyl Phthalate		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Fluoranthene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Fluorene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Hexachlorobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Hexachlorobutadiene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Hexachlorocyclopentadiene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Hexachloroethane		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU

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Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
Indeno(1,2,3-cd)pyrene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Isophorone		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
N-Nitrosodi-n-propylamine		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Naphthalene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Nitrobenzene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Pentachlorophenol		ug/kg	<840	IU	<850	IU	<850	IU	<800	IU	<880	IU	<880	IU
Phenanthrene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Phenol		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	<360	IU
Pyrene		ug/kg	<350	IU	<350	IU	<350	IU	<330	IU	<360	IU	23	IJ

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Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
1,2,4-Trichlorobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
1,2-Dichlorobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
1,3-Dichlorobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
1,4-Dichlorobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,4,5-Trichlorophenol		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
2,4,6-Trichlorophenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,4-Dichlorophenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,4-Dimethylphenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,4-Dinitrophenol		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
2,4-Dinitrotoluene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2,6-Dinitrotoluene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2-Chloronaphthalene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2-Chlorophenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
2-Methylnaphthalene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2-Methylphenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
2-Nitroaniline		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
2-Nitrophenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
3,3'-Dichlorobenzidine		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
3-Nitroaniline		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
4-Bromophenyl Phenyl Ether		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
4-Chloro-3-Methylphenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
4-Chloroaniline		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
4-Methylphenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
4-Nitroaniline		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU

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Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
4-Nitrophenol		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
Acenaphthene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Acenaphthylene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Anthracene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzo(a)anthracene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzo(a)pyrene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzo(b)fluoranthene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzo(g,h,i)perylene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzo(k)fluoranthene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Benzyl Butyl Phthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Bis(2-Chloroethoxy)methane		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Bis(2-Chloroethyl)ether		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Carbazole		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Chrysene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Di-n-Butylphthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Di-n-Octylphthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Dibenzo(a,h)anthracene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Dibenzofuran		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Diethyl Phthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Dimethyl Phthalate		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Fluoranthene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Fluorene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Hexachlorobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Hexachlorobutadiene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Hexachlorocyclopentadiene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Hexachloroethane		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU

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Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
Indeno(1,2,3-cd)pyrene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Isophorone		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
N-Nitrosodi-n-propylamine		ug/kg	<330	UJsIU	<370	UJsIU	<390	IU	<360	UJsIU	<330	IU	<390	IU
Naphthalene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Nitrobenzene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Pentachlorophenol		ug/kg	<800	IU	<900	IU	<940	IU	<880	IU	<800	IU	<940	IU
Phenanthrene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Phenol		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU
Pyrene		ug/kg	<330	IU	<370	IU	<390	IU	<360	IU	<330	IU	<390	IU

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Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
1,2,4-Trichlorobenzene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
1,2-Dichlorobenzene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
1,3-Dichlorobenzene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
1,4-Dichlorobenzene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2,4,5-Trichlorophenol		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU
2,4,6-Trichlorophenol		ug/kg	<370	IU	NA	<330	IU	<370	IU	<370	IU	<18,000	IU
2,4-Dichlorophenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2,4-Dimethylphenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2,4-Dinitrophenol		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU
2,4-Dinitrotoluene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2,6-Dinitrotoluene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2-Chloronaphthalene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2-Chlorophenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<900	IU	NA	<800	IU	<900	IU	<890	IU	<44,000	IU
2-Methylnaphthalene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	160	IJ	3,000,000	IE
2-Methylphenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
2-Nitroaniline		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU
2-Nitrophenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
3,3'-Dichlorobenzidine		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
3-Nitroaniline		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU
4-Bromophenyl Phenyl Ether		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
4-Chloro-3-Methylphenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
4-Chloroaniline		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
4-Methylphenol		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
4-Nitroaniline		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU

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Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
4-Nitrophenol		ug/kg	<900	IU	NA	<800	RslU	<900	IU	<890	IU	<44,000	IU
Acenaphthene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	440		3,300,000	IE
Acenaphthylene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Anthracene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	420		2,100,000	IE
Benzo(a)anthracene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	240	IJ	710,000	IE
Benzo(a)pyrene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	60	IJ	140,000	
Benzo(b)fluoranthene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	54	IJ	270,000	IE
Benzo(g,h,i)perylene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	1,300,000	IE
Benzo(k)fluoranthene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	84	IJ	36,000	
Benzyl Butyl Phthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Bis(2-Chloroethoxy)methane		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Bis(2-Chloroethyl)ether		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Carbazole		ug/kg	<370	IU	NA	<330	RslU	<370	IU	99	IJ	410,000	IE
Chrysene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	240	IJ	640,000	IE
Di-n-Butylphthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Di-n-Octylphthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Dibenzo(a,h)anthracene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	18,000	IJ
Dibenzofuran		ug/kg	<370	IU	NA	<330	RslU	<370	IU	340	IJ	1,600,000	IE
Diethyl Phthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Dimethyl Phthalate		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Fluoranthene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	1,700		5,800,000	IE
Fluorene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	540		2,400,000	IE
Hexachlorobenzene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Hexachlorobutadiene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Hexachlorocyclopentadiene		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU
Hexachloroethane		ug/kg	<370	IU	NA	<330	RslU	<370	IU	<370	IU	<18,000	IU

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Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
Indeno(1,2,3-cd)pyrene		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	<370	IU	27,000	
Isophorone		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	<370	IU	<18,000	IU
N-Nitrosodi-n-propylamine		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	<370	IU	<18,000	IU
Naphthalene		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	120	IJ	1,200,000	IE
Nitrobenzene		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	<370	IU	<18,000	IU
Pentachlorophenol		ug/kg	<900	IU	NA	<800	RsIU	<900	IU	<890	IU	<44,000	IU
Phenanthrene		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	2,600		3,300,000	IE
Phenol		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	<370	IU	<18,000	IU
Pyrene		ug/kg	<370	IU	NA	<330	RsIU	<370	IU	1,000		1,800,000	IE

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Location Date	Background Level	UNITS	LEHR-S-362DL		LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
1,2,4-Trichlorobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
1,2-Dichlorobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
1,3-Dichlorobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
1,4-Dichlorobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,4,5-Trichlorophenol		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
2,4,6-Trichlorophenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,4-Dichlorophenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,4-Dimethylphenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,4-Dinitrophenol		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
2,4-Dinitrotoluene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2,6-Dinitrotoluene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2-Chloronaphthalene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2-Chlorophenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
2-Methylnaphthalene		ug/kg	1,900,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2-Methylphenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
2-Nitroaniline		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
2-Nitrophenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
3,3'-Dichlorobenzidine		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
3-Nitroaniline		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
4-Bromophenyl Phenyl Ether		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
4-Chloro-3-Methylphenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
4-Chloroaniline		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
4-Methylphenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
4-Nitroaniline		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL		LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
4-Nitrophenol		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
Acenaphthene		ug/kg	3,300,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Acenaphthylene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Anthracene		ug/kg	1,500,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzo(a)anthracene		ug/kg	660,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzo(a)pyrene		ug/kg	180,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzo(b)fluoranthene		ug/kg	96,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzo(g,h,i)perylene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzo(k)fluoranthene		ug/kg	240,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Benzyl Butyl Phthalate		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Bis(2-Chloroethoxy)methane		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Bis(2-Chloroethyl)ether		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<1,800,00	IU	23	UzIJB	<370	IU	<350	IU	<370	IU	<360	IU
Carbazole		ug/kg	350,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Chrysene		ug/kg	630,000	IJ	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Di-n-Butylphthalate		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Di-n-Octylphthalate		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Dibenzo(a,h)anthracene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Dibenzofuran		ug/kg	2,100,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Diethyl Phthalate		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Dimethyl Phthalate		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Fluoranthene		ug/kg	4,000,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Fluorene		ug/kg	3,100,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Hexachlorobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Hexachlorobutadiene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Hexachlorocyclopentadiene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Hexachloroethane		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL		LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
Indeno(1,2,3-cd)pyrene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Isophorone		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
N-Nitrosodi-n-propylamine		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Naphthalene		ug/kg	2,600,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Nitrobenzene		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Pentachlorophenol		ug/kg	<4,400,00	IU	<880	IU	<890	IU	<860	IU	<890	IU	<870	IU
Phenanthrene		ug/kg	9,500,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Phenol		ug/kg	<1,800,00	IU	<360	IU	<370	IU	<350	IU	<370	IU	<360	IU
Pyrene		ug/kg	3,900,000		<360	IU	<370	IU	<350	IU	<370	IU	<360	IU

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Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
1,2,4-Trichlorobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
1,2-Dichlorobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
1,3-Dichlorobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
1,4-Dichlorobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,4,5-Trichlorophenol		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
2,4,6-Trichlorophenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,4-Dichlorophenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,4-Dimethylphenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,4-Dinitrophenol		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
2,4-Dinitrotoluene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2,6-Dinitrotoluene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2-Chloronaphthalene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2-Chlorophenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
2-Methylnaphthalene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2-Methylphenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
2-Nitroaniline		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
2-Nitrophenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
3,3'-Dichlorobenzidine		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
3-Nitroaniline		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
4-Bromophenyl Phenyl Ether		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
4-Chloro-3-Methylphenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
4-Chloroaniline		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
4-Methylphenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
4-Nitroaniline		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
4-Nitrophenol		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
Acenaphthene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Acenaphthylene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Anthracene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzo(a)anthracene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzo(a)pyrene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzo(b)fluoranthene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzo(g,h,i)perylene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzo(k)fluoranthene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Benzyl Butyl Phthalate		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Bis(2-Chloroethoxy)methane		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Bis(2-Chloroethyl)ether		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	22	UzIJB	<380	IU	250	IJ	41	IJ	190	IJ	91	IJ
Carbazole		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Chrysene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Di-n-Butylphthalate		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Di-n-Octylphthalate		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Dibenzo(a,h)anthracene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Dibenzofuran		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Diethyl Phthalate		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Dimethyl Phthalate		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Fluoranthene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	31	IJ	<400	IU
Fluorene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Hexachlorobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Hexachlorobutadiene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Hexachlorocyclopentadiene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Hexachloroethane		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
Indeno(1,2,3-cd)pyrene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Isophorone		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
N-Nitrosodi-n-propylamine		ug/kg	<350	IU	<380	UJIIU	<370	UJIIU	<390	UJIIU	<340	UJIIU	<400	UJIIU
Naphthalene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Nitrobenzene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Pentachlorophenol		ug/kg	<860	IU	<910	IU	<890	IU	<940	IU	<830	IU	<970	IU
Phenanthrene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	26	IJ	<400	IU
Phenol		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU
Pyrene		ug/kg	<350	IU	<380	IU	<370	IU	<390	IU	<340	IU	<400	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
1,2,4-Trichlorobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	RIIU
1,2-Dichlorobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
1,3-Dichlorobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
1,4-Dichlorobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	RIIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2,4,5-Trichlorophenol		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
2,4,6-Trichlorophenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2,4-Dichlorophenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2,4-Dimethylphenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2,4-Dinitrophenol		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
2,4-Dinitrotoluene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2,6-Dinitrotoluene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2-Chloronaphthalene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2-Chlorophenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
2-Methylnaphthalene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2-Methylphenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
2-Nitroaniline		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
2-Nitrophenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
3,3'-Dichlorobenzidine		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
3-Nitroaniline		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
4-Bromophenyl Phenyl Ether		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
4-Chloro-3-Methylphenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
4-Chloroaniline		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
4-Methylphenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
4-Nitroaniline		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU

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Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
4-Nitrophenol		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
Acenaphthene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Acenaphthylene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Anthracene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzo(a)anthracene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzo(a)pyrene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzo(b)fluoranthene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzo(g,h,i)perylene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzo(k)fluoranthene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Benzyl Butyl Phthalate		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Bis(2-Chloroethoxy)methane		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Bis(2-Chloroethyl)ether		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<360	IU	26	IJ	<380	IU	38	IJ	<410	IU	<370	IU
Carbazole		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Chrysene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Di-n-Butylphthalate		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Di-n-Octylphthalate		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Dibenzo(a,h)anthracene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Dibenzofuran		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Diethyl Phthalate		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Dimethyl Phthalate		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Fluoranthene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Fluorene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Hexachlorobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Hexachlorobutadiene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Hexachlorocyclopentadiene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Hexachloroethane		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
Indeno(1,2,3-cd)pyrene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Isophorone		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
N-Nitrosodi-n-propylamine		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	RIIU
Naphthalene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Nitrobenzene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Pentachlorophenol		ug/kg	<870	IU	<930	IU	<920	IU	<880	IU	<1,000	IU	<890	IU
Phenanthrene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Phenol		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU
Pyrene		ug/kg	<360	IU	<390	IU	<380	IU	<360	IU	<410	IU	<370	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
1,2,4-Trichlorobenzene		ug/kg	<390	RIIU	<360	RIIU	<400	RIIU	<400	RIIU	<400	RIIU	<410	RIIU
1,2-Dichlorobenzene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
1,3-Dichlorobenzene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
1,4-Dichlorobenzene		ug/kg	<390	RIIU	<360	RIIU	<400	RIIU	<400	RIIU	<400	RIIU	<410	RIIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2,4,5-Trichlorophenol		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
2,4,6-Trichlorophenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2,4-Dichlorophenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2,4-Dimethylphenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2,4-Dinitrophenol		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
2,4-Dinitrotoluene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2,6-Dinitrotoluene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2-Chloronaphthalene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2-Chlorophenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
2-Methylnaphthalene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2-Methylphenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
2-Nitroaniline		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
2-Nitrophenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
3,3'-Dichlorobenzidine		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
3-Nitroaniline		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
4-Bromophenyl Phenyl Ether		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
4-Chloro-3-Methylphenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
4-Chloroaniline		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
4-Methylphenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
4-Nitroaniline		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
4-Nitrophenol		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
Acenaphthene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Acenaphthylene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Anthracene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzo(a)anthracene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzo(a)pyrene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzo(b)fluoranthene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzo(g,h,i)perylene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzo(k)fluoranthene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Benzyl Butyl Phthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Bis(2-Chloroethoxy)methane		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Bis(2-Chloroethyl)ether		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Carbazole		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Chrysene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Di-n-Butylphthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Di-n-Octylphthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Dibenzo(a,h)anthracene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Dibenzofuran		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Diethyl Phthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Dimethyl Phthalate		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Fluoranthene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Fluorene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Hexachlorobenzene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Hexachlorobutadiene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Hexachlorocyclopentadiene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Hexachloroethane		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Isophorone		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
N-Nitrosodi-n-propylamine		ug/kg	<390	RIIU	<360	RIIU	<400	RIIU	<400	RIIU	<400	RIIU	<410	RIIU
Naphthalene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Nitrobenzene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Pentachlorophenol		ug/kg	<950	IU	<860	IU	<960	IU	<970	IU	<960	IU	<1,000	IU
Phenanthrene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Phenol		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU
Pyrene		ug/kg	<390	IU	<360	IU	<400	IU	<400	IU	<400	IU	<410	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
1,2,4-Trichlorobenzene		ug/kg	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<350	RIIU
1,2-Dichlorobenzene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
1,3-Dichlorobenzene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
1,4-Dichlorobenzene		ug/kg	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<350	RIIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2,4,5-Trichlorophenol		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
2,4,6-Trichlorophenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2,4-Dichlorophenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2,4-Dimethylphenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2,4-Dinitrophenol		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
2,4-Dinitrotoluene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2,6-Dinitrotoluene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2-Chloronaphthalene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2-Chlorophenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
2-Methylnaphthalene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2-Methylphenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
2-Nitroaniline		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
2-Nitrophenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
3,3'-Dichlorobenzidine		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
3-Nitroaniline		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
4-Bromophenyl Phenyl Ether		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
4-Chloro-3-Methylphenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
4-Chloroaniline		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
4-Methylphenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
4-Nitroaniline		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
4-Nitrophenol		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
Acenaphthene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Acenaphthylene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Anthracene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzo(a)anthracene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzo(a)pyrene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzo(b)fluoranthene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzo(g,h,i)perylene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzo(k)fluoranthene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Benzyl Butyl Phthalate		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Bis(2-Chloroethoxy)methane		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Bis(2-Chloroethyl)ether		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<360	IU	<360	IU	<360	IU	29	IJ	<360	IU	<350	IU
Carbazole		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Chrysene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Di-n-Butylphthalate		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Di-n-Octylphthalate		ug/kg	<360	IU	<360	IU	<360	IU	37	IJ	<360	IU	<350	IU
Dibenzo(a,h)anthracene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Dibenzofuran		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Diethyl Phthalate		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Dimethyl Phthalate		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Fluoranthene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Fluorene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Hexachlorobenzene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Hexachlorobutadiene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Hexachlorocyclopentadiene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Hexachloroethane		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
Indeno(1,2,3-cd)pyrene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Isophorone		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
N-Nitrosodi-n-propylamine		ug/kg	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<360	RIIU	<350	RIIU
Naphthalene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Nitrobenzene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Pentachlorophenol		ug/kg	<870	IU	<870	IU	<880	IU	<870	IU	<870	IU	<860	IU
Phenanthrene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Phenol		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU
Pyrene		ug/kg	<360	IU	<360	IU	<360	IU	<360	IU	<360	IU	<350	IU

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Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
1,2,4-Trichlorobenzene		ug/kg	<360	RIIU	<350	RIIU	<360	IU	<370	IU	<360	UJIIU	<350	UJIIU
1,2-Dichlorobenzene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
1,3-Dichlorobenzene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
1,4-Dichlorobenzene		ug/kg	<360	RIIU	<350	RIIU	<360	IU	<370	IU	<360	IU	<350	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2,4,5-Trichlorophenol		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
2,4,6-Trichlorophenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2,4-Dichlorophenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2,4-Dimethylphenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2,4-Dinitrophenol		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
2,4-Dinitrotoluene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2,6-Dinitrotoluene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2-Chloronaphthalene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2-Chlorophenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
2-Methylnaphthalene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2-Methylphenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
2-Nitroaniline		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
2-Nitrophenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
3,3'-Dichlorobenzidine		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
3-Nitroaniline		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
4-Bromophenyl Phenyl Ether		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
4-Chloro-3-Methylphenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
4-Chloroaniline		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
4-Methylphenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
4-Nitroaniline		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
4-Nitrophenol		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
Acenaphthene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Acenaphthylene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Anthracene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzo(a)anthracene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzo(a)pyrene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzo(b)fluoranthene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzo(g,h,i)perylene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzo(k)fluoranthene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Benzyl Butyl Phthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Bis(2-Chloroethoxy)methane		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Bis(2-Chloroethyl)ether		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Carbazole		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Chrysene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Di-n-Butylphthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	31	IJ
Di-n-Octylphthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Dibenzo(a,h)anthracene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Dibenzofuran		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Diethyl Phthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Dimethyl Phthalate		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Fluoranthene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Fluorene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Hexachlorobenzene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Hexachlorobutadiene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Hexachlorocyclopentadiene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Hexachloroethane		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
Indeno(1,2,3-cd)pyrene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Isophorone		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
N-Nitrosodi-n-propylamine		ug/kg	<360	RIIU	<350	RIIU	<360	IU	<370	IU	<360	IU	<350	IU
Naphthalene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Nitrobenzene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Pentachlorophenol		ug/kg	<860	IU	<850	IU	<870	IU	<900	IU	<860	IU	<850	IU
Phenanthrene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Phenol		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU
Pyrene		ug/kg	<360	IU	<350	IU	<360	IU	<370	IU	<360	IU	<350	IU

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
1,2,4-Trichlorobenzene		ug/kg	<350	UJIIU	<350	UJIIU
1,2-Dichlorobenzene		ug/kg	<350	IU	<350	IU
1,3-Dichlorobenzene		ug/kg	<350	IU	<350	IU
1,4-Dichlorobenzene		ug/kg	<350	IU	<350	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<350	IU	<350	IU
2,4,5-Trichlorophenol		ug/kg	<840	IU	<860	IU
2,4,6-Trichlorophenol		ug/kg	<350	IU	<350	IU
2,4-Dichlorophenol		ug/kg	<350	IU	<350	IU
2,4-Dimethylphenol		ug/kg	<350	IU	<350	IU
2,4-Dinitrophenol		ug/kg	<840	IU	<860	IU
2,4-Dinitrotoluene		ug/kg	<350	IU	<350	IU
2,6-Dinitrotoluene		ug/kg	<350	IU	<350	IU
2-Chloronaphthalene		ug/kg	<350	IU	<350	IU
2-Chlorophenol		ug/kg	<350	IU	<350	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<840	IU	<860	IU
2-Methylnaphthalene		ug/kg	<350	IU	<350	IU
2-Methylphenol		ug/kg	<350	IU	<350	IU
2-Nitroaniline		ug/kg	<840	IU	<860	IU
2-Nitrophenol		ug/kg	<350	IU	<350	IU
3,3'-Dichlorobenzidine		ug/kg	<350	IU	<350	IU
3-Nitroaniline		ug/kg	<840	IU	<860	IU
4-Bromophenyl Phenyl Ether		ug/kg	<350	IU	<350	IU
4-Chloro-3-Methylphenol		ug/kg	<350	IU	<350	IU
4-Chloroaniline		ug/kg	<350	IU	<350	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<350	IU	<350	IU
4-Methylphenol		ug/kg	<350	IU	<350	IU
4-Nitroaniline		ug/kg	<840	IU	<860	IU

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
4-Nitrophenol		ug/kg	<840	IU	<860	IU
Acenaphthene		ug/kg	<350	IU	<350	IU
Acenaphthylene		ug/kg	<350	IU	<350	IU
Anthracene		ug/kg	<350	IU	<350	IU
Benzo(a)anthracene		ug/kg	<350	IU	<350	IU
Benzo(a)pyrene		ug/kg	<350	IU	<350	IU
Benzo(b)fluoranthene		ug/kg	<350	IU	<350	IU
Benzo(g,h,i)perylene		ug/kg	<350	IU	<350	IU
Benzo(k)fluoranthene		ug/kg	<350	IU	<350	IU
Benzyl Butyl Phthalate		ug/kg	<350	IU	<350	IU
Bis(2-Chloroethoxy)methane		ug/kg	<350	IU	<350	IU
Bis(2-Chloroethyl)ether		ug/kg	<350	IU	<350	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	71	IJ	<350	IU
Carbazole		ug/kg	<350	IU	<350	IU
Chrysene		ug/kg	19	IJ	<350	IU
Di-n-Butylphthalate		ug/kg	<350	IU	<350	IU
Di-n-Octylphthalate		ug/kg	<350	IU	<350	IU
Dibenzo(a,h)anthracene		ug/kg	<350	IU	<350	IU
Dibenzofuran		ug/kg	<350	IU	<350	IU
Diethyl Phthalate		ug/kg	<350	IU	<350	IU
Dimethyl Phthalate		ug/kg	<350	IU	<350	IU
Fluoranthene		ug/kg	<350	IU	<350	IU
Fluorene		ug/kg	<350	IU	<350	IU
Hexachlorobenzene		ug/kg	<350	IU	<350	IU
Hexachlorobutadiene		ug/kg	<350	IU	<350	IU
Hexachlorocyclopentadiene		ug/kg	<350	IU	<350	IU
Hexachloroethane		ug/kg	<350	IU	<350	IU

Table I-3
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
Indeno(1,2,3-cd)pyrene		ug/kg	<350	IU	<350	IU
Isophorone		ug/kg	<350	IU	<350	IU
N-Nitrosodi-n-propylamine		ug/kg	<350	IU	<350	IU
Naphthalene		ug/kg	<350	IU	<350	IU
Nitrobenzene		ug/kg	<350	IU	<350	IU
Pentachlorophenol		ug/kg	<840	IU	<860	IU
Phenanthrene		ug/kg	<350	IU	<350	IU
Phenol		ug/kg	<350	IU	<350	IU
Pyrene		ug/kg	<350	IU	<350	IU

TABLE I-4

SOUTH WEST TRENCHES – PESTICIDES AND PCBS BY CLP

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2	
4,4'-DDD		ug/kg	NA		19	<3.7	IU	<4	IU	NA		17	Jcl
4,4'-DDE		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
4,4'-DDT		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Aldrin		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	UJrIU	NA	
Alpha-BHC		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Alpha-Chlordane		ug/kg	NA		48	0.88	IJP	<2	IU	NA		37	
Arochlor-1016		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Arochlor-1221		ug/kg	<76	IU	NA	<74	IU	<79	IU	<76	IU	NA	
Arochlor-1232		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Arochlor-1242		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Arochlor-1248		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Arochlor-1254		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Arochlor-1260		ug/kg	<38	IU	NA	<37	IU	<40	IU	<38	IU	NA	
Beta-BHC		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	UJclU	NA	
Delta-BHC		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Dieldrin		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Endosulfan I		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Endosulfan II		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Endosulfan Sulfate		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Endrin		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Endrin Aldehyde		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Endrin Ketone		ug/kg	<3.8	IU	NA	<3.7	IU	<4	IU	<3.8	IU	NA	
Gamma-BHC		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Gamma-Chlordane		ug/kg	NA		51	0.93	IJP	<2	IU	NA		43	
Heptachlor		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Heptachlor Epoxide		ug/kg	<1.9	IU	NA	<1.9	IU	<2	IU	<1.9	IU	NA	
Methoxychlor		ug/kg	<19	IU	NA	<19	IU	<20	IU	<19	IU	NA	

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
Toxaphene		ug/kg	<190	IU	NA	<190	IU	<200	IU	<190	IU	NA

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
4,4'-DDD		ug/kg	<3.7	UJcIU	NA		31	28	JcIP	56	IE	<3.3	UJcIU
4,4'-DDE		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
4,4'-DDT		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Aldrin		ug/kg	<1.9	UJrIU	<1.9	UJrIU	NA	<1.7	UJcIU	<1.7	IU	<1.7	UJcIU
Alpha-BHC		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Alpha-Chlordane		ug/kg	1.8	IJ	NA		83	60		100	IP	<1.7	IU
Arochlor-1016		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	<33	IU
Arochlor-1221		ug/kg	<75	IU	<74	IU	NA	<67	IU	<67	IU	<66	IU
Arochlor-1232		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	<33	IU
Arochlor-1242		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	<33	IU
Arochlor-1248		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	<33	IU
Arochlor-1254		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	<33	IU
Arochlor-1260		ug/kg	<37	IU	<37	IU	NA	<33	IU	<33	IU	1,000	
Beta-BHC		ug/kg	<1.9	UJcIU	<1.9	UJcIU	NA	<1.7	UJcIU	<1.7	IU	<1.7	UJcIU
Delta-BHC		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Dieldrin		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Endosulfan I		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Endosulfan II		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Endosulfan Sulfate		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Endrin		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Endrin Aldehyde		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Endrin Ketone		ug/kg	<3.7	IU	<3.7	IU	NA	<3.3	IU	<3.3	IU	<3.3	IU
Gamma-BHC		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Gamma-Chlordane		ug/kg	2.1		NA		100	78		140	IE	<1.7	IU
Heptachlor		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Heptachlor Epoxide		ug/kg	<1.9	IU	<1.9	IU	NA	<1.7	IU	<1.7	IU	<1.7	IU
Methoxychlor		ug/kg	<19	IU	<19	IU	NA	<17	IU	<17	IU	<17	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
Toxaphene		ug/kg	<190	IU	<190	IU	NA	<170	IU	<170	IU	<170	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342		LEHR-S-343	
4,4'-DDD		ug/kg	NA	<3.3	IU	NA	<3.8	UJcIU	80	JcIP	<3.8	UJcIU
4,4'-DDE		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
4,4'-DDT		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Aldrin		ug/kg	NA	<1.7	IU	NA	<1.9	UJrIU	<1.7	UJcIU	<1.9	UJrIU
Alpha-BHC		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Alpha-Chlordane		ug/kg	NA	<1.7	IU	NA	1.3	IJ	200		4.8	
Arochlor-1016		ug/kg	NA	<33	IU	NA	<38	IU	<35	IU	<38	IU
Arochlor-1221		ug/kg	NA	<66	IU	NA	<76	IU	<70	IU	<76	IU
Arochlor-1232		ug/kg	NA	<33	IU	NA	<38	IU	<35	IU	<38	IU
Arochlor-1242		ug/kg	NA	<33	IU	NA	<38	IU	<35	IU	<38	IU
Arochlor-1248		ug/kg	NA	<33	IU	NA	<38	IU	<35	IU	<38	IU
Arochlor-1254		ug/kg	NA	<33	IU	NA	<38	IU	<35	IU	<38	IU
Arochlor-1260		ug/kg	NA	1,300		NA	<38	IU	<35	IU	<38	IU
Beta-BHC		ug/kg	NA	<1.7	IU	NA	<1.9	UJcIU	<1.7	UJcIU	<1.9	UJcIU
Delta-BHC		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Dieldrin		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Endosulfan I		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Endosulfan II		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Endosulfan Sulfate		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Endrin		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Endrin Aldehyde		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Endrin Ketone		ug/kg	NA	<3.3	IU	NA	<3.8	IU	<3.5	IU	<3.8	IU
Gamma-BHC		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Gamma-Chlordane		ug/kg	NA	<1.7	IU	NA	1.8	IJ	230		6	
Heptachlor		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Heptachlor Epoxide		ug/kg	NA	<1.7	IU	NA	<1.9	IU	<1.7	IU	<1.9	IU
Methoxychlor		ug/kg	NA	<17	IU	NA	<19	IU	<17	IU	<19	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342		LEHR-S-343	
Toxaphene		ug/kg	NA	<170	IU	NA	<190	IU	<170	IU	<190	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
4,4'-DDD		ug/kg	<3.5	UJcIU	<3.5	UJcIU	<3.5	UJcIU	240	Jcl	<3.7	UJcIU	<3.7	UJcIU
4,4'-DDE		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
4,4'-DDT		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Aldrin		ug/kg	<1.8	UJrIU	<1.8	UJrIU	<1.8	UJrIU	<1.7	UJcIU	<1.8	UJrIU	<1.8	UJrIU
Alpha-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Alpha-Chlordane		ug/kg	25		0.98	IJP	<1.8	IU	310		21		2.3	
Arochlor-1016		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Arochlor-1221		ug/kg	<70	IU	<71	IU	<71	IU	<66	IU	<73	IU	<73	IU
Arochlor-1232		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Arochlor-1242		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Arochlor-1248		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Arochlor-1254		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Arochlor-1260		ug/kg	<35	IU	<35	IU	<35	IU	<33	IU	<37	IU	<37	IU
Beta-BHC		ug/kg	<1.8	UJcIU	<1.8	UJcIU	<1.8	UJcIU	<1.7	UJcIU	<1.8	UJcIU	<1.8	UJcIU
Delta-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Dieldrin		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Endosulfan I		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Endosulfan II		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Endosulfan Sulfate		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Endrin		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Endrin Aldehyde		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Endrin Ketone		ug/kg	<3.5	IU	<3.5	IU	<3.5	IU	<3.3	IU	<3.7	IU	<3.7	IU
Gamma-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Gamma-Chlordane		ug/kg	25		0.9	IJ	<1.8	IU	300		27		2.3	
Heptachlor		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	<1.8	IU	<1.8	IU	<1.8	IU	<1.7	IU	<1.8	IU	<1.8	IU
Methoxychlor		ug/kg	<18	IU	<18	IU	<18	IU	<17	IU	<18	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
Toxaphene		ug/kg	<180	IU	<180	IU	<180	IU	<170	IU	<180	IU	<180	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
4,4'-DDD		ug/kg	200		<3.7	IU	<3.9	IU	<3.7	IU	5.7		<3.9	IU
4,4'-DDE		ug/kg	<3.3	IU	<3.7	IU	1.8	IJ	5.6		<3.3	IU	<3.9	IU
4,4'-DDT		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	2.2	IJ	<3.3	IU	<3.9	IU
Aldrin		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Alpha-BHC		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Alpha-Chlordane		ug/kg	800		<1.9	IU	<2	IU	<1.8	IU	10		1.4	IJP
Arochlor-1016		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Arochlor-1221		ug/kg	<66	IU	<75	IU	<78	IU	<74	IU	<66	IU	<78	IU
Arochlor-1232		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Arochlor-1242		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Arochlor-1248		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Arochlor-1254		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Arochlor-1260		ug/kg	<33	IU	<37	IU	<39	IU	<37	IU	<33	IU	<39	IU
Beta-BHC		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Delta-BHC		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Dieldrin		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Endosulfan I		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Endosulfan II		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Endosulfan Sulfate		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Endrin		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Endrin Aldehyde		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Endrin Ketone		ug/kg	<3.3	IU	<3.7	IU	<3.9	IU	<3.7	IU	<3.3	IU	<3.9	IU
Gamma-BHC		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Gamma-Chlordane		ug/kg	740		<1.9	IU	<2	IU	<1.8	IU	11		1.5	IJ
Heptachlor		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Heptachlor Epoxide		ug/kg	<1.6	IU	<1.9	IU	<2	IU	<1.8	IU	<1.7	IU	<1.9	IU
Methoxychlor		ug/kg	<16	IU	<19	IU	<20	IU	<18	IU	<17	IU	<19	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
Toxaphene		ug/kg	<160	IU	<190	IU	<200	IU	<180	IU	<170	IU	<190	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
4,4'-DDD		ug/kg	<3.7	IU	NA	7.8	JcIP	<3.7	IU	<3.7	IU	<190	UJsIU
4,4'-DDE		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
4,4'-DDT		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Aldrin		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Alpha-BHC		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Alpha-Chlordane		ug/kg	1.6	IJ	NA	16		1.8	IJ	2.2		<94	UJsIU
Arochlor-1016		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Arochlor-1221		ug/kg	<74	IU	NA	<67	IU	<75	IU	<75	IU	<3,800	UJsIU
Arochlor-1232		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Arochlor-1242		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Arochlor-1248		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Arochlor-1254		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Arochlor-1260		ug/kg	<37	IU	NA	<33	IU	<37	IU	<37	IU	<1,900	UJsIU
Beta-BHC		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Delta-BHC		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Dieldrin		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Endosulfan I		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Endosulfan II		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Endosulfan Sulfate		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Endrin		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Endrin Aldehyde		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Endrin Ketone		ug/kg	<3.7	IU	NA	<3.3	IU	<3.7	IU	<3.7	IU	<190	UJsIU
Gamma-BHC		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Gamma-Chlordane		ug/kg	1.9	IP	NA	17		1.6	IJP	2.2		<94	UJsIU
Heptachlor		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Heptachlor Epoxide		ug/kg	<1.8	IU	NA	<1.7	IU	<1.9	IU	<1.9	IU	<94	UJsIU
Methoxychlor		ug/kg	<18	IU	NA	<17	IU	<19	IU	<19	IU	<940	UJsIU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
Toxaphene		ug/kg	<180	IU	NA	<170	IU	<190	IU	<190	IU	<9,400	UJsIU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
4,4'-DDD		ug/kg	NA	7.6	IP	<3.7	IU	<3.6	IU	3.3	IJ	3.4	IJ
4,4'-DDE		ug/kg	NA	14		<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
4,4'-DDT		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Aldrin		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Alpha-BHC		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
alpha-Chlordane		ug/kg	NA	10		<1.9	IU	<1.8	IU	4.3		3.8	
Arochlor-1016		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Arochlor-1221		ug/kg	NA	<73	IU	<74	IU	<72	IU	<74	IU	<72	IU
Arochlor-1232		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Arochlor-1242		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Arochlor-1248		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Arochlor-1254		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Arochlor-1260		ug/kg	NA	<37	IU	<37	IU	<36	IU	<37	IU	<36	IU
Beta-BHC		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Delta-BHC		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Dieldrin		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Endosulfan I		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Endosulfan II		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Endosulfan Sulfate		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Endrin		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Endrin Aldehyde		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Endrin Ketone		ug/kg	NA	<3.7	IU	<3.7	IU	<3.6	IU	<3.7	IU	<3.6	IU
Gamma-BHC		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
gamma-Chlordane		ug/kg	NA	1.2	IJP	<1.9	IU	<1.8	IU	6		6	
Heptachlor		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	NA	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.8	IU
Methoxychlor		ug/kg	NA	<18	IU	<19	IU	<18	IU	<19	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
Toxaphene		ug/kg	NA	<180	IU	<190	IU	<180	IU	<190	IU	<180	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
4,4'-DDD		ug/kg	<3.6	IU	0.48	IJ	140	IP	0.73	IJ	30	IP	0.52	IJ
4,4'-DDE		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
4,4'-DDT		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Aldrin		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Alpha-BHC		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Alpha-Chlordane		ug/kg	<1.8	IU	0.94	IJP	490	IP	1.7	IJ	88	IP	0.92	IJ
Arochlor-1016		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Arochlor-1221		ug/kg	<72	IU	<75	IU	<73	IU	<78	IU	<69	IU	<81	IU
Arochlor-1232		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Arochlor-1242		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Arochlor-1248		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Arochlor-1254		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Arochlor-1260		ug/kg	<36	IU	<38	IU	<37	IU	<39	IU	<34	IU	<40	IU
Beta-BHC		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Delta-BHC		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Dieldrin		ug/kg	<3.6	IU	<3.8	IU	26	IP	<3.9	IU	4.2	IP	<4	IU
Endosulfan I		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	0.44	IJ	<1.7	IU	0.2	IJ
Endosulfan II		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Endosulfan Sulfate		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Endrin		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Endrin Aldehyde		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Endrin Ketone		ug/kg	<3.6	IU	<3.8	IU	<3.7	IU	<3.9	IU	<3.4	IU	<4	IU
Gamma-BHC		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Gamma-Chlordane		ug/kg	<1.8	IU	1.3	IJP	590		2.3		110		1.1	IJ
Heptachlor		ug/kg	<1.8	IU	<1.9	IU	47	IP	<1.9	IU	17	IP	<2	IU
Heptachlor Epoxide		ug/kg	<1.8	IU	<1.9	IU	<1.8	IU	<1.9	IU	<1.7	IU	<2	IU
Methoxychlor		ug/kg	<18	IU	<19	IU	<18	IU	<19	IU	<17	IU	<20	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
Toxaphene		ug/kg	<180	IU	<190	IU	<180	IU	<190	IU	<170	IU	<200	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
4,4'-DDD		ug/kg	32		<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
4,4'-DDE		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	3.7	IJ
4,4'-DDT		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Aldrin		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Alpha-BHC		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Alpha-Chlordane		ug/kg	50	IP	<2	IU	0.56	IJ	<1.8	IU	<2.1	IU	5.1	IP
Arochlor-1016		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Arochlor-1221		ug/kg	<73	IU	<78	IU	<76	IU	<73	IU	<83	IU	<73	IU
Arochlor-1232		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Arochlor-1242		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Arochlor-1248		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Arochlor-1254		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Arochlor-1260		ug/kg	<37	IU	<39	IU	<38	IU	<36	IU	<42	IU	<37	IU
Beta-BHC		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Delta-BHC		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Dieldrin		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Endosulfan I		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Endosulfan II		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Endosulfan Sulfate		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Endrin		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Endrin Aldehyde		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Endrin Ketone		ug/kg	<3.7	IU	<3.9	IU	<3.8	IU	<3.6	IU	<4.2	IU	<3.7	IU
Gamma-BHC		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Gamma-Chlordane		ug/kg	50	IP	<2	IU	0.67	IJ	<1.8	IU	<2.1	IU	5.6	
Heptachlor		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	<1.8	IU	<2	IU	<1.9	IU	<1.8	IU	<2.1	IU	<1.8	IU
Methoxychlor		ug/kg	<18	IU	<20	IU	<19	IU	<18	IU	<21	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
Toxaphene		ug/kg	<180	IU	<200	IU	<190	IU	<180	IU	<210	IU	<180	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
4,4'-DDD		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	0.57	IJP
4,4'-DDE		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
4,4'-DDT		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Aldrin		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Alpha-BHC		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Alpha-Chlordane		ug/kg	<2	IU	0.73	IJP	<2	IU	0.68	IJP	<2	IU	1.6	IJP
Arochlor-1016		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Arochlor-1221		ug/kg	<79	IU	<72	IU	<80	IU	<80	IU	<80	IU	<83	IU
Arochlor-1232		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Arochlor-1242		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Arochlor-1248		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Arochlor-1254		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Arochlor-1260		ug/kg	<40	IU	<36	IU	<40	IU	<40	IU	<40	IU	<41	IU
Beta-BHC		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Delta-BHC		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Dieldrin		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Endosulfan I		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Endosulfan II		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Endosulfan Sulfate		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Endrin		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Endrin Aldehyde		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Endrin Ketone		ug/kg	<4	IU	<3.6	IU	<4	IU	<4	IU	<4	IU	<4.1	IU
Gamma-BHC		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Gamma-Chlordane		ug/kg	<2	IU	0.86	IJ	<2	IU	0.82	IJ	<2	IU	1.9	IJ
Heptachlor		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Heptachlor Epoxide		ug/kg	<2	IU	<1.8	IU	<2	IU	<2	IU	<2	IU	<2.1	IU
Methoxychlor		ug/kg	<20	IU	<18	IU	<20	IU	<20	IU	<20	IU	<21	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
Toxaphene		ug/kg	<200	IU	<180	IU	<200	IU	<200	IU	<200	IU	<210	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
4,4'-DDD		ug/kg	<3.6	IU	4	IP	<360	IU	<3.6	IU	99	IP	50	IP
4,4'-DDE		ug/kg	0.69	IJ	<3.7	IU	<3.6	UJs|U	13	IP	14	IP	<3.5	IU
4,4'-DDT		ug/kg	<3.6	IU	<3.7	IU	<3.6	IU	<3.6	IU	<3.6	IU	<3.5	IU
Aldrin		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Alpha-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Alpha-Chlordane		ug/kg	0.73	IJP	6.8		1,700		580		420		220	
Arochlor-1016		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Arochlor-1221		ug/kg	<71	IU	<73	IU	<73	UJs|U	<72	IU	<72	IU	<70	IU
Arochlor-1232		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Arochlor-1242		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Arochlor-1248		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Arochlor-1254		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Arochlor-1260		ug/kg	<36	IU	<37	IU	<36	UJs|U	<36	IU	<36	IU	<35	IU
Beta-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Delta-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Dieldrin		ug/kg	<3.6	IU	<3.7	IU	70	Js|P	29	IP	19	IP	<3.5	IU
Endosulfan I		ug/kg	<1.8	IU	2		<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Endosulfan II		ug/kg	<3.6	IU	<3.7	IU	<3.6	UJs|U	<3.6	IU	<3.6	IU	<3.5	IU
Endosulfan Sulfate		ug/kg	<3.6	IU	<3.7	IU	<3.6	UJs|U	11	IP	<3.6	IU	<3.5	IU
Endrin		ug/kg	<3.6	IU	<3.7	IU	<3.6	UJs|U	<3.6	IU	<3.6	IU	<3.5	IU
Endrin Aldehyde		ug/kg	<3.6	IU	<3.7	IU	<3.6	UJs|U	<3.6	IU	<3.6	IU	<3.5	IU
Endrin Ketone		ug/kg	<3.6	IU	<3.7	IU	<3.6	UJs|U	<3.6	IU	<3.6	IU	<3.5	IU
Gamma-BHC		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Gamma-Chlordane		ug/kg	1	IJ	8.4		1,900		630		500		270	
Heptachlor		ug/kg	<1.8	IU	<1.8	IU	43	Js|P	11	IP	96		8.8	IP
Heptachlor Epoxide		ug/kg	<1.8	IU	<1.8	IU	<1.8	UJs|U	<1.8	IU	<1.8	IU	<1.8	IU
Methoxychlor		ug/kg	<18	IU	<18	IU	<18	UJs|U	<18	IU	<18	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
Toxaphene		ug/kg	<180	IU	<180	IU	<180	UJsIU	<180	IU	<180	IU	<180	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
4,4'-DDD		ug/kg	32	JsIP	3.8		<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
4,4'-DDE		ug/kg	<3.5	UJsIU	<3.5	IU	1.8	IJP	<3.8	IU	<3.6	IU	<3.5	IU
4,4'-DDT		ug/kg	<3.5	IU	<3.5	IU	3.7	IP	<3.8	IU	<3.6	IU	<3.5	IU
Aldrin		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Alpha-BHC		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Alpha-Chlordane		ug/kg	88		8		8.1		<1.9	IU	<1.8	IU	<1.8	IU
Arochlor-1016		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Arochlor-1221		ug/kg	<71	UJsIU	<71	IU	<72	IU	<76	IU	<72	IU	<71	IU
Arochlor-1232		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Arochlor-1242		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Arochlor-1248		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Arochlor-1254		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Arochlor-1260		ug/kg	<35	UJsIU	<35	IU	<36	IU	<38	IU	<36	IU	<35	IU
Beta-BHC		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Delta-BHC		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Dieldrin		ug/kg	2.9	JsIJP	<3.5	IU	0.41	IJP	<3.8	IU	<3.6	IU	<3.5	IU
Endosulfan I		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Endosulfan II		ug/kg	<3.5	UJsIU	<3.5	IU	<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
Endosulfan Sulfate		ug/kg	<3.5	UJsIU	<3.5	IU	<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
Endrin		ug/kg	<3.5	UJsIU	<3.5	IU	<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
Endrin Aldehyde		ug/kg	<3.5	UJsIU	<3.5	IU	<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
Endrin Ketone		ug/kg	<3.5	UJsIU	<3.5	IU	<3.6	IU	<3.8	IU	<3.6	IU	<3.5	IU
Gamma-BHC		ug/kg	<1.8	UJsIU	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Gamma-Chlordane		ug/kg	110		9.2		8.9		<1.9	IU	<1.8	IU	<1.8	IU
Heptachlor		ug/kg	1.3	JIIJ	<1.8	IU	<1.8	IU	<1.9	IU	<1.8	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	<1.8	UJsIU	<1.8	IU	1.3	IJ	<1.9	IU	<1.8	IU	<1.8	IU
Methoxychlor		ug/kg	<18	UJsIU	<18	IU	1.1	IJ	<19	IU	<18	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
Toxaphene		ug/kg	<180	UJsIU	<180	IU	<180	IU	<190	IU	<180	IU	<180	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
4,4'-DDD		ug/kg	<3.5	IU	1.1	IJP
4,4'-DDE		ug/kg	<3.5	IU	<3.6	IU
4,4'-DDT		ug/kg	<3.5	IU	<3.6	IU
Aldrin		ug/kg	<1.8	IU	<1.8	IU
Alpha-BHC		ug/kg	<1.8	IU	<1.8	IU
Alpha-Chlordane		ug/kg	<1.8	IU	1.2	IJ
Arochlor-1016		ug/kg	<35	IU	<36	IU
Arochlor-1221		ug/kg	<70	IU	<71	IU
Arochlor-1232		ug/kg	<35	IU	<36	IU
Arochlor-1242		ug/kg	<35	IU	<36	IU
Arochlor-1248		ug/kg	<35	IU	<36	IU
Arochlor-1254		ug/kg	<35	IU	<36	IU
Arochlor-1260		ug/kg	<35	IU	<36	IU
Beta-BHC		ug/kg	<1.8	IU	<1.8	IU
Delta-BHC		ug/kg	<1.8	IU	<1.8	IU
Dieldrin		ug/kg	<3.5	IU	<3.6	IU
Endosulfan I		ug/kg	<1.8	IU	<1.8	IU
Endosulfan II		ug/kg	<3.5	IU	<3.6	IU
Endosulfan Sulfate		ug/kg	<3.5	IU	<3.6	IU
Endrin		ug/kg	<3.5	IU	<3.6	IU
Endrin Aldehyde		ug/kg	<3.5	IU	<3.6	IU
Endrin Ketone		ug/kg	<3.5	IU	<3.6	IU
Gamma-BHC		ug/kg	<1.8	IU	<1.8	IU
Gamma-Chlordane		ug/kg	<1.8	IU	1.8	
Heptachlor		ug/kg	<1.8	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	<1.8	IU	<1.8	IU
Methoxychlor		ug/kg	<18	IU	<18	IU

Table I-4
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
Toxaphene		ug/kg	<180	IU	<180	IU

TABLE I-5

SOUTH WEST TRENCHES – METALS BY CLP

Table I-5
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
Antimony	0.74	mg/kg	0.25	IN	NA	0.3	IN	0.25	IN	<0.23	INU	NA
Arsenic	9.46	mg/kg	6.2		NA	6.3		7.2		8		NA
Barium	237	mg/kg	200		NA	200		**240**		180	IN	NA
Beryllium	0.66	mg/kg	0.41	IB	NA	0.45	IB	0.54	IB	0.44	IB	NA
Cadmium	0.46	mg/kg	<0.22	IU	NA	<0.22	IU	<0.24	IU	<0.23	IU	NA
Chromium	178	mg/kg	100	IN*	NA	110	IN*	130	IN*	170		NA
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIU	NA	<0.5	UJhIUH	<0.5	UJhIU	<0.5	UJhIUH	NA
Cobalt	29	mg/kg	21		NA	21		25		24		NA
Copper	50	mg/kg	39		NA	41		**51**		42		NA
Iron	42000	mg/kg	34,000		NA	35,000		41,000		40,000	IC	NA
Lead	10.1	mg/kg	8.7		NA	10		8.7		8.5		NA
Manganese	720	mg/kg	680		NA	670		**770**		**750**		NA
Mercury	0.49	mg/kg	0.24		NA	0.39		<0.12	IU	0.31		NA
Molybdenum	2	mg/kg	<0.45	IU	NA	<0.44	IU	0.53	IB	<0.45	IU	NA
Nickel	326	mg/kg	180	I*	NA	210	I*	250	I*	280		NA
Selenium	1	mg/kg	<0.67	IU	NA	<0.65	IU	<0.72	IU	<0.68	IU	NA
Silver	0.52	mg/kg	<0.22	IU	NA	<0.22	IU	<0.24	IU	<0.23	IU	NA
Thallium	1.36	mg/kg	<0.22	IU	NA	<0.22	IU	<0.24	IU	<0.23	IU	NA
Vanadium	73	mg/kg	57		NA	58		**74**		70		NA
Zinc	82	mg/kg	66		NA	74		79		77		NA

Table I-5
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
Antimony	0.74	mg/kg	<1.1	INU	<0.22	INU	NA	0.58	IB	**2.2**		**1.3**	
Arsenic	9.46	mg/kg	7.8		7.4		NA	1.1	IB	1.1	IB	2.6	
Barium	237	mg/kg	**270**	IN	170	IN	NA	22		70		59	
Beryllium	0.66	mg/kg	0.44	IB	0.4	IB	NA	<0.2	IU	<0.98	IU	<0.22	IU
Cadmium	0.46	mg/kg	<0.22	IU	<0.22	IU	NA	0.39	IB	**2.2**		**7.1**	
Chromium	178	mg/kg	160		**180**		NA	7.1		8.1		9.4	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	NA	<0.2	UJhIUH	<0.2	UJhIUH	<0.2	UJhIUH
Cobalt	29	mg/kg	23		22		NA	2.6		5.4		2	
Copper	50	mg/kg	38		36		NA	31	JdI*N	**64**	I*N	**890**	JdI*N
Iron	42000	mg/kg	39,000	IC	38,000	IC	NA	3,500	JdI*	8,400	I*	9,200	JdI*
Lead	10.1	mg/kg	8		9.6		NA	**16**	IN	**74**	IN	**49**	IN
Manganese	720	mg/kg	**720**		660		NA	140	JdI*	320	I*	84	JdI*
Mercury	0.49	mg/kg	0.47		**0.58**		NA	0.17		0.2		**0.61**	
Molybdenum	2	mg/kg	<0.44	IU	<0.43	IU	NA	<0.4	IU	0.49	IB	**5.9**	
Nickel	326	mg/kg	270		270		NA	8.9	JdI*	31	I*	58	JdI*
Selenium	1	mg/kg	<0.66	IU	<0.65	IU	NA	<0.6	IU	<0.98	IU	**1.5**	
Silver	0.52	mg/kg	<0.22	IU	<0.22	IU	NA	0.2	IB	**1.1**		**2.7**	
Thallium	1.36	mg/kg	<0.22	IU	<0.22	IU	NA	<0.2	IU	<0.98	IU	<0.22	IU
Vanadium	73	mg/kg	70		66		NA	6.2	JdI*	14	I*	2.6	JdI*
Zinc	82	mg/kg	75		76		NA	54	JdI*	**440**	I*	**730**	JdI*

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342	LEHR-S-343	
Antimony	0.74	mg/kg	NA	**1.3**		NA	<0.23	INU	NA	<0.23	INU
Arsenic	9.46	mg/kg	NA	3.4		NA	8.1		NA	7.4	
Barium	237	mg/kg	NA	60		NA	170	IN	NA	190	IN
Beryllium	0.66	mg/kg	NA	<0.2	IU	NA	0.47	IB	NA	0.45	IB
Cadmium	0.46	mg/kg	NA	**6.3**		NA	<0.23	IU	NA	<0.23	IU
Chromium	178	mg/kg	NA	12		NA	**180**		NA	140	
Chromium, Hexavalent (+6)	0.099	mg/kg	NA	<0.2	UJhIUH	NA	<0.5	UJhIUH	NA	<0.5	UJhIUH
Cobalt	29	mg/kg	NA	2.3		NA	25		NA	21	
Copper	50	mg/kg	NA	**830**	JdI*N	NA	43		NA	42	
Iron	42000	mg/kg	NA	9,200	JdI*	NA	**42,000**	IC	NA	37,000	IC
Lead	10.1	mg/kg	NA	**34**	IN	NA	8.5		NA	8.6	
Manganese	720	mg/kg	NA	79	JdI*	NA	**760**		NA	640	
Mercury	0.49	mg/kg	NA	**0.64**		NA	0.26		NA	0.34	
Molybdenum	2	mg/kg	NA	**5.5**		NA	<0.46	IU	NA	<0.46	IU
Nickel	326	mg/kg	NA	89	JdI*	NA	270		NA	230	
Selenium	1	mg/kg	NA	**1.6**		NA	<0.69	IU	NA	<0.68	IU
Silver	0.52	mg/kg	NA	**2.3**		NA	<0.23	IU	NA	<0.23	IU
Thallium	1.36	mg/kg	NA	<0.2	IU	NA	<0.23	IU	NA	<0.23	IU
Vanadium	73	mg/kg	NA	2.6	JdI*	NA	**73**		NA	65	
Zinc	82	mg/kg	NA	**710**	JdI*	NA	79		NA	73	

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
Antimony	0.74	mg/kg	<0.21	INU	<0.21	INU	<0.21	INU	<0.2	IU	<0.22	INU	<0.22	INU
Arsenic	9.46	mg/kg	5		7.3		7.4		3.5		7.2		7.3	
Barium	237	mg/kg	120	IN	150	IN	160	IN	82		140	IN	140	IN
Beryllium	0.66	mg/kg	0.34	IB	0.38	IB	0.35	IB	0.24	IB	0.36	IB	0.33	IB
Cadmium	0.46	mg/kg	<0.21	IU	<0.21	IU	<0.21	IU	<0.7	IU	<0.22	IU	<0.22	IU
Chromium	178	mg/kg	110		170		170		100		**230**		**250**	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.2	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	15		23		20		13		22		23	
Copper	50	mg/kg	30		32		37		30	JdI*N	30		31	
Iron	42000	mg/kg	27,000	IC	35,000	IC	35,000	IC	23,000	JdI*	36,000		37,000	IC
Lead	10.1	mg/kg	6.3		7		7.3		4.1	INB	6.6		6.3	IB
Manganese	720	mg/kg	550		650		590		390	JdI*	610		630	
Mercury	0.49	mg/kg	0.34		0.25		0.16		0.22		0.28		0.32	
Molybdenum	2	mg/kg	<0.41	IU	<0.42	IU	<0.42	IU	<0.4	IU	<0.44	IU	<0.44	IU
Nickel	326	mg/kg	160		280		230		150	JdI*	300		320	
Selenium	1	mg/kg	<0.62	IU	<0.64	IU	<0.64	IU	<0.6	IU	<0.66	IU	<0.65	IU
Silver	0.52	mg/kg	<0.21	IU	<0.21	IU	<0.21	IU	<0.2	IU	<0.22	IU	<0.22	IU
Thallium	1.36	mg/kg	<0.21	IU	<0.21	IU	<0.21	IU	<0.2	IU	<0.22	IU	<0.22	IU
Vanadium	73	mg/kg	48		62		60		36	JdI*	59		58	
Zinc	82	mg/kg	79		62		71		41	JdI*	62		58	

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
Antimony	0.74	mg/kg	0.37	INB	0.38	JIINB	0.3	JIINB	0.35	JIINB	<0.2	INU	0.55	JIINB
Arsenic	9.46	mg/kg	6		6.5		7.5		6.5		0.84	IB	7.6	
Barium	237	mg/kg	190	IN	170		180		180		13	IN	**240**	
Beryllium	0.66	mg/kg	0.43	IB	0.47	IB	0.47	IB	0.44	IB	<0.2	IU	0.51	IB
Cadmium	0.46	mg/kg	<0.2	IU	<0.22	IU	<0.23	IU	<0.22	IU	<0.2	IU	<2.3	IU
Chromium	178	mg/kg	150	IN	160		**230**		**180**		13	IN	160	
Chromium, Hexavalent (+6)	0.099	mg/kg	**0.22**	JhIH	0.053	JhIHB	0.041	JhIHB	<0.33	UJhIHU	0.048	JhIHB	<0.5	UJhIHU
Cobalt	29	mg/kg	21		24		28		24		0.66	IB	27	
Copper	50	mg/kg	38		42		39		35		7.4		**53**	
Iron	42000	mg/kg	33,000		40,000	JII	**46,000**	JII	40,000	JII	2,700	JII	**43,000**	
Lead	10.1	mg/kg	**11**		7.7		8		7.2		4.7	IB	9.7	
Manganese	720	mg/kg	660		710		**750**		650		39		690	
Mercury	0.49	mg/kg	0.33		0.22	IN	0.43	IN	0.18	IN	**0.55**		**0.79**	IN
Molybdenum	2	mg/kg	0.47	IB	0.55	IB	0.56	IB	0.5	IB	<0.2	IU	0.71	IB
Nickel	326	mg/kg	220		270		**360**		280		7		270	
Selenium	1	mg/kg	<0.6	IU	<0.67	IU	0.84	IB	<0.65	IU	<0.6	IU	<0.7	IU
Silver	0.52	mg/kg	<0.2	IU	<0.22	IU	<0.23	IU	<0.22	IU	<0.2	IU	<0.23	IU
Thallium	1.36	mg/kg	<0.2	IU	<0.22	IU	<0.23	IU	<0.22	IU	<0.2	IU	<0.23	IU
Vanadium	73	mg/kg	67		72		72		69		4.5		**79**	
Zinc	82	mg/kg	78		71		67		63		15		**90**	

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
Antimony	0.74	mg/kg	0.44	JIINB	NA	<0.2	INU	<2.2	INU	<0.22	INU	<0.31	IU
Arsenic	9.46	mg/kg	6.5		NA	5.1		6.9		7.1		0.96	IB
Barium	237	mg/kg	220		NA	160	IN	210		200		15	IB
Beryllium	0.66	mg/kg	0.5	IB	NA	0.3	IB	0.44	IB	0.47	IB	<0.31	IU
Cadmium	0.46	mg/kg	<0.23	IU	NA	0.37	IB	<0.22	IU	<0.22	IU	0.37	IB
Chromium	178	mg/kg	140		NA	100	IN	170		150		14	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIHU	NA	<0.2	UJhIHU	<0.5	UJhIHU	0.08	JhIHB	<0.5	UJhIUH
Cobalt	29	mg/kg	25		NA	16		26		23		0.8	IB
Copper	50	mg/kg	**58**		NA	44		40		42		**88**	JdIN*
Iron	42000	mg/kg	38,000		NA	26,000	JII	39,000	JII	38,000	JII	520	JdIN*C
Lead	10.1	mg/kg	10		NA	**14**		8.3		8.2		2.7	IB
Manganese	720	mg/kg	**1,000**		NA	570		**850**		440		29	IN
Mercury	0.49	mg/kg	0.35	IN	NA	**0.66**		**0.54**	IN	**0.5**	IN	0.18	IN
Molybdenum	2	mg/kg	0.57	IB	NA	0.55	IB	0.57	IB	0.47	IB	0.52	IB
Nickel	326	mg/kg	250	Bpl	NA	170		280	Bpl	260		14	
Selenium	1	mg/kg	<0.68	IU	NA	<0.6	IU	0.93	IB	<0.22	IU	<0.92	IU
Silver	0.52	mg/kg	<0.23	IU	NA	<0.6	IU	<0.22	IU	<0.22	IU	<0.31	IU
Thallium	1.36	mg/kg	<0.23	IU	NA	<0.6	IU	<0.22	IU	<0.22	IU	<0.31	IU
Vanadium	73	mg/kg	**73**		NA	50		68		**73**		7.6	
Zinc	82	mg/kg	**99**		NA	**310**		75		74		**95**	IN

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
Antimony	0.74	mg/kg	NA	<0.22	INU	0.25	INB	<0.21	INU	<0.22	INU	<0.22	INU
Arsenic	9.46	mg/kg	NA	1.7	IB	7		6		6.4		6.6	
Barium	237	mg/kg	NA	39	IN	210	IN	140	IN	180	IN	150	IN
Beryllium	0.66	mg/kg	NA	<0.22	IU	0.44	IB	0.34	IB	0.38	IB	0.36	IB
Cadmium	0.46	mg/kg	NA	<0.22	IU	<0.22	IU	<0.21	IU	0.28	IB	<0.22	IU
Chromium	178	mg/kg	NA	24	JdIN*	130	JdI*N	150	JdI*N	120	JdI*N	**180**	JdI*N
Chromium, Hexavalent (+6)	0.099	mg/kg	NA	<0.5	UJhIUH	<0.5	UJhIU	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	NA	4.4		25		21		22		23	
Copper	50	mg/kg	NA	8.3	JdIN*	43	JdIN*	28	JdIN*	**62**	JdIN*	36	JdIN*
Iron	42000	mg/kg	NA	6,300	JdI*	39,000	JdI*	34,000	JdI*	33,000	JdI*	37,000	JdI*
Lead	10.1	mg/kg	NA	1.8	IB	8		6.6		**21**		8.3	
Manganese	720	mg/kg	NA	150	JdIN*	**740**	JdI*N	600	JdI*N	**880**	JdI*N	670	JdI*N
Mercury	0.49	mg/kg	NA	**0.57**	I*	**0.94**	I*	0.13	I*	0.25	I*	0.42	I*
Molybdenum	2	mg/kg	NA	<0.22	IU	0.44	IB	0.4	IB	0.88	IB	0.44	IB
Nickel	326	mg/kg	NA	46	JdIN*	250	JdI*N	250	JdI*N	220	JdI*N	270	JdI*N
Selenium	1	mg/kg	NA	<0.65	IU	0.75	IB	<0.64	IU	0.84	IB	<0.66	IU
Silver	0.52	mg/kg	NA	<0.22	IU	<0.22	IU	<0.21	IU	<0.22	IU	<0.22	IU
Thallium	1.36	mg/kg	NA	<0.22	IU	0.26	IB	<0.21	IU	<0.22	IU	<0.22	IU
Vanadium	73	mg/kg	NA	12	JdIN*	65	JdI*N	54	JdI*N	57	JdI*N	61	JdI*N
Zinc	82	mg/kg	NA	21		66		51		**130**		54	

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
Antimony	0.74	mg/kg	<0.21	INU	<1.1	UJIINU	<1.1	UJIINU	<1.2	UJIINU	<1	UJIINU	<1.2	UJIINU
Arsenic	9.46	mg/kg	6.9		7.4		6.4		5.5		5.4		7	
Barium	237	mg/kg	170	IN	180	JIIN	180	JIIN	200	JIIN	150	JIIN	220	JIIN
Beryllium	0.66	mg/kg	NA		0.37	INB	0.37	INB	0.34	INB	0.28	INB	0.49	INB
Cadmium	0.46	mg/kg	<0.21	IU	<1.1	IU	<1.1	IU	<1.2	IU	<1	IU	<1.2	IU
Chromium	178	mg/kg	140	JdI*N	120		75		87		95		100	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	22		22		18		9.5		15		24	
Copper	50	mg/kg	36	JdIN*	**52**		**59**		47		**59**		**78**	
Iron	42000	mg/kg	37,000	JdI*	37,000	IC	32,000	IC	35,000	IC	33,000	IC	**44,000**	IC
Lead	10.1	mg/kg	8.9		8.2	IN	9.6	IN	9.1	IN	**12**	IN	9.5	IN
Manganese	720	mg/kg	670	JdI*N	610	I*	620	I*	330	I*	690	I*	**750**	I*
Mercury	0.49	mg/kg	0.28	I*	0.18		0.11		<0.1	IU	0.21		0.15	
Molybdenum	2	mg/kg	0.37	IB	0.37	IB	1.5		0.29	IB	1.4		0.37	IB
Nickel	326	mg/kg	240	JdI*N	210		120		98		140		180	
Selenium	1	mg/kg	0.75	IB	<1.1	IU	<1.1	IU	<1.2	IU	<1	IU	<1.2	IU
Silver	0.52	mg/kg	<0.21	IU	<1.1	IU	<1.1	IU	<1.2	IU	<1	IU	<1.2	IU
Thallium	1.36	mg/kg	<0.21	IU	<1.1	IU	<1.1	IU	<1.2	IU	<1	IU	<1.2	IU
Vanadium	73	mg/kg	62	JdI*N	68	JIIN	53	JIIN	59	JIIN	59	JIIN	**80**	JIIN
Zinc	82	mg/kg	56		74	IN	**130**	IN	70	IN	**350**	IN	**130**	IN

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
Antimony	0.74	mg/kg	<1.1	UJIINU	<1.2	UJIINU	<1.2	UJIINU	<1.1	UJIINU	<1.2	UJIINU	0.28	JIINB
Arsenic	9.46	mg/kg	2.7		7.1		7		5.9		6.4		6.6	
Barium	237	mg/kg	67	JIIN	170	JIIN	170	JIIN	180	JIIN	200	JIIN	140	
Beryllium	0.66	mg/kg	<1.1	IU	0.42	INB	0.39	INB	0.26	INB	0.4	INB	0.27	IB
Cadmium	0.46	mg/kg	0.27	IB	<1.2	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	IU
Chromium	178	mg/kg	36		140		130		33		100		160	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	7.5		23		22		22		18		25	
Copper	50	mg/kg	**64**		**51**		**67**		28		**54**		32	
Iron	42000	mg/kg	12,000	IC	38,000	IC	36,000	IC	20,000	IC	39,000	IC	33,000	IC
Lead	10.1	mg/kg	**11**	IN	8.9	IN	8.4	IN	8.9	IN	7.7	IN	8.7	
Manganese	720	mg/kg	240	I*	460	I*	680	I*	**860**	I*	540	I*	610	
Mercury	0.49	mg/kg	0.27		0.31		0.29		<0.1	IU	0.18		**0.59**	I*N
Molybdenum	2	mg/kg	0.25	IB	0.47	IB	0.37	IB	0.33	IB	0.3	IB	0.44	IB
Nickel	326	mg/kg	61		240		230		57		150		300	
Selenium	1	mg/kg	<1.1	IU	<1.2	IU	<1.2	IU	<1.1	IU	<1.2	IU	0.89	IB
Silver	0.52	mg/kg	<1.1	IU	<1.2	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	IU
Thallium	1.36	mg/kg	<1.1	IU	<1.2	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	IU
Vanadium	73	mg/kg	23	JIIN	72	JIIN	70	JIIN	42	JIIN	72	JIIN	68	
Zinc	82	mg/kg	**86**	IN	**92**	IN	**110**	IN	41	IN	**200**	IN	56	

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
Antimony	0.74	mg/kg	<1.2	UJIINU	<1.1	UJIINU	<1.2	UJIINU	<1.2	UJIINU	<1.2	UJIINU	<1.2	UJIINU
Arsenic	9.46	mg/kg	7.4		6.5		7.6		7.4		7		**9.7**	
Barium	237	mg/kg	**270**		150		210		**240**		210		**250**	
Beryllium	0.66	mg/kg	0.51	IB	0.28	IB	0.41	IB	0.43	IB	0.32	IB	0.47	IB
Cadmium	0.46	mg/kg	<1.2	IU	<1.1	IU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Chromium	178	mg/kg	110		**180**		110		110		93		96	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	**29**		22		26		26		16		26	
Copper	50	mg/kg	**55**		30		**66**		49		47		**59**	
Iron	42000	mg/kg	40,000	IC	32,000	IC	40,000	IC	41,000	IC	34,000	IC	**45,000**	IC
Lead	10.1	mg/kg	9.3		6.3	IB	9.1		9.1		8.8		**11**	
Manganese	720	mg/kg	**910**		540		**800**		**750**		320		**940**	
Mercury	0.49	mg/kg	0.23	I*N	0.38	I*N	0.29	I*N	0.39	I*N	**0.84**	I*N	<0.13	IU
Molybdenum	2	mg/kg	0.44	IB	0.34	IB	0.58	IB	0.45	IB	0.29	IB	0.5	IB
Nickel	326	mg/kg	240		240		230		230		130		170	
Selenium	1	mg/kg	**1.2**		0.63	IB	**1.1**	IB	0.93	IB	<1.2	IU	0.8	IB
Silver	0.52	mg/kg	<1.2	IU	<1.1	IU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Thallium	1.36	mg/kg	<1.2	IU	<1.1	IU	<1.2	IU	<1.2	IU	<1.2	IU	<1.2	IU
Vanadium	73	mg/kg	68		58		72		72		63		**82**	
Zinc	82	mg/kg	**82**		51		**88**		75		60		**89**	

Table I-5
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
Antimony	0.74	mg/kg	<1.1	UJIINU	<1.1	UJIINU	<1.1	UJIINU	<1.1	UJIINU	<1.1	UJIINU	<1.1	UJIINU
Arsenic	9.46	mg/kg	6.4		7.2		6.7		7.6		6.6		7.3	
Barium	237	mg/kg	210		210		190		210		190		150	
Beryllium	0.66	mg/kg	0.33	IB	0.37	IB	0.36	IB	0.31	IB	0.29	IB	0.28	IB
Cadmium	0.46	mg/kg	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Chromium	178	mg/kg	84		140		150		170		140		**200**	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	22		25		23		26		24		24	
Copper	50	mg/kg	35		40		38		40		38		31	
Iron	42000	mg/kg	29,000	IC	37,000	IC	34,000	IC	37,000	IC	36,000	IC	36,000	IC
Lead	10.1	mg/kg	9.1		8.4		9.7		**11**		8		7.8	
Manganese	720	mg/kg	**720**		**720**		630		**720**		680		650	
Mercury	0.49	mg/kg	**0.64**	I*N	**5.2**	I*N	**0.72**	I*N	0.47	I*N	**0.98**	I*N	0.11	I*N
Molybdenum	2	mg/kg	0.35	IB	0.33	IB	0.38	IB	0.33	IB	0.3	IB	0.39	IB
Nickel	326	mg/kg	140		260		240		310		270		310	
Selenium	1	mg/kg	<1.1	IU	0.81	IB	**1.1**		**1**	IB	<1.1	IU	<1.1	IU
Silver	0.52	mg/kg	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Thallium	1.36	mg/kg	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1.1	IU
Vanadium	73	mg/kg	53		63		59		62		59		58	
Zinc	82	mg/kg	54		62		62		64		60		56	

Table I-5
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
Antimony	0.74	mg/kg	<1	UJIINU	<1	UJIINU	0.28	INB	<1.1	IU	<1.1	INU	<1	INU
Arsenic	9.46	mg/kg	6.4		6.2		5.8		5.6		6.5		5.2	
Barium	237	mg/kg	170		210		150	IN	150	IN	130	IN	130	IN
Beryllium	0.66	mg/kg	0.32	IB	0.27	IB	0.37	IB	0.34	IB	0.36	IB	0.31	IB
Cadmium	0.46	mg/kg	<1	IU	<1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1	IU
Chromium	178	mg/kg	160		58		**180**		170		**210**		**180**	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIU	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	25		20		21		20		22		21	
Copper	50	mg/kg	37		36		27		34		28		27	
Iron	42000	mg/kg	34,000	IC	21,000	IC	32,000		34,000		34,000		34,000	
Lead	10.1	mg/kg	8.2		8.9		8		6.8	IB	6.8		6.5	
Manganese	720	mg/kg	630		**910**		650		580		610		590	
Mercury	0.49	mg/kg	**0.52**	I*N	0.14	I*N	0.23	IN*	0.19	IN*	0.19	IN*	**0.72**	IN*
Molybdenum	2	mg/kg	0.33	IB	0.33	IB	0.44	IB	0.39	IB	0.37	IB	0.39	IB
Nickel	326	mg/kg	300		86		290		300		**330**		320	
Selenium	1	mg/kg	0.8	IB	<1	IU	<1.1	IU	<1.1	IU	<1.1	INU	<1	INU
Silver	0.52	mg/kg	<1	IU	<1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1	IU
Thallium	1.36	mg/kg	<1	IU	<1	IU	<1.1	IU	<1.1	IU	<1.1	IU	<1	IU
Vanadium	73	mg/kg	55		41		54		58		59		58	
Zinc	82	mg/kg	58		49		58		64		54		51	

Table I-5
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
Antimony	0.74	mg/kg	<0.97	INU	<0.99	INU
Arsenic	9.46	mg/kg	5.6		6.3	
Barium	237	mg/kg	120	IN	140	IN
Beryllium	0.66	mg/kg	0.29	IB	0.3	IB
Cadmium	0.46	mg/kg	<0.97	IU	<0.99	IU
Chromium	178	mg/kg	**210**		**240**	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	21		23	
Copper	50	mg/kg	39		30	
Iron	42000	mg/kg	34,000		37,000	
Lead	10.1	mg/kg	6		6.6	
Manganese	720	mg/kg	600		710	
Mercury	0.49	mg/kg	**1.1**	IN*	0.16	IN*
Molybdenum	2	mg/kg	0.39	IB	0.4	INU
Nickel	326	mg/kg	**340**		**420**	
Selenium	1	mg/kg	<0.97	IU	<0.99	IU
Silver	0.52	mg/kg	<0.97	IU	<0.99	IU
Thallium	1.36	mg/kg	<0.97	IU	<0.99	IU
Vanadium	73	mg/kg	55		58	
Zinc	82	mg/kg	53		56	

TABLE I-6

SOUTH WEST TRENCHES – RADIOCHEMICAL ANALYSES

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-331				LEHR-S-332				LEHR-S-333				LEHR-S-334B			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.44		0.19	0.27	0.37		0.19	0.29	0.66		0.15	0.17	0.1		0.39	0.62
Americium-241	NA	pCi/g	0.021		0.018	0.018	0.022		0.019	0.02	0.027		0.02	0.01	---		---	---
Bismuth-212*	NA	pCi/g	0.17		0.28	0.47	0.31		0.38	0.48	0.24		0.24	0.32	0.17		0.85	1.2
Bismuth-214*	0.57	pCi/g	0.41		0.13	0.14	0.42		0.13	0.13	0.389		0.092	0.097	-0.09		0.21	0.34
Carbon-14	0.87	pCi/g	**3.9**		3.1	4.9	-1.3		2.9	5.4	-0.6		3	5.5	-0.8		5.8	11
Cesium-137*	0.053	pCi/g	0.028		0.051	0.066	0.038		0.038	0.057	-0.015		-0.024	0.044	0.003		0.08	0.14
Cobalt-60*	0.016	pCi/g	-0.023		0.024	0.084	0.005		0.027	0.062	-0.002		0.02	0.04	-0.029		0.055	0.19
Gross Alpha	11.8	pCi/g	5.4	JmlC	4.7	7	6.5	JmlC	5.8	9.1	5.2	JmlC	4.7	7.2	2.4	JC	4.4	7.7
Gross Beta	17.4	pCi/g	13.7		4.2	5.9	16.1		4.9	6.8	**17.6**		4.2	5.4	**33**	JC	5	5.2
Lead-210*	NA	pCi/g	1.2		1.5	2.2	3.2		3	4.4	1.4		9.4	14	-0.1		8	12
Lead-212*	0.74	pCi/g	0.55		0.11	0.088	0.56		0.11	0.085	0.581		0.092	0.07	-0.02		0.19	0.29
Lead-214*	0.75	pCi/g	0.467		0.1	0.11	0.421		0.1	0.13	0.473		0.08	0.081	0.02		0.21	0.34
Plutonium-241	NA	pCi/g	0.1		1.5	2.1	-0.2		1.5	2	0.3		1.6	2.3	---		---	---
Potassium-40*	13.6	pCi/g	9.6		1.6	0.88	10.3		1.7	0.75	10.3		1.4	0.53	-0.2		1.5	2.4
Radium-223*	NA	pCi/g	-0.32		0.28	1	0.01		0.37	1	0.0		0.22	0.68	-0.14		0.82	2.2
Radium-226	0.77	pCi/g	**0.86**		0.43	0.51	0.15		0.26	0.45	**0.81**		0.4	0.46	0.44		0.18	0.13
Radium-226*	0.77	pCi/g	**0.84**		0.79	1.1	**1.32**		0.83	1.1	**1.33**		0.64	0.84	**1**		2.3	3.4
Strontium-90	0.36	pCi/g	**1.47**	Jml	0.32	0.41	**2.01**	Jml	0.36	0.44	0.31	Jml	0.26	0.43	**25.1**	JIB	1.8	0.8
Thallium-208*	0.21	pCi/g	0.196		0.064	0.063	0.157		0.066	0.076	0.167		0.044	0.044	0.02		0.13	0.2
Thorium-228	0.71	pCi/g	0.55		0.13	0.11	**0.71**		0.14	0.092	**0.76**		0.13	0.09	---		---	---
Thorium-230	0.8	pCi/g	0.57		0.11	0.034	0.54		0.11	0.044	0.66		0.11	0.042	---		---	---
Thorium-232	0.64	pCi/g	0.51		0.11	0.037	0.496		0.1	0.04	**0.71**		0.11	0.033	---		---	---
Thorium-234*	NA	pCi/g	0.94		0.43	1	0.73		0.45	1.1	0.51		0.45	1.3	-1.3		1.6	5.2
Tritium	0.023	pCi/g	---		---	---	---		---	---	---		---	---	**22**		14	21
Tritium	105	pCi/L	-50		100	220	60		120	200	10		110	200	---		---	---
Uranium-233/234	0.66	pCi/g	0.489		0.08	0.026	0.461		0.08	0.033	0.616		0.092	0.026	---		---	---
Uranium-235	NA	pCi/g	0.031		0.02	0.017	0.05		0.026	0.02	0.05		0.025	0.017	---		---	---
Uranium-235*	0.071	pCi/g	0.02		0.17	0.28	-0.04		0.16	0.27	-0.1		0.13	0.23	-0.02		0.56	0.84
Uranium-238	0.63	pCi/g	0.418		0.073	0.018	0.511		0.082	0.017	0.556		0.087	0.025	---		---	---

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-334W				LEHR-S-335				LEHR-S-336				LEHR-S-337			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.66		0.92	1.5	0.47		0.22	0.31	0.44		0.21	0.26	0.54		0.2	0.29
Bismuth-212*	NA	pCi/g	-0.3		1.9	2.8	0.43		0.42	0.53	0.42		0.38	0.45	0.14		0.37	0.52
Bismuth-214*	0.57	pCi/g	-0.22		0.51	0.97	0.37		0.13	0.16	0.36		0.13	0.14	0.34		0.12	0.13
Carbon-14	0.87	pCi/g	-2.6		5.6	11	-1		2.7	5.1	-0.2		3	5.5	**3.9**		3.3	5.4
Cesium-137*	0.053	pCi/g	-0.13		0.2	0.39	**0.057**		0.041	0.06	0.021		0.052	0.07	0.011		0.04	0.069
Cobalt-60*	0.016	pCi/g	-0.04		0.15	0.29	-0.023		0.026	0.079	0.0		0.039	0.078	0.001		0.025	0.049
Gross Alpha	11.8	pCi/g	1.2	IC	1.8	3	4.7	IC	4.2	6.2	5	IC	4.5	6.6	4.9	IC	4.6	7.1
Gross Beta	17.4	pCi/g	1.8	IC	3.3	5.6	13.2		4.1	5.7	16.6		4.4	5.9	12		3.9	5.4
Lead-210*	NA	pCi/g	5.3		7.1	11	-0.5		3.4	5.1	2		1.6	2.3	2.5		2.9	4.3
Lead-212*	0.74	pCi/g	0.11		0.43	0.62	0.38		0.12	0.14	0.47		0.1	0.097	0.539		0.1	0.083
Lead-214*	0.75	pCi/g	0.34		0.47	0.67	0.34		0.11	0.15	0.38		0.11	0.13	0.37		0.099	0.11
Potassium-40*	13.6	pCi/g	-1.2		2.8	5	10.6		1.8	1.1	10.7		1.8	0.7	10.7		1.8	0.81
Radium-223*	NA	pCi/g	1		2	6.4	0.17		0.38	1.1	-0.17		0.33	1.1	-0.21		0.33	1.1
Radium-226	0.77	pCi/g	0.12		0.11	0.17	0.65		0.22	0.17	0.59		0.22	0.2	0.59		0.22	0.21
Radium-226*	0.77	pCi/g	-1.9		4.9	7.8	0.7		1	1.4	0.11		0.81	1.2	**1.05**		0.81	1.1
Strontium-90	0.36	pCi/g	**4.48**	JIB	0.75	0.91	**0.77**	JI	0.27	0.4	0.15	JI	0.25	0.42	**1.88**	JI	0.31	0.36
Thallium-208*	0.21	pCi/g	-0.3		0.14	0.48	0.116		0.067	0.086	0.153		0.064	0.069	0.169		0.065	0.07
Thorium-234*	NA	pCi/g	2.3		3.3	9.4	0.36		0.77	2.2	0.56		0.45	1.1	0.71		0.45	1.1
Tritium	0.023	pCi/g	-0.3		3.2	6	---		---	---	---		---	---	---		---	---
Tritium	105	pCi/L	---		---	---	9		82	150	-8		82	150	**340**		120	150
Uranium-235*	0.071	pCi/g	**0.4**		1.1	1.6	-0.14		0.15	0.41	**0.1**		0.18	0.27	0.04		0.18	0.27

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-338				LEHR-S-338-QC				LEHR-S-339				LEHR-S-340			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.55		0.23	0.31	0.23		0.37	0.63	-0.53		0.47	0.97	-0.2		3.5	7.5
Bismuth-212*	NA	pCi/g	0.54		0.43	0.52	0.58		0.72	0.88	0.0		1.3	1.8	-2		8.8	16
Bismuth-214*	0.57	pCi/g	0.53		0.16	0.18	**0.92**		0.26	0.28	0.12		0.39	0.57	-1.1		2.1	4.2
Carbon-14	0.87	pCi/g	**2.7**		6.2	11	-4.5		5.3	11	**117**		14	11	0.4		5	9
Cesium-137*	0.053	pCi/g	0.048		0.052	0.082	**0.082**		0.1	0.13	0.02		0.19	0.26	-0.3		1.4	2.4
Cobalt-60*	0.016	pCi/g	-0.012		0.025	0.063	0.0		0.05	0.096	-0.101		0.072	0.32	**0.04**		0.37	0.77
Gross Alpha	11.8	pCi/g	8.9	IC	6	8.2	11.1	IC	6.7	8.8	3.7	IC	4	6.4	1.9	IC	4.3	7.8
Gross Beta	17.4	pCi/g	**103**	IC	10	7.8	**90**	IC	11	9.3	**27.6**	IC	4.9	5.7	**34,700**	IC	1,700	5.4
Lead-210*	NA	pCi/g	-1		11	16	6.2		3.1	4.2	2.8		2.2	3.1	-9		23	37
Lead-212*	0.74	pCi/g	0.42		0.12	0.14	0.45		0.16	0.19	-0.09		0.24	0.36	0.5		1.6	2.5
Lead-214*	0.75	pCi/g	**0.83**		0.15	0.15	**0.87**		0.22	0.25	0.29		0.32	0.5	**1.8**		2.1	3.6
Potassium-40*	13.6	pCi/g	7.7		1.5	1	5.2		1.8	1.6	0.1		2	3.2	1.5		4.5	6.9
Radium-223*	NA	pCi/g	-0.06		0.42	1.3	-0.45		0.71	2.1	0.3		1.2	3.8	-9		12	34
Radium-226	0.77	pCi/g	**7.06**		0.83	0.19	**11.5**		1.1	0.18	0.59		0.23	0.23	0.35		0.19	0.2
Radium-226*	0.77	pCi/g	**2.2**		1.2	1.5	**1.4**		1.8	2.3	-1.7		3	4.6	-3		18	28
Strontium-90	0.36	pCi/g	**34.1**	JIB	2.2	0.78	**14**	JIB	1.2	0.86	**10.7**	JIB	1.3	1.3	**16,700**	JIB	840	10
Thallium-208*	0.21	pCi/g	0.186		0.077	0.092	0.13		0.12	0.15	0.04		0.21	0.3	**0.6**		1.4	2.1
Thorium-234*	NA	pCi/g	0.4		1.1	3.9	0.6		1	3.3	0.9		1.5	3.7	7		12	38
Tritium	0.023	pCi/g	-0.4		1.1	2.2	**2.8**		2.7	4.4	**1**		7	13	---		---	---
Tritium	105	pCi/L	---		---	---	---		---	---	---		---	---	-10		100	190
Uranium-235*	0.071	pCi/g	-0.01		0.29	0.44	0.04		0.36	0.56	**0.22**		0.65	0.97	**0.1**		5.1	9.7

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-340-QC				LEHR-S-341				LEHR-S-342				LEHR-S-343			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.1		2.1	4	0.47		0.18	0.22	**5.5**		6	9.1	0.33		0.12	0.17
Bismuth-212*	NA	pCi/g	-2.9		5.1	9.5	0.56		0.35	0.39	0.0		13	18	0.31		0.22	0.27
Bismuth-214*	0.57	pCi/g	-1.3		1.2	2.5	0.37		0.11	0.12	0.0		4.1	6.3	0.243		0.078	0.098
Carbon-14	0.87	pCi/g	0.7		5.5	9.8	-1.6		2.7	5.3	-0.1		6	11	-1.2		2.8	5.4
Cesium-137*	0.053	pCi/g	0.04		0.85	1.4	-0.019		0.033	0.061	-0.3		1.3	2.3	0.002		0.022	0.038
Cobalt-60*	0.016	pCi/g	**0.07**		0.16	0.26	-0.021		0.027	0.063	-0.44		0.74	2.4	0.001		0.014	0.041
Gross Alpha	11.8	pCi/g	2.9	IC	3.7	6.2	6.5	IC	4.9	7	6.4	IC	4.7	6.6	5.6	IC	4.7	6.9
Gross Beta	17.4	pCi/g	**45,100**	IC	2,300	5.6	13.1		3.8	5.3	**29.3**	IC	4.9	5.3	13.4		4.1	5.6
Lead-210*	NA	pCi/g	61		98	160	1.5		2.6	3.9	-49		88	130	3		8.5	12
Lead-212*	0.74	pCi/g	**1.2**		1.2	1.9	0.506		0.097	0.081	-1		3.1	4.7	0.432		0.078	0.07
Lead-214*	0.75	pCi/g	-0.6		1.2	2.5	0.43		0.096	0.1	**4.3**		3.3	4.8	0.409		0.074	0.077
Potassium-40*	13.6	pCi/g	2.1		2.9	4.1	10.2		1.6	0.62	5		24	38	10.3		1.4	0.53
Radium-223*	NA	pCi/g	0.3		8	24	-0.02		0.28	0.84	-1		12	38	0.04		0.2	0.63
Radium-226	0.77	pCi/g	0.34		0.18	0.2	0.6		0.22	0.2	**1.06**		0.46	0.49	0.3		0.18	0.23
Radium-226*	0.77	pCi/g	**6**		14	23	-0.55		0.71	0.98	**17**		33	47	**1.07**		0.58	0.77
Strontium-90	0.36	pCi/g	**2,890**	JIB	170	35	**0.95**	JI	0.27	0.38	**18.7**	JIB	2.1	1.9	0.22	JI	0.23	0.39
Thallium-208*	0.21	pCi/g	-0.16		0.74	1.4	0.139		0.055	0.059	-1.7		1.9	3.1	0.143		0.041	0.043
Thorium-234*	NA	pCi/g	8		11	35	0.81		0.41	0.93	-10		24	75	0.64		0.4	1.1
Tritium	0.023	pCi/g	---		---	---	---		---	---	-1		10	20	---		---	---
Tritium	105	pCi/L	60		110	180	-34		78	150	---		---	---	20		85	150
Uranium-235*	0.071	pCi/g	-2.6		4.4	8.6	**0.12**		0.17	0.24	-7.8		5.8	11	-0.02		0.12	0.21

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South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-344				LEHR-S-345				LEHR-S-346				LEHR-S-347			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.38		0.32	0.5	0.47		0.17	0.23	0.5		0.17	0.22	0.46		0.18	0.25
Bismuth-212*	NA	pCi/g	-0.6		0.34	1	0.16		0.34	0.46	0.35		0.31	0.38	0.28		0.34	0.44
Bismuth-214*	0.57	pCi/g	0.44		0.2	0.23	0.37		0.1	0.1	0.41		0.11	0.11	0.16		0.11	0.15
Carbon-14	0.87	pCi/g	-2.5		3	6	-1.9		2.7	5.3	-2.1		2.5	4.9	-3		5	9.7
Cesium-137*	0.053	pCi/g	**0.085**		0.088	0.11	-0.032		0.025	0.065	0.011		0.031	0.052	0.015		0.034	0.058
Cobalt-60*	0.016	pCi/g	-0.022		0.033	0.13	-0.015		0.025	0.052	-0.002		0.024	0.052	**0.016**		0.033	0.067
Gross Alpha	11.8	pCi/g	4	IC	4.3	6.8	5.2	IC	4.6	6.7	2.4	IC	3.7	6.5	9.2	IC	5	6
Gross Beta	17.4	pCi/g	10.2		4	5.9	13.7		4.3	6	11.8		4.2	6	9.7	IC	3.5	5
Lead-210*	NA	pCi/g	1.3		2.3	3.5	0.5		1.3	2	2.2		2.4	3.5	-2		7.9	12
Lead-212*	0.74	pCi/g	0.45		0.14	0.16	0.271		0.075	0.083	0.486		0.087	0.067	0.333		0.097	0.11
Lead-214*	0.75	pCi/g	0.47		0.16	0.21	0.352		0.085	0.1	0.41		0.086	0.097	0.263		0.094	0.12
Potassium-40*	13.6	pCi/g	9.6		2.2	1.6	10		1.6	0.73	11.4		1.7	0.62	6.3		1.2	0.81
Radium-223*	NA	pCi/g	0.13		0.54	1.7	-0.23		0.29	0.94	0.02		0.25	0.79	0.0		0.3	0.97
Radium-226	0.77	pCi/g	0.39		0.16	0.16	0.3		0.17	0.21	0.51		0.2	0.2	0.45		0.21	0.22
Radium-226*	0.77	pCi/g	0.5		1.3	2	0.56		0.66	0.96	-0.18		0.64	0.92	0.28		0.83	1.2
Strontium-90	0.36	pCi/g	0.33	JI	0.21	0.34	0.06		0.23	0.4	**0.49**	JI	0.25	0.4	**2.59**	JIB	0.76	1.1
Thallium-208*	0.21	pCi/g	0.155		0.099	0.12	0.109		0.052	0.06	0.146		0.056	0.062	0.076		0.057	0.077
Thorium-234*	NA	pCi/g	0.33		0.92	2.8	0.31		0.37	0.89	0.27		0.37	0.9	0.79		0.79	3.1
Tritium	0.023	pCi/g	---		---	---	---		---	---	---		---	---	**91.1**		8.4	3.5
Tritium	105	pCi/L	60		150	250	36		87	150	98		91	150	---		---	---
Uranium-235*	0.071	pCi/g	-0.16		0.24	0.46	-0.05		0.13	0.24	0.07		0.13	0.22	-0.02		0.22	0.34

Table I-6
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South West Trenches
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Lab_chem	Background Levels	Units	LEHR-S-348				LEHR-S-349				LEHR-S-350				LEHR-S-351			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.45		0.15	0.2	0.56		0.18	0.23	0.47		0.18	0.23	0.5		0.3	0.4
Bismuth-212*	NA	pCi/g	0.47		0.32	0.37	0.26		0.32	0.42	0.26		0.31	0.4	-0.2		0.32	0.9
Bismuth-214*	0.57	pCi/g	0.326		0.1	0.11	0.39		0.11	0.12	0.33		0.13	0.17	0.14		0.16	0.22
Carbon-14	0.87	pCi/g	-0.8		2.7	5.1	0.1		3	5.4	-1		5.3	9.8	-1.3		2.7	5.1
Cesium-137*	0.053	pCi/g	-0.003		0.023	0.057	0.005		0.035	0.06	**23**		2.3	0.074	-0.005		0.055	0.095
Cobalt-60*	0.016	pCi/g	-0.009		0.02	0.065	-0.024		0.026	0.07	0.008		0.03	0.056	**0.016**		0.041	0.093
Gross Alpha	11.8	pCi/g	4.3	IC	4.5	7.1	5.1	IC	4.4	6.6	3.5	IC	4	6.6	4.2	IC	4.1	6.5
Gross Beta	17.4	pCi/g	9.8		3.9	5.8	10.8		3.9	5.6	**33.3**	IC	4.7	4.7	13.6		3.7	5
Lead-210*	NA	pCi/g	0.8		1.2	1.9	0.9		2.5	3.8	-1		11	16	0.4		2.2	3.2
Lead-212*	0.74	pCi/g	0.39		0.082	0.077	0.419		0.088	0.08	0.43		0.12	0.15	0.59		0.14	0.13
Lead-214*	0.75	pCi/g	0.293		0.08	0.1	0.376		0.09	0.11	0.4		0.13	0.19	0.33		0.14	0.19
Potassium-40*	13.6	pCi/g	8.5		1.4	0.54	10.4		1.6	0.63	9.7		1.6	0.9	12		2.2	1.2
Radium-223*	NA	pCi/g	0.04		0.26	0.79	-0.1		0.28	0.92	0.47		0.62	1.6	0.47		0.68	1.6
Radium-226	0.77	pCi/g	0.43		0.18	0.18	0.45		0.17	0.16	0.41	JdI	0.19	0.19	0.34	JdI	0.18	0.21
Radium-226*	0.77	pCi/g	**0.8**		0.63	0.89	-0.24		0.71	1	0.6		1.1	1.7	**0.9**		1.2	1.6
Strontium-90	0.36	pCi/g	0.2	JI	0.26	0.44	0.08	JI	0.24	0.42	-0.02		0.26	0.46	0.31		0.24	0.39
Thallium-208*	0.21	pCi/g	0.118		0.046	0.046	0.155		0.056	0.058	0.125		0.068	0.09	0.169		0.09	0.1
Thorium-234*	NA	pCi/g	0.26		0.35	0.88	0.82		0.4	0.92	0.58		0.96	3.6	0.57		0.84	2.5
Tritium	105	pCi/L	3		82	150	-28		79	150	**190**		200	340	56		97	170
Uranium-235*	0.071	pCi/g	0.0		0.14	0.21	0.01		0.16	0.25	**0.1**		0.3	0.47	-0.04		0.28	0.41

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Lab_chem	Background Levels	Units	LEHR-S-352				LEHR-S-353				LEHR-S-354				LEHR-S-355			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.46		0.18	0.27	0.48		0.17	0.24	0.38		0.15	0.2	0.22		0.3	0.49
Bismuth-212*	NA	pCi/g	0.21		0.24	0.38	0.41		0.24	0.32	0.15		0.3	0.38	0.0		0.72	0.96
Bismuth-214*	0.57	pCi/g	0.37		0.11	0.12	0.35		0.11	0.11	0.45		0.11	0.12	**1.47**		0.3	0.28
Carbon-14	0.87	pCi/g	-0.4		3	5.5	-1.3		2.8	5.4	-2.2		4.8	9.1	-1.1		5.8	11
Cesium-137*	0.053	pCi/g	0.004		0.03	0.052	0.016		0.033	0.054	0.049		0.032	0.046	0.007		0.063	0.11
Cobalt-60*	0.016	pCi/g	-0.015		0.028	0.071	-0.016		0.021	0.049	-0.011		0.016	0.045	-0.026		0.03	0.12
Gross Alpha	11.8	pCi/g	4.6	IC	4.4	6.7	7.2	IC	4.9	6.9	**14.7**	JmIC	6.5	6.7	**12.4**	JmIC	6	7
Gross Beta	17.4	pCi/g	14.6		4	5.4	11.8		3.6	5.1	**36.7**		5.6	5.9	**52.8**		6.4	5.7
Lead-210*	NA	pCi/g	2		2.6	3.9	2		2.3	3.4	1.1		2.6	3.5	3.6		6.6	8.5
Lead-212*	0.74	pCi/g	0.419		0.089	0.083	0.434		0.085	0.079	0.257		0.08	0.092	0.04		0.15	0.21
Lead-214*	0.75	pCi/g	0.337		0.09	0.11	0.328		0.08	0.095	0.534		0.097	0.1	**1.68**		0.26	0.25
Potassium-40*	13.6	pCi/g	10.6		1.7	0.73	10.1		1.6	0.63	7.2		1.2	0.71	0.2		1.1	1.7
Radium-223*	NA	pCi/g	-0.01		0.27	0.88	0.13		0.27	0.74	-0.08		0.25	0.87	-0.61		0.67	2.1
Radium-226	0.77	pCi/g	0.47	JdI	0.18	0.14	0.62	JdI	0.21	0.19	**2.26**		0.62	0.46	**2.02**		0.76	0.2
Radium-226*	0.77	pCi/g	**1.1**		0.75	1	**0.87**		0.68	0.95	**0.9**		0.73	0.95	**2.7**		1.8	2.3
Strontium-90	0.36	pCi/g	0.12	JzI	0.26	0.45	0.08	JzI	0.22	0.37	**3.15**		0.52	0.61	**13.8**		1.1	0.67
Thallium-208*	0.21	pCi/g	0.155		0.056	0.056	0.124		0.052	0.059	0.107		0.049	0.057	-0.035		0.1	0.15
Thorium-234*	NA	pCi/g	0.61		0.39	0.94	0.34		0.37	0.85	0.46		0.54	1.5	-0.2		1.2	3.8
Tritium	0.023	pCi/g	---		---	---	---		---	---	---		---	---	**0.05**	JII	0.87	1.6
Tritium	105	pCi/L	0.0		90	170	36		92	160	60		140	250	---		---	---
Uranium-235*	0.071	pCi/g	-0.071		0.1	0.26	-0.01		0.13	0.23	-0.06		0.14	0.26	-0.02		0.33	0.63

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Lab_chem	Background Levels	Units	LEHR-S-356				LEHR-S-357				LEHR-S-358				LEHR-S-359			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.43		0.2	0.27	**0.75**		0.3	0.38	-0.08		0.19	0.48	0.26		0.3	0.44
Bismuth-212*	NA	pCi/g	0.45		0.4	0.46	0.2		0.53	0.67	0.14		0.43	0.73	0.21		0.6	0.77
Bismuth-214*	0.57	pCi/g	**1.68**		0.23	0.16	**1.37**		0.25	0.19	0.15		0.17	0.22	0.53		0.19	0.2
Carbon-14	0.87	pCi/g	0.2		2.7	4.8	-1		2.7	5.2	-2.7		5.7	11	-3.2		5	9.6
Cesium-137*	0.053	pCi/g	0.003		0.039	0.065	0.005		0.059	0.099	0.011		0.065	0.11	**0.119**		0.069	0.095
Cobalt-60*	0.016	pCi/g	0.011		0.029	0.061	**0.017**		0.041	0.11	-0.04		0.029	0.11	-0.035		0.043	0.13
Gross Alpha	11.8	pCi/g	**12.9**	JmlC	6.3	7.5	**16.7**	JmlC	6.4	6.5	1.8	JmlC	3.7	6.8	7.6	JmlC	4.9	6.2
Gross Beta	17.4	pCi/g	**18.3**		4.7	6.2	**23.2**		4.4	5.1	4.2		3.5	5.7	14.6		4.3	6
Lead-210*	NA	pCi/g	3.8		9.9	13	3.2		2.2	3	0.18		0.98	1.5	0.69		0.84	1.2
Lead-212*	0.74	pCi/g	0.44		0.11	0.12	0.42		0.12	0.13	-0.01		0.12	0.17	0.46		0.13	0.13
Lead-214*	0.75	pCi/g	**1.9**		0.21	0.14	**1.32**		0.2	0.19	0.08		0.13	0.19	0.52		0.16	0.2
Potassium-40*	13.6	pCi/g	12.1		1.8	0.89	9.5		1.9	1	0.5		1	1.4	9.7		2	1.2
Radium-223*	NA	pCi/g	0.06		0.38	1.2	0.08		0.65	1.5	-0.12		0.52	1.6	-0.52		0.4	1.5
Radium-226	0.77	pCi/g	**1.98**		0.36	0.15	**1.73**		0.31	0.16	0.45		0.31	0.33	**1.28**		0.51	0.42
Radium-226*	0.77	pCi/g	**3.6**		1.2	1.3	**1.9**		1.2	1.6	0.4		1.3	1.8	0.5		1.2	1.7
Strontium-90	0.36	pCi/g	0.26	Jdl	0.25	0.41	0.07		0.23	0.39	**0.37**		0.22	0.36	**3.16**		0.54	0.65
Thallium-208*	0.21	pCi/g	0.163		0.066	0.075	0.056		0.084	0.11	0.028		0.084	0.11	0.126		0.087	0.1
Thorium-234*	NA	pCi/g	0.29		0.92	3.5	0.21		0.81	2.3	0.35		0.7	1.6	0.41		0.65	1.5
Tritium	0.023	pCi/g	---		---	---	---		---	---	**2.6**	Jll	4	6.9	---		---	---
Tritium	105	pCi/L	-30		100	190	10		130	250	---		---	---	21		89	160
Uranium-235*	0.071	pCi/g	-0.04		0.2	0.36	**0.1**		0.27	0.39	0.05		0.28	0.39	-0.05		0.27	0.39

Table I-6
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Lab_chem	Background Levels	Units	LEHR-S-360				LEHR-S-361				LEHR-S-362				LEHR-S-378			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.39		0.27	0.38	0.37		0.18	0.25	**1.6**		2.7	4.7	0.55		0.2	0.27
Bismuth-212*	NA	pCi/g	0.18		0.57	0.73	0.32		0.32	0.37	1.5	JzlB	6.6	10	0.39		0.36	0.45
Bismuth-214*	0.57	pCi/g	0.4		0.17	0.19	0.46		0.12	0.12	0.3		1.5	2.5	0.4		0.13	0.15
Carbon-14	0.87	pCi/g	-0.7		2.8	5.3	-1		2.8	5.3	**2.1**		6.2	11	-1.9		5.3	9.9
Cesium-137*	0.053	pCi/g	0.029		0.053	0.085	0.006		0.032	0.053	-0.81		0.74	1.5	**0.092**		0.056	0.063
Cobalt-60*	0.016	pCi/g	0.015		0.06	0.1	0.009		0.024	0.047	-0.15		0.32	0.69	0.013		0.029	0.065
Gross Alpha	11.8	pCi/g	5.4	JmlC	4.9	7.6	5.4	JmlC	4.4	6.5	0.23	Jml	0.29	0.48	4.4	JmlC	5.1	8.4
Gross Beta	17.4	pCi/g	**19.2**		4.1	5	**20.9**		4.2	5.2	**1,698**		85	0.75	**26**		4.9	5.8
Lead-210*	NA	pCi/g	0.2		2	3	-2		7.7	11	2		11	16	5.4		9.4	13
Lead-212*	0.74	pCi/g	0.45		0.13	0.13	0.433		0.096	0.096	0.1		1	1.5	0.5		0.11	0.11
Lead-214*	0.75	pCi/g	0.5		0.15	0.18	0.537		0.1	0.1	-0.4	Jdl	1.2	2.2	0.47		0.11	0.13
Potassium-40*	13.6	pCi/g	11.2		2.1	1.2	10.4		1.5	0.73	-2		4.4	7.3	10.2		1.7	0.86
Radium-223*	NA	pCi/g	-0.41		0.3	1.6	-0.36		0.28	0.95	-0.1		6.7	21	-0.04		0.29	1.2
Radium-226	0.77	pCi/g	**0.91**		0.26	0.2	0.47		0.17	0.16	0.62		0.21	0.18	**0.86**		0.29	0.18
Radium-226*	0.77	pCi/g	**1.5**		1.2	1.6	0.52		0.79	1.1	0.0		12	16	-0.3		0.98	1.4
Strontium-90	0.36	pCi/g	**4.38**	IY	0.84	1.1	**22.3**		1.5	0.65	**3,690**		180	0.81	**2.47**		0.45	0.56
Thallium-208*	0.21	pCi/g	0.105		0.086	0.11	0.099		0.054	0.066	-0.19		0.91	1.4	0.119		0.065	0.084
Thorium-234*	NA	pCi/g	0.85		0.82	2.3	0.32		0.76	3	39.5		7.7	18	0.57		0.93	3.7
Tritium	0.023	pCi/g	---		---	---	---		---	---	-2.2		5.2	11	---		---	---
Tritium	105	pCi/L	23		95	170	38		92	160	---		---	---	98		97	160
Uranium-235*	0.071	pCi/g	-0.03		0.26	0.38	**0.09**		0.21	0.3	**2.6**	JzlB	3.2	5.1	-0.12		0.15	0.4

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-379				LEHR-S-380				LEHR-S-381				LEHR-S-382			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.61		0.23	0.29	0.43		0.18	0.24	0.39		0.2	0.32	0.48		0.2	0.26
Bismuth-212*	NA	pCi/g	0.24		0.39	0.52	0.21		0.37	0.53	0.37		0.41	0.52	0.24		0.32	0.4
Bismuth-214*	0.57	pCi/g	0.48		0.13	0.12	0.43		0.12	0.12	**0.59**		0.16	0.19	0.43		0.13	0.13
Carbon-14	0.87	pCi/g	-1.1		5.4	10	-0.5		6	11	-4.1		6.3	12	-0.8		5.8	11
Cesium-137*	0.053	pCi/g	0.033		0.042	0.069	-0.032		0.026	0.071	**0.105**		0.062	0.07	0.009		0.036	0.063
Cobalt-60*	0.016	pCi/g	0.009		0.029	0.06	-0.0104		0.0088	0.061	**0.021**		0.031	0.049	-0.013		0.024	0.064
Gross Alpha	11.8	pCi/g	8	JmlC	5.3	7.2	2.7	JmlC	3.9	6.6	4.5	JmlC	4.8	7.6	3.2	JmlC	4.4	7.4
Gross Beta	17.4	pCi/g	15.1		4.3	5.9	12.7		4	5.6	**22.8**		4.8	5.9	**36.9**		5.5	5.7
Lead-210*	NA	pCi/g	0.8		2.9	4.5	1.7		1.4	2.1	2.8		3.5	4.7	2.3		3	4.4
Lead-212*	0.74	pCi/g	0.54		0.11	0.095	0.406		0.089	0.082	0.37		0.11	0.12	0.376		0.089	0.089
Lead-214*	0.75	pCi/g	0.49		0.11	0.12	0.472		0.1	0.11	0.6		0.13	0.16	0.412		0.097	0.11
Potassium-40*	13.6	pCi/g	11.3		1.9	0.81	11.5		1.8	0.72	7.7		1.5	1	9.5		1.6	0.66
Radium-223*	NA	pCi/g	0.07		0.4	1.1	-0.1		0.35	0.88	0.42		0.38	1.2	0.04		0.37	0.93
Radium-226	0.77	pCi/g	0.6		0.25	0.26	0.71		0.24	0.14	**1.16**		0.34	0.28	0.62		0.27	0.29
Radium-226*	0.77	pCi/g	0.44		0.84	1.3	**0.99**		0.72	1	0.27		0.99	1.4	**1.3**		0.8	1.1
Strontium-90	0.36	pCi/g	0.13	JI	0.32	0.55	-0.17	JI	0.27	0.5	**1.48**		0.37	0.51	**6.53**		0.57	0.41
Thallium-208*	0.21	pCi/g	**0.224**		0.073	0.071	0.153		0.058	0.062	0.059		0.063	0.09	0.161		0.059	0.06
Thorium-234*	NA	pCi/g	0.4		0.47	1.1	0.67		0.41	0.98	0.03		0.75	2.1	0.63		0.45	1.1
Tritium	0.023	pCi/g	---		---	---	---		---	---	-2.7		5	10	---		---	---
Tritium	105	pCi/L	-78		65	140	28		82	140	---		---	---	13		76	140
Uranium-235*	0.071	pCi/g	**0.12**		0.2	0.29	**0.1**		0.16	0.24	-0.13		0.15	0.41	0.02		0.18	0.28

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-383				LEHR-S-465				LEHR-S-466				LEHR-S-467			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.31		0.17	0.23	0.53		0.16	0.21	0.65		0.17	0.22	0.64		0.16	0.18
Bismuth-212*	NA	pCi/g	0.24		0.33	0.45	0.03		0.26	0.38	0.34		0.26	0.32	0.21		0.27	0.38
Bismuth-214*	0.57	pCi/g	0.313		0.1	0.12	0.484		0.1	0.098	0.55		0.11	0.087	0.534		0.1	0.081
Carbon-14	0.87	pCi/g	-0.9		6	11	-2.5		5.1	9.7	-3.4		5.6	11	-3		5.4	10
Cesium-137*	0.053	pCi/g	0.01		0.037	0.05	-0.018		0.02	0.053	-0.014		0.021	0.052	-0.024		0.021	0.053
Cobalt-60*	0.016	pCi/g	-0.008		0.025	0.061	-0.019		0.015	0.058	0.0		0.024	0.053	-0.003		0.014	0.047
Gross Alpha	11.8	pCi/g	6	JmIC	4.8	7	8	IC	4.8	6	6.6	IC	4.8	6.6	6	IC	4.5	6.2
Gross Beta	17.4	pCi/g	**51.8**		6.3	5.6	13.8		4.1	5.7	15.6		4.2	5.7	12.4		4	5.5
Lead-210*	NA	pCi/g	1.7		1.5	2.2	0.82		0.76	1.1	0.61		0.78	1.2	0.54		0.68	1
Lead-212*	0.74	pCi/g	0.404		0.086	0.082	0.68		0.11	0.079	0.626		0.098	0.072	0.68		0.11	0.08
Lead-214*	0.75	pCi/g	0.34		0.089	0.11	0.566		0.097	0.097	0.554		0.092	0.091	0.63		0.095	0.088
Potassium-40*	13.6	pCi/g	10		1.6	0.67	11.7		1.6	0.56	12.5		1.7	0.54	10.7		1.5	0.52
Radium-223*	NA	pCi/g	0.21		0.32	0.82	-0.16		0.31	0.91	-0.06		0.19	0.83	0.19		0.29	0.77
Radium-226	0.77	pCi/g	**0.96**		0.29	0.16	0.57		0.18	0.13	0.62		0.19	0.14	0.3		0.15	0.18
Radium-226*	0.77	pCi/g	**1.03**		0.72	1	**1.43**		0.68	0.9	**1.25**		0.63	0.86	0.35		0.62	0.86
Strontium-90	0.36	pCi/g	**5.25**		0.66	0.67	**0.46**	JI	0.46	0.76	**0.47**	JI	0.45	0.75	0.04	JI	0.42	0.73
Thallium-208*	0.21	pCi/g	0.14		0.059	0.068	0.164		0.052	0.055	0.193		0.054	0.055	**0.213**		0.052	0.047
Thorium-234*	NA	pCi/g	0.46		0.41	1.1	0.92		0.41	1.1	0.57		0.39	1.1	0.68		0.37	1
Tritium	105	pCi/L	8		78	140	10		140	270	-83		96	210	-10		120	220
Uranium-235*	0.071	pCi/g	0.0		0.17	0.26	0.03		0.14	0.23	-0.05		0.12	0.22	0.06		0.14	0.21

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-468				LEHR-S-469				LEHR-S-470				LEHR-S-471			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.44		0.12	0.16	0.61		0.11	0.12	0.43		0.13	0.17	0.52		0.17	0.25
Bismuth-212*	NA	pCi/g	0.26		0.24	0.31	0.47		0.2	0.22	0.42		0.23	0.25	0.43		0.33	0.42
Bismuth-214*	0.57	pCi/g	0.499		0.094	0.083	0.413		0.074	0.07	**0.571**		0.1	0.086	**1.56**		0.2	0.099
Carbon-14	0.87	pCi/g	-3.7		5	9.8	-4.1		5.5	11	-3.6		5.5	11	-4.5		4.9	9.8
Cesium-137*	0.053	pCi/g	**0.062**		0.033	0.038	-0.012		0.014	0.034	0.014		0.034	0.049	-0.009		0.024	0.059
Cobalt-60*	0.016	pCi/g	-0.001		0.02	0.04	0.014		0.015	0.026	-0.013		0.014	0.048	-0.016		0.021	0.064
Gross Alpha	11.8	pCi/g	6.4	IC	4.8	6.8	6.8	IC	4.8	6.5	7.8	IC	5.2	7.2	7.6	IC	5.2	7.2
Gross Beta	17.4	pCi/g	**42.6**		5.8	5.6	**17.7**		4.3	5.6	**20.8**		4.4	5.4	15.8		4.1	5.5
Lead-210*	NA	pCi/g	0.53		0.72	1.1	1.8		2.5	3.5	1.33		0.7	0.96	2.09		0.98	1.3
Lead-212*	0.74	pCi/g	0.439		0.075	0.061	0.634		0.085	0.055	0.573		0.09	0.067	0.66		0.11	0.088
Lead-214*	0.75	pCi/g	0.631		0.088	0.084	0.555		0.073	0.06	**0.791**		0.1	0.086	**1.73**		0.18	0.1
Potassium-40*	13.6	pCi/g	7.5		1.1	0.41	11.8		1.4	0.37	8.4		1.2	0.51	12.1		1.7	0.68
Radium-223*	NA	pCi/g	0.24		0.27	0.66	-0.04		0.18	0.54	-0.02		0.26	0.75	-0.07		0.28	0.92
Radium-226	0.77	pCi/g	**0.92**		0.24	0.14	0.64		0.19	0.13	**1.18**		0.29	0.21	**2.44**		0.38	0.12
Radium-226*	0.77	pCi/g	**1.02**		0.54	0.74	**1.09**		0.47	0.61	0.12		0.58	0.75	**1.69**		0.81	1
Strontium-90	0.36	pCi/g	**9.46**	JI	0.86	0.63	0.07	JI	0.41	0.71	**2.4**	JI	0.54	0.73	0.33	JI	0.41	0.69
Thallium-208*	0.21	pCi/g	0.134		0.04	0.039	0.203		0.04	0.033	0.158		0.043	0.039	**0.227**		0.059	0.056
Thorium-234*	NA	pCi/g	0.41		0.34	1	0.54		0.4	1.4	0.47		0.32	0.91	0.96		0.45	1.3
Tritium	105	pCi/L	-80		140	260	0.0		110	210	0.0		140	270	**200**		120	180
Uranium-235*	0.071	pCi/g	0.02		0.12	0.19	**0.09**		0.12	0.18	0.06		0.12	0.19	0.04		0.17	0.26

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-472				LEHR-S-473				LEHR-S-474				LEHR-S-475			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.69		0.11	0.11	0.59		0.17	0.21	**0.71**		0.17	0.21	0.45		0.15	0.2
Bismuth-212*	NA	pCi/g	0.49		0.19	0.21	0.25		0.31	0.42	0.3		0.27	0.32	0.25		0.26	0.32
Bismuth-214*	0.57	pCi/g	**0.6**		0.088	0.069	0.49		0.11	0.095	0.5		0.11	0.092	0.356		0.1	0.11
Carbon-14	0.87	pCi/g	-4.7		5.4	11	-2.2		5.8	11	-1.7		5.3	9.9	**4.3**		6.4	11
Cesium-137*	0.053	pCi/g	-0.011		0.015	0.034	-0.014		0.022	0.057	-0.017		0.018	0.051	0.012		0.035	0.048
Cobalt-60*	0.016	pCi/g	-0.005		0.012	0.033	-0.023		0.022	0.074	-0.0019		0.0075	0.047	0.0		0.025	0.052
Gross Alpha	11.8	pCi/g	6	IC	4.6	6.7	6.9	IC	4.8	6.6	9.8	IC	5.6	7.2	1.3	IC	3.2	6
Gross Beta	17.4	pCi/g	16.1		4.1	5.4	15.4		4.2	5.6	10.7		3.8	5.4	13.6		4.1	5.7
Lead-210*	NA	pCi/g	1.3		2.6	3.7	0.56		0.8	1.2	0.64		0.86	1.3	0.48		0.76	1.2
Lead-212*	0.74	pCi/g	0.644		0.088	0.057	0.556		0.1	0.084	0.671		0.1	0.075	0.427		0.082	0.072
Lead-214*	0.75	pCi/g	0.72		0.083	0.061	0.577		0.1	0.1	0.558		0.096	0.095	0.484		0.086	0.086
Potassium-40*	13.6	pCi/g	12.3		1.5	0.41	**16.7**		2.2	0.53	12.2		1.7	0.61	11.5		1.6	0.54
Radium-223*	NA	pCi/g	-0.17		0.16	0.62	-0.17		0.22	0.95	-0.22		0.21	0.87	0.07		0.32	0.79
Radium-226	0.77	pCi/g	0.68		0.21	0.17	0.64		0.18	0.11	0.53		0.18	0.16	0.48		0.17	0.17
Radium-226*	0.77	pCi/g	**1.21**		0.48	0.61	**1.47**		0.73	0.97	**0.87**		0.67	0.95	**0.88**		0.61	0.87
Strontium-90	0.36	pCi/g	**0.36**	JI	0.44	0.74	0.13	JI	0.37	0.64	0.08	JI	0.39	0.68	0.01	JI	0.42	0.73
Thallium-208*	0.21	pCi/g	0.209		0.041	0.036	0.136		0.05	0.053	**0.218**		0.056	0.05	0.14		0.049	0.053
Thorium-234*	NA	pCi/g	0.91		0.4	1.4	0.58		0.41	1.1	0.74		0.42	1.2	0.45		0.38	1.1
Tritium	105	pCi/L	-20		110	210	70		120	210	-10		100	210	10		140	270
Uranium-235*	0.071	pCi/g	-0.026		0.1	0.18	-0.064		0.033	0.24	0.01		0.15	0.22	-0.046		0.084	0.21

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-476				LEHR-S-477				LEHR-S-478				LEHR-S-479			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.6		0.11	0.11	0.46		0.13	0.16	0.7		0.13	0.13	0.64		0.18	0.23
Bismuth-212*	NA	pCi/g	0.32		0.18	0.22	0.27		0.24	0.32	0.15		0.2	0.28	0.3		0.31	0.4
Bismuth-214*	0.57	pCi/g	0.501		0.079	0.068	0.377		0.085	0.082	0.392		0.078	0.079	0.55		0.12	0.11
Carbon-14	0.87	pCi/g	-2.5		5.8	11	-1.8		5.7	11	-1.8		5.8	11	-3.8		5.6	11
Cesium-137*	0.053	pCi/g	-0.004		0.011	0.027	0.008		0.031	0.044	0.008		0.023	0.03	-0.015		0.02	0.055
Cobalt-60*	0.016	pCi/g	-0.0041		0.0097	0.029	-0.021		0.013	0.053	-0.006		0.012	0.035	-0.005		0.024	0.059
Gross Alpha	11.8	pCi/g	5.6	IC	4.6	6.7	3.9	IC	4	6.2	**14.3**	IC	6.3	6.8	10	IC	5.5	6.8
Gross Beta	17.4	pCi/g	13.5		4.1	5.7	13.6		4	5.5	15.3		4.2	5.6	14.2		4	5.5
Lead-210*	NA	pCi/g	-0.1		2.3	3.4	1.06		0.65	0.91	-2.9		7.2	11	0.62		0.92	1.4
Lead-212*	0.74	pCi/g	0.62		0.084	0.053	0.472		0.082	0.065	0.555		0.082	0.06	0.504		0.095	0.081
Lead-214*	0.75	pCi/g	0.624		0.076	0.056	0.438		0.08	0.086	0.513		0.073	0.063	0.604		0.1	0.1
Potassium-40*	13.6	pCi/g	12.5		1.5	0.36	8.1		1.2	0.49	9.9		1.3	0.47	11.8		1.7	0.69
Radium-223*	NA	pCi/g	-0.01		0.17	0.52	-0.12		0.19	0.77	0.2		0.19	0.57	-0.22		0.22	0.99
Radium-226	0.77	pCi/g	**0.84**		0.21	0.15	0.55		0.18	0.14	0.61		0.19	0.17	0.63		0.19	0.16
Radium-226*	0.77	pCi/g	**1.12**		0.47	0.6	**0.93**		0.57	0.78	0.63		0.49	0.68	**1.41**		0.71	0.96
Strontium-90	0.36	pCi/g	-0.08	JI	0.38	0.68	**2.44**	JI	0.54	0.72	**0.84**	JI	0.41	0.64	0.09	JI	0.34	0.59
Thallium-208*	0.21	pCi/g	0.189		0.037	0.031	0.14		0.043	0.043	0.18		0.04	0.036	0.177		0.056	0.056
Thorium-234*	NA	pCi/g	0.57		0.37	1.3	0.55		0.33	0.88	0.49		0.36	1	0.86		0.45	1.3
Tritium	105	pCi/L	40		120	210	-40		100	210	0.0		110	200	70		120	220
Uranium-235*	0.071	pCi/g	0.019		0.1	0.18	-0.018		0.053	0.19	0.0		0.11	0.18	-0.06		0.14	0.24

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-480				LEHR-S-481				LEHR-S-482				LEHR-S-483			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.52		0.11	0.13	0.57		0.12	0.15	0.61		0.16	0.22	0.51		0.16	0.21
Bismuth-212*	NA	pCi/g	0.18		0.2	0.27	0.33		0.21	0.25	0.16		0.32	0.45	0.31		0.26	0.32
Bismuth-214*	0.57	pCi/g	0.356		0.073	0.073	0.364		0.079	0.084	0.48		0.11	0.1	**0.57**		0.12	0.11
Carbon-14	0.87	pCi/g	-5.1		5.4	11	-3.8		5.1	10	-2.4		5.7	11	-5.2		5.2	11
Cesium-137*	0.053	pCi/g	0.003		0.021	0.029	-0.01		0.014	0.035	0.022		0.038	0.051	-0.01		0.031	0.054
Cobalt-60*	0.016	pCi/g	-0.002		0.013	0.034	-0.006		0.011	0.038	-0.002		0.022	0.062	-0.006		0.02	0.053
Gross Alpha	11.8	pCi/g	5.9	IC	5.9	9.5	6	IC	4.6	6.4	2.39		0.97	0.95	1		1	1.6
Gross Beta	17.4	pCi/g	15.7		4.3	5.8	14		4	5.5	2.26		0.66	0.9	1.78		0.96	1.5
Lead-210*	NA	pCi/g	3.3		7.1	9.9	5.3		7.9	11	1.14		0.77	1.1	0.92		0.86	1.3
Lead-212*	0.74	pCi/g	0.442		0.072	0.06	0.517		0.08	0.062	0.7		0.11	0.082	0.537		0.096	0.084
Lead-214*	0.75	pCi/g	0.395		0.064	0.063	0.469		0.071	0.068	**0.78**	JdI	0.11	0.091	0.639	JdI	0.1	0.099
Potassium-40*	13.6	pCi/g	9.2		1.2	0.39	9.6		1.3	0.46	11.8		1.7	0.63	12.2		1.7	0.48
Radium-223*	NA	pCi/g	-0.04		0.16	0.59	-0.04		0.16	0.57	0.02		0.32	0.81	-0.11		0.22	0.82
Radium-226	0.77	pCi/g	0.32		0.15	0.17	**1.07**		0.24	0.14	**0.79**		0.22	0.043	0.58		0.2	0.18
Radium-226*	0.77	pCi/g	**0.83**		0.47	0.63	0.34		0.52	0.68	**1.04**		0.69	0.96	0.65		0.65	0.95
Strontium-90	0.36	pCi/g	0.27	JI	0.38	0.64	-0.02	JI	0.39	0.68	**0.95**	JzIB	0.28	0.4	0.22	JzIB	0.21	0.34
Thallium-208*	0.21	pCi/g	0.179		0.039	0.034	0.162		0.041	0.04	**0.243**		0.059	0.05	0.164		0.052	0.053
Thorium-234*	NA	pCi/g	0.52		0.34	1	0.65		0.37	1.1	1.01		0.43	1.2	0.63		0.42	1.2
Tritium	105	pCi/L	30		120	220	-30		110	220	-70		110	220	20		120	220
Uranium-235*	0.071	pCi/g	0.03		0.12	0.19	0.07		0.13	0.2	-0.02		0.15	0.25	0.03		0.13	0.21

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-484				LEHR-S-485				LEHR-S-486				LEHR-S-487			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.502		0.1	0.12	0.44		0.15	0.21	0.49		0.16	0.22	0.412		0.093	0.11
Bismuth-212*	NA	pCi/g	0.25		0.16	0.2	0.22		0.27	0.35	0.28		0.29	0.38	0.23		0.16	0.2
Bismuth-214*	0.57	pCi/g	0.397		0.07	0.062	0.5		0.11	0.1	0.53		0.11	0.099	0.41		0.07	0.059
Carbon-14	0.87	pCi/g	2		6	11	-3.7		5.5	11	0.1		5.9	11	-6.3		5.3	11
Cesium-137*	0.053	pCi/g	0.032		0.022	0.027	0.015		0.032	0.042	-0.007		0.027	0.048	-0.011		0.011	0.029
Cobalt-60*	0.016	pCi/g	-0.0007		0.0033	0.022	-0.001		0.0069	0.059	0.006		0.023	0.051	0.005		0.013	0.025
Gross Alpha	11.8	pCi/g	1.01		0.8	1.2	1.8		1.2	1.6	2		1.4	2.1	1.8		1.2	1.6
Gross Beta	17.4	pCi/g	1.49		0.62	0.92	1.48		0.94	1.5	1.12		0.94	1.5	0.8		0.88	1.4
Lead-210*	NA	pCi/g	1.1		2.3	3.2	0.57		0.75	1.1	0.12		0.85	1.3	-1		2.2	3.2
Lead-212*	0.74	pCi/g	0.428		0.065	0.051	0.596		0.1	0.085	0.502		0.093	0.083	0.436		0.067	0.052
Lead-214*	0.75	pCi/g	0.511	Jdl	0.066	0.058	0.684	Jdl	0.1	0.096	0.598	Jdl	0.099	0.1	0.521	Jdl	0.066	0.057
Potassium-40*	13.6	pCi/g	10.6		1.3	0.36	12.8		1.8	0.55	11.9		1.7	0.54	10.7		1.3	0.35
Radium-223*	NA	pCi/g	-0.14		0.12	0.46	-0.21		0.2	0.89	-0.22		0.21	0.96	0.01		0.15	0.49
Radium-226	0.77	pCi/g	0.46		0.17	0.14	0.49		0.18	0.12	0.42		0.2	0.22	0.66		0.21	0.15
Radium-226*	0.77	pCi/g	**0.81**		0.41	0.55	**1.11**		0.68	0.94	**0.78**		0.66	0.95	0.65		0.41	0.55
Strontium-90	0.36	pCi/g	**0.5**	JzlB	0.26	0.41	**0.64**	JzlB	0.32	0.5	**0.49**	JzlB	0.23	0.36	0.21	JzlB	0.22	0.37
Thallium-208*	0.21	pCi/g	0.171		0.034	0.027	0.151		0.051	0.054	0.119		0.05	0.059	0.15		0.033	0.028
Thorium-234*	NA	pCi/g	0.06		0.36	1.1	0.64		0.39	1	0.92		0.43	1.3	0.34		0.36	1.2
Tritium	105	pCi/L	50		120	210	30		120	230	-10		120	230	20		120	220
Uranium-235*	0.071	pCi/g	**0.136**		0.1	0.14	-0.08		0.13	0.23	-0.04		0.15	0.23	-0.084		0.092	0.16

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-488				LEHR-S-489				LEHR-S-490				LEHR-S-491			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.41		0.13	0.19	0.38		0.14	0.19	0.486		0.092	0.098	0.37		0.12	0.17
Bismuth-212*	NA	pCi/g	0.32		0.24	0.29	0.44		0.27	0.32	0.29		0.15	0.18	0.32		0.22	0.24
Bismuth-214*	0.57	pCi/g	0.416		0.092	0.08	0.5		0.11	0.094	0.415		0.066	0.051	0.444		0.094	0.083
Carbon-14	0.87	pCi/g	-3		5.5	11	-1.8		5.8	11	-5.7		5.4	11	-2.8		5.7	11
Cesium-137*	0.053	pCi/g	0.01		0.03	0.042	0.018		0.029	0.046	0.02		0.02	0.026	0.011		0.027	0.036
Cobalt-60*	0.016	pCi/g	-0.01		0.02	0.045	0.009		0.018	0.032	-0.0024		0.0099	0.02	0.009		0.025	0.046
Gross Alpha	11.8	pCi/g	0.5		1	1.8	1.59		0.71	0.78	1.34		0.94	1.4	1.6		1.1	1.5
Gross Beta	17.4	pCi/g	1.29		0.94	1.5	0.72		0.54	0.87	3.12		0.7	0.88	1.23		0.92	1.5
Lead-210*	NA	pCi/g	1.13		0.68	0.94	0.21		0.78	1.2	-0.7		2.1	3.1	0.43		0.66	0.98
Lead-212*	0.74	pCi/g	0.572		0.092	0.069	0.537		0.091	0.072	0.437		0.064	0.048	0.431		0.083	0.073
Lead-214*	0.75	pCi/g	0.49	Jdl	0.085	0.085	0.542	Jdl	0.093	0.097	0.565	Jdl	0.066	0.051	0.534	Jdl	0.088	0.086
Potassium-40*	13.6	pCi/g	10.6		1.5	0.45	**14.8**		1.9	0.46	10.4		1.2	0.31	10.4		1.5	0.49
Radium-223*	NA	pCi/g	0.03		0.27	0.69	0.09		0.32	0.83	0.03		0.17	0.42	-0.2		0.19	0.7
Radium-226	0.77	pCi/g	**1.06**		0.26	0.18	0.5		0.18	0.14	0.69		0.22	0.15	0.38		0.18	0.2
Radium-226*	0.77	pCi/g	**0.86**		0.58	0.8	0.43		0.61	0.9	0.41		0.39	0.51	0.04		0.58	0.81
Strontium-90	0.36	pCi/g	0.13	J/lB	0.21	0.36	0.1	J/lB	0.23	0.39	**0.53**	J/lB	0.29	0.45	**1.01**	J/lB	0.32	0.46
Thallium-208*	0.21	pCi/g	0.118		0.044	0.05	0.168		0.05	0.049	0.145		0.031	0.027	0.128		0.041	0.039
Thorium-234*	NA	pCi/g	0.46		0.34	0.95	0.45		0.38	1.1	0.53		0.33	1	0.42		0.34	0.93
Tritium	105	pCi/L	-70		110	220	-89		92	210	50		120	210	20		110	210
Uranium-235*	0.071	pCi/g	0.01		0.13	0.2	0.03		0.14	0.22	0.026		0.097	0.15	-0.01		0.13	0.2

Table I-6
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-492				LEHR-S-493				LEHR-S-494				LEHR-S-495			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.42		0.14	0.18	0.422		0.088	0.1	0.31		0.11	0.18	0.48		0.15	0.2
Bismuth-212*	NA	pCi/g	0.18		0.25	0.35	0.17		0.15	0.19	0.32		0.24	0.29	0.23		0.3	0.41
Bismuth-214*	0.57	pCi/g	0.484		0.097	0.079	0.349		0.066	0.066	0.38		0.087	0.085	0.49		0.11	0.09
Carbon-14	0.87	pCi/g	-5.4		5.4	11	-2.8		5.7	11	-2.4		5.7	11	-2.9		5.2	10
Cesium-137*	0.053	pCi/g	-0.006		0.024	0.042	-0.018		0.011	0.029	-0.001		0.016	0.039	-0.005		0.025	0.044
Cobalt-60*	0.016	pCi/g	0.004		0.019	0.037	-0.0045		0.0099	0.027	0.01		0.023	0.046	-0.018		0.019	0.048
Gross Alpha	11.8	pCi/g	0.91		0.97	1.5	1.7		1.2	1.7	1.3		1.2	1.8	1.8		1.1	1.5
Gross Beta	17.4	pCi/g	1.34		0.93	1.5	1.22		0.89	1.4	1.31		0.92	1.5	1.46		0.9	1.4
Gross Beta	17.4	pCi/g	---		---	---	---		---	---	14.6		4.4	6.1	13.9		4.4	6.1
Lead-210*	NA	pCi/g	0.45		0.73	1.1	0.0		2.1	3.1	1.18		0.66	0.91	0.51		0.79	1.2
Lead-212*	0.74	pCi/g	0.523		0.087	0.068	0.398		0.061	0.049	0.4		0.077	0.068	0.548		0.093	0.076
Lead-214*	0.75	pCi/g	0.526	Jdl	0.086	0.088	0.452	Jdl	0.061	0.054	0.469	Jdl	0.081	0.079	0.533	Jdl	0.093	0.099
Potassium-40*	13.6	pCi/g	10.9		1.5	0.44	10.7		1.3	0.37	10.4		1.4	0.36	11.4		1.6	0.55
Radium-223*	NA	pCi/g	-0.04		0.19	0.75	-0.07		0.11	0.45	0.05		0.24	0.7	0.07		0.31	0.78
Radium-226	0.77	pCi/g	0.51		0.2	0.16	0.52		0.2	0.19	0.39		0.17	0.15	**0.88**		0.25	0.13
Radium-226*	0.77	pCi/g	0.33		0.56	0.79	0.53		0.39	0.52	0.45		0.52	0.75	-0.11		0.64	0.88
Strontium-90	0.36	pCi/g	**0.91**	JzlB	0.33	0.49	0.34	JzlB	0.23	0.37	**0.81**	JzlB	0.28	0.41	**0.59**	JzlB	0.25	0.39
Thallium-208*	0.21	pCi/g	0.187		0.048	0.043	0.144		0.031	0.027	0.13		0.043	0.046	0.173		0.052	0.052
Thorium-234*	NA	pCi/g	0.48		0.35	1.1	0.43		0.32	1.1	0.51		0.32	0.86	0.85		0.4	1.2
Tritium	105	pCi/L	-30		110	220	-30		110	210	10		110	210	-30		110	210
Uranium-235*	0.071	pCi/g	0.03		0.13	0.21	0.038		0.088	0.14	-0.131		0.079	0.2	**0.09**		0.14	0.22

TABLE I-7

SOUTH WEST TRENCHES – CATIONS/ANIONS

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
Alkalinity, total (as CaCO3)	708	mg/kg	<300	IU	NA	340		440		NA		NA
Ammonia-Nitrogen		mg/kg	<0.5	IU	NA	<0.5	IU	<0.5	IU	NA		NA
Chloride	14	mg/kg	**470**	Jdl*	NA	**27**	Jdl*	2.5	Jdl*	9.5	Jhl	NA
Nitrogen, Nitrate (as N)	10	mg/kg	**250**	JnlH	NA	0.65	JhlH	0.33	JhlH	**54**	JhlH	NA
Sulfate	36	mg/kg	**1,700**	Jnl	NA	2.4	Jhl	3.8	Jhl	**37**	Jhl	NA
Sulfide	30	mg/kg	<60	IU	NA	<60	IUN	<60	IU	NA		NA
Total Kjeldahl Nitrogen		mg/kg	290		NA	400		560		NA		NA

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
Chloride	14	mg/kg	**15**	Jhl	5.1	Jhl	NA	8.6	Jhl	**51**	Jhl	**78**	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**88**	JhlH	**21**	JhlH	NA	**210**	JhlH	**1,200**	JhlHD	0.37	JhlHD
Sulfate	36	mg/kg	**120**	Jhl	27	Jhl	NA	**270**	Jhl	**1,600**	Jhl	**5,700**	Jhl

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342	LEHR-S-343	
Chloride	14	mg/kg	NA	**68**	Jhl	NA	**20**	Jhl	NA	**15**	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	NA	<0.2	RhlUH	NA	**380**	JhlH	NA	**290**	JhlH
Sulfate	36	mg/kg	NA	**5,500**	Jhl	NA	**220**	Jhl	NA	**140**	Jhl

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
Chloride	14	mg/kg	0.81	Jhl	0.58	Jhl	0.25	Jhl	1.6	Jhl	0.23	Jhl	0.56	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	2.4	JhlH	0.44	JhlH	<0.2	RhlU	<0.2	RhlUH	0.32	JhlH	0.35	JhlH
Sulfate	36	mg/kg	4.1	Jhl	1.1	Jhl	<1	RhlU	9.2	Jhl	1.1	Jhl	1.2	Jhl

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LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
Chloride	14	mg/kg	2.3	Jhl	3.5	Jhl	8.9	Jhl	11	Jhl	2.7	Jhl	9.5	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**11**	JhlNH	**39**	JhlH	**49**	JhlH	**59**	JhlH	**350**	JhlNH	**56**	JhlH
Sulfate	36	mg/kg	13	Jhl	25	Jhl	30	Jhl	**36**	Jhl	**170**	Jhl	33	Jhl

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
Chloride	14	mg/kg	7	Jhl	NA	0.25	Jhl	2	Jhl	1.1	Jhl	**43**	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**390**	JhlH	NA	8.4	JhlNH	**64**	JhlH	**17**	JhlH	<0.2	RhlH
Sulfate	36	mg/kg	**250**	Jhl	NA	9.2	Jhl	**45**	Jhl	23	Jhl	**260**	Jhl

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South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
Chloride	14	mg/kg	NA	4.8	Jhl	12	Jhl	**17**	Jhl	0.32	Jhl	1.9	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	NA	9.4	JhlH	**21**	JhlH	**18**	JhlH	**55**	JhlH	7.2	JhlH
Sulfate	36	mg/kg	NA	**53**	Jhl	**47**	Jhl	**81**	Jhl	19	Jhl	6.1	Jhl

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
Chloride	14	mg/kg	0.97	Jhl	0.27	Jhl	<0.2	Rhl	0.27	Jhl	0.46	Jhl	0.66	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	4.7	JhlH	0.9	JhlH	0.69	JhlH	1.7	JhlH	3	JhlH	3.1	JhlH
Sulfate	36	mg/kg	7.4	Jhl	25	Jhl	26	Jhl	24	Jhl	**69**	Jhl	**43**	Jhl

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
Chloride	14	mg/kg	1.7	JhI	3.4	JhI	3.2	JhI	3	JhI	2.5	JhI	1	JhI
Nitrogen, Nitrate (as N)	10	mg/kg	**56**	JhIH	**91**	JhIH	**48**	JhIH	**17**	JhIH	**12**	JhIH	5	JhIH
Sulfate	36	mg/kg	**99**	JhI	**110**	JhI	**66**	JhI	**50**	JhI	**46**	JhI	9.6	JhI

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
Chloride	14	mg/kg	0.86	Jhl	0.35	Jhl	<0.2	RhlU	<0.2	RhlU	<0.2	RhlU	0.27	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	9.6	JhlH	3.9	JhlH	3	JhlH	2.3	JhlH	1.4	JhlH	3	JhlH
Sulfate	36	mg/kg	4.3	Jhl	3.8	Jhl	1.1	Jhl	1.4	Jhl	1	Jhl	1	Jhl

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
Chloride	14	mg/kg	0.64	JhI	4.4	JhI	1.1	JhI	5.5	JhI	8.4	JhI	<0.2	RhIU
Nitrogen, Nitrate (as N)	10	mg/kg	0.57	JhIH	3.6	JhIH	0.77	JhIH	6.1	JhIH	8.1	JhIH	0.62	JhIH
Sulfate	36	mg/kg	<1	RhIU	6.6	JhI	1.3	JhI	6.2	JhI	13	JhI	1.4	JhI

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
Chloride	14	mg/kg	0.77	JhI	0.58	JhI	0.65	JnI	<0.2	RnIU	0.3	JnI	0.49	JnI
Nitrogen, Nitrate (as N)	10	mg/kg	1.6	JhIH	0.27	JhIH	<0.2	RnIUH	0.37	JnIH	0.26	JnIH	0.38	JnIH
Sulfate	36	mg/kg	<1	RhIU	<1	RhIU	<1	RnIU	<1	RnIU	1.6	JnI	11	JnI

Table I-7
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
Chloride	14	mg/kg	0.72	Jnl	0.45	Jnl
Nitrogen, Nitrate (as N)	10	mg/kg	1.1	JnlH	0.22	JnlH
Sulfate	36	mg/kg	4.5	Jnl	2.8	Jnl

TABLE I-8

SOUTH WEST TRENCHES – GENERAL CHEMISTRY

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-331		LEHR-S-331DL2	LEHR-S-332		LEHR-S-333		LEHR-S-335		LEHR-S-335DL2
Conductivity	338	uS/cm	29		NA	67		79		NA		NA
Formaldehyde		mg/kg	NA		NA	NA		NA		<1	IUN	NA
Kerosene Range Organics		mg/kg	<34	IU	NA	<33	IU	<35	IU	NA		NA
pH		pH Un	7.9		NA	8.1		8.3		7.9	IH	NA
Total Organic Carbon		mg/kg	<1,000	IU	NA	<1,000	IU	1,100		NA		NA

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-336		LEHR-S-337		LEHR-S-337DL8	LEHR-S-338		LEHR-S-338-QC		LEHR-S-340	
Formaldehyde		mg/kg	<1	IUN	<1	IUN	NA	<1	IUN	<1	IUN	<1	IUN
pH		pH Un	7.9	IH	7.9	IH	NA	5.7	IH	5.9	IH	6.9	IH

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-340DL	LEHR-S-340-QC		LEHR-S-340-QCDL	LEHR-S-341		LEHR-S-342	LEHR-S-343	
Formaldehyde		mg/kg	NA	<1	IUN	NA	<1	IUN	NA	<1	IUN
pH		pH Un	NA	6.9	IH	NA	7.4		NA	7.6	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-344		LEHR-S-345		LEHR-S-346		LEHR-S-347		LEHR-S-348		LEHR-S-349	
Formaldehyde		mg/kg	<1	IUN	<1	IUN	<1	IUN	<1	IUN	1.6	IN	<1	IUN
pH		pH Un	7.9		7.6		7.8		8.3		7.9		8	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-350		LEHR-S-351		LEHR-S-352		LEHR-S-353		LEHR-S-354		LEHR-S-356	
Formaldehyde		mg/kg	<1	INU	<1	INU	<1	INU	<1	INU	<1	IU	<1	INU
pH		pH Un	7.6		7.7		7.8		7.9		5.5		6.8	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-357		LEHR-S-358	LEHR-S-359		LEHR-S-360		LEHR-S-361		LEHR-S-362	
Formaldehyde		mg/kg	<1	INU	NA	<1	INU	<1	INU	<1	INU	<1	IUN
pH		pH Un	6.5		NA	7.8		7.2		7.4		6.9	IH

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-362DL	LEHR-S-378		LEHR-S-379		LEHR-S-380		LEHR-S-381		LEHR-S-382	
Formaldehyde		mg/kg	NA	<1	IUN	<1	IUN	<1	IUN	<1	IUN	<1	IUN
pH		pH Un	NA	7.3		8.3		8		6.4		7.4	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-383		LEHR-S-465		LEHR-S-466		LEHR-S-467		LEHR-S-468		LEHR-S-469	
Formaldehyde		mg/kg	<1	IUN	<1	IU	<1	IU	<1	IU	<1	IU	<1	IU
pH		pH Un	7.4		8.1		8.2		8.3		8		8.1	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-470		LEHR-S-471		LEHR-S-472		LEHR-S-473		LEHR-S-474		LEHR-S-475	
Formaldehyde		mg/kg	<1	IU	<1	IU	<1	IU	<1	IU	<1	IU	<1	IU
pH		pH Un	6.5		7		7.7		8		8		7.9	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-476		LEHR-S-477		LEHR-S-478		LEHR-S-479		LEHR-S-480		LEHR-S-481	
Formaldehyde		mg/kg	<1	IU	<1	IU	<1	IUN	<1	IU	<1	IU	<1	IU
pH		pH Un	7.7		8.2		7.9		7.9		7.9		8	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-482		LEHR-S-483		LEHR-S-484		LEHR-S-485		LEHR-S-486		LEHR-S-487	
Formaldehyde		mg/kg	1.4	IN	<1	IU	<1	IU	<1	IU	<1	IU	<1	IU
pH		pH Un	8.2	IH	8.2	IH	7.8	IH	7.9	IH	8.1	IH	8.1	IH

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-488		LEHR-S-489		LEHR-S-490		LEHR-S-491		LEHR-S-492		LEHR-S-493	
Formaldehyde		mg/kg	<1	IU	<1	IU	<1	IUN	<1	IUH	<1	IUN	<1	IUN
pH		pH Un	7.2	IH	7.9	IH	7.3		7.7		8.3		8.1	

Table I-8
LEHR Environmental Restoration
South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-494		LEHR-S-495	
Formaldehyde		mg/kg	<1	IUN	<1	IUN
pH		pH Un	8.3		8.4	

TABLE I-9

RINSEATE FOR SOUTH WEST TRENCHES – VOLATILE ORGANICS BY CLP

Table I-9
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
1,1,1-Trichloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,1,2,2-Tetrachloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,1,2-Trichloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,1-Dichloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,1-Dichloroethene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,2-Dichloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,2-Dichloroethene (total)		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
1,2-Dichloropropane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
2-Butanone		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
2-Hexanone		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
4-Methyl-2-Pentanone		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Acetone		UG/L	<10	IU	3	IJ	<10	IU	<10	IU
Benzene		ug/L	<1	IU	<1	IU	<1	IU	<1	IU
Bromodichloromethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Bromoform		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Bromomethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Carbon Disulfide		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Carbon Tetrachloride		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Chlorobenzene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Chloroethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Chloroform		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Chloromethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
cis-1,3-Dichloropropene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Dibromochloromethane		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Ethylbenzene		ug/L	<1	IU	<1	IU	<1	IU	<1	IU
m,p-Xylenes		ug/L	<1	IU	<1	IU	<1	IU	<1	IU
Methylene Chloride		UG/L	<10	IU	<10	IU	<10	IU	<10	IU

Table I-9
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
o-Xylene		ug/L	<1	IU	<1	IU	<1	IU	<1	IU
Styrene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Tetrachloroethene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Toluene		ug/L	<1	IU	<1	IU	<1	IU	<1	IU
trans-1,3-Dichloropropene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Trichloroethene		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Vinyl Chloride		UG/L	<10	IU	<10	IU	<10	IU	<10	IU
Xylenes (Total)		UG/L	<10	IU	<10	IU	<10	IU	<10	IU

TABLE I-10

RINSEATE FOR SOUTH WEST TRENCHES – SEMIVOLATILE ORGANICS BY CLP

Table I-10
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
1,2,4-Trichlorobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
1,2-Dichlorobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
1,3-Dichlorobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
1,4-Dichlorobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,2'-oxybis(1-Chloropropane)		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,4,5-Trichlorophenol		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
2,4,6-Trichlorophenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,4-Dichlorophenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,4-Dimethylphenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,4-Dinitrophenol		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
2,4-Dinitrotoluene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2,6-Dinitrotoluene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2-Chloronaphthalene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2-Chlorophenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2-Methyl-4,6-dinitrophenol		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
2-Methylnaphthalene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2-Methylphenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
2-Nitroaniline		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
2-Nitrophenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
3,3'-Dichlorobenzidine		UG/L	<11	RclU	<11	RclU	<10	RclU	<11	IU
3-Nitroaniline		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
4-Bromophenyl Phenyl Ether		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
4-Chloro-3-Methylphenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
4-Chloroaniline		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
4-Chlorophenyl Phenyl Ether		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
4-Methylphenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
4-Nitroaniline		UG/L	<28	IU	<28	IU	<26	IU	<28	IU

Table I-10
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
4-Nitrophenol		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
Acenaphthene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Acenaphthylene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Anthracene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzo(a)anthracene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzo(a)pyrene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzo(b)fluoranthene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzo(g,h,i)perylene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzo(k)fluoranthene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Benzyl Butyl Phthalate		UG/L	1.4	IJ	1.2	IJ	1.3	IJ	2	IJ
Bis(2-Chloroethoxy)methane		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Bis(2-Chloroethyl)ether		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Bis(2-Ethylhexyl)phthalate		UG/L	1	IJ	3.1	IJ	9.3	IJ	<11	IU
Carbazole		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Chrysene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Di-n-Butylphthalate		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Di-n-Octylphthalate		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Dibenzo(a,h)anthracene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Dibenzofuran		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Diethyl Phthalate		UG/L	<11	IU	<11	IU	0.79	IJ	<11	IU
Dimethyl Phthalate		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Fluoranthene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Fluorene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Hexachlorobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Hexachlorobutadiene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Hexachlorocyclopentadiene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Hexachloroethane		UG/L	<11	IU	<11	IU	<10	IU	<11	IU

Table I-10
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
Indeno(1,2,3-cd)pyrene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Isophorone		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
N-Nitrosodi-n-propylamine		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Naphthalene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Nitrobenzene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Pentachlorophenol		UG/L	<28	IU	<28	IU	<26	IU	<28	IU
Phenanthrene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Phenol		UG/L	<11	IU	<11	IU	<10	IU	<11	IU
Pyrene		UG/L	<11	IU	<11	IU	<10	IU	<11	IU

TABLE I-11

RINSEATE FOR SOUTH WEST TRENCHES – PESTICIDES AND PCBS BY CLP

Table I-11
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
Toxaphene		UG/L	<5.6	IU	<5.2	IU	<5.2	IU	<5.6	IU

TABLE I-12

RINSEATE FOR SOUTH WEST TRENCHES – METALS BY CLP

Table I-12
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
Antimony		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Arsenic		mg/L	<0.002	IU	<0.002	IU	<0.002	IU	<0.002	IU
Barium		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Beryllium		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Cadmium		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Chromium		mg/L	0.0076	UzIB	0.0061	UzIB	0.0057	UzIB	0.0049	UzIB
Chromium, Hexavalent (+6)		mg/L	<0.02	UJhIU	<0.02	UJhIU	<0.02	UJhIU	<0.02	UJhIU
Cobalt		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Copper		mg/L	0.024		0.039		0.0053	UzI	0.0052	UzI
Iron		mg/L	0.41	UzIC	0.093	UzIC	0.08	UzIC	0.22	UzIC
Lead		mg/L	0.0011	UzIB	<0.001	IU	0.0013	UzIB	<0.001	IU
Manganese		mg/L	0.0026	UzIB	0.0013	UzIB	0.0015	UzIB	0.0018	UzIB
Mercury		mg/L	<0.0002	IU	<0.0002	IU	<0.0002	IU	<0.0002	IU
Molybdenum		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Nickel		mg/L	0.0023	UzIB	0.002	UzIB	0.0019	UzIB	0.0018	UzIB
Selenium		mg/L	<0.003	IU	<0.003	IU	<0.003	IU	<0.003	IU
Silver		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Thallium		mg/L	<0.001	IU	<0.001	IU	<0.001	IU	<0.001	IU
Vanadium		mg/L	0.0047	UzIB	0.0016	UzIB	<0.001	IU	<0.001	IU
Zinc		mg/L	0.042	UzI*C	0.023	UzI*C	0.0052	UzI*C	0.0085	UzI*C

TABLE I-13

RINSEATE FOR SOUTH WEST TRENCHES – RADIOCHEMICAL ANALYSES

Table I-13
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-L-220				LEHR-L-221				LEHR-L-222				LEHR-L-223			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	NA	pCi/L	-4.7		9.7	18	-9		18	57	19		29	49	-1.9		9.4	18
Bismuth-212*	NA	pCi/L	0.0		18	25	-42		30	98	-2		44	82	16		19	23
Bismuth-214*	NA	pCi/L	2.8		6.9	11	-2		17	28	12		18	28	19.9		8	9.8
Carbon-14	NA	pCi/L	-0.8		5.7	11	-5		5.4	11	23.2		8.3	11	1.4		6.1	11
Cesium-137*	NA	pCi/L	0.8		2.1	3.6	0.2		5.2	9.3	-1.3		6.2	12	-0.9		2.1	3.9
Cobalt-60*	NA	pCi/L	-0.4		1.2	3.3	2.4		4.8	9.6	3.6		5.4	11	-0.1		1.7	4.1
Gross Alpha	NA	pCi/L	0.38	Jdl	0.7	1.2	0.04	Jdl	0.58	1.2	0.05	Jdl	0.52	1.1	5.1	Jdl	1.4	0.94
Gross Beta	NA	pCi/L	-0.2		1.1	2	-0.3		1.1	2.1	-0.1		1.1	2	0.3		1.3	2.1
Lead-210*	NA	pCi/L	50		420	580	40		150	220	20		150	240	120		410	560
Lead-212*	NA	pCi/L	-3.6		5.9	9.2	-7		12	19	-9		13	19	4.4		6.1	8.8
Lead-214*	NA	pCi/L	0.3		5.5	9.3	-11		11	23	-6		11-	22	14.3		6.9	10
Potassium-40*	NA	pCi/L	-22		31	57	9		92	150	2		90	150	-16		31	56
Radium-223*	NA	pCi/L	-12		22	79	10		64	180	-24		54	200	-18		18	73
Radium-226	NA	pCi/L	0.14		0.13	0.19	0.46		0.19	0.14	0.09		0.14	0.24	0.06		0.12	0.22
Radium-226*	NA	pCi/L	-3		63	94	80		160	240	40		150	220	-13		67	100
Strontium-90	NA	pCi/L	0.07		0.33	0.58	0.15		0.49	0.84	0.11		0.34	0.59	0.13		0.32	0.55
Thallium-208*	NA	pCi/L	1.4		3	4.4	6		9.3	12	2.4		8.8	12	1.7		3.4	4.9
Thorium-234*	NA	pCi/L	-3		60	210	0.0		88	230	-20		94	260	-3		62	210
Tritium	105	pCi/L	-40		110	220	90		130	220	20		120	220	0.0		110	220
Uranium-235*	NA	pCi/L	4		18	27	15		34	49	4		34	51	6		21	27

TABLE I-14

RINSEATE FOR SOUTH WEST TRENCHES – CATIONS/ANIONS

Table I-14
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
Nitrogen, Nitrate (as N)		mg/L	<0.1	IU	<0.1	IU	<0.1	IU	<0.1	IU

TABLE I-15

RINSEATE FOR SOUTH WEST TRENCHES – GENERAL CHEMISTRY

Table I-15
LEHR Environmental Restoration
Rinseate for South West Trenches
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-L-220		LEHR-L-221		LEHR-L-222		LEHR-L-223	
Formaldehyde		mg/L	<1	IU	<1	IU	<1	IU	<1	IU

TABLE I-16

RADIUM/STRONTIUM AREA – VOLATILE ORGANICS BY CLP

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
1,1,1-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,1-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,1-Dichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,2-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
1,2-Dichloropropane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
2-Butanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
2-Hexanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Acetone		ug/kg	<12	IU	<11	IU	5	UJzIJB	6	UJzIJ	7	UJzIJ	7	UJzIJ
Benzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Bromodichloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Bromoform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Bromomethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Carbon Disulfide		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Carbon Tetrachloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Chlorobenzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Chloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Chloroform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Chloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Dibromochloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Ethylbenzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Methylene Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Styrene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
Tetrachloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Toluene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Trichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Vinyl Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU
Xylenes (Total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	<12	IU	<13	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
1,1,1-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Butanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Hexanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Acetone		ug/kg	5	UJzIJ	<12	IU	5	UJzIJ	<12	IU	4	UJzIJ	7	UJzIJ
Benzene		ug/kg	<12	IU	<12	IU	5	IJ	4	IJ	4	IJ	4	IJ
Bromodichloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromoform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromomethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chlorobenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Ethylbenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Methylene Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Styrene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
Tetrachloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Toluene		ug/kg	<12	IU	<12	IU	4	IJ	<12	IU	<12	IU	<12	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Trichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
1,1,1-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Butanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
2-Hexanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Acetone		ug/kg	7	UJzIJ	5	UJzIJ	<12	IU	<12	IU	<12	IU	<12	IU
Benzene		ug/kg	4	IJ	4	IJ	<12	IU	<12	IU	<12	IU	<12	IU
Bromodichloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromoform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Bromomethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chlorobenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloroform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Chloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Ethylbenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Methylene Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Styrene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
Tetrachloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Toluene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Trichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU	<12	IU

Table I-16
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
1,1,1-Trichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
2-Butanone		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
2-Hexanone		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Acetone		ug/kg	9	UJzIJB	7	UJzIJB	5	UJzIJB	6	UJzIJB	<11	IU	<12	IU
Benzene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Bromodichloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Bromoform		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Bromomethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Chlorobenzene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Chloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Chloroform		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Chloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Ethylbenzene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Methylene Chloride		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Styrene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU

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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
Tetrachloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Toluene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Trichloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<12	IU	<11	IU	<13	IU	<11	IU	<12	IU

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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
1,1,1-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,1-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,1-Dichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,2-Dichloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
1,2-Dichloropropane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
2-Butanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
2-Hexanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Acetone		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	21	UJzIB
Benzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Bromodichloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Bromoform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Bromomethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Carbon Disulfide		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Carbon Tetrachloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Chlorobenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Chloroethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Chloroform		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Chloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Dibromochloromethane		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Ethylbenzene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Methylene Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Styrene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
Tetrachloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Toluene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Trichloroethene		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Vinyl Chloride		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU
Xylenes (Total)		ug/kg	<12	IU	<12	IU	<12	IU	<12	IU	<15	UJIU	<11	IU

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
1,1,1-Trichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
2-Butanone		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
2-Hexanone		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Acetone		ug/kg	5	UJzIJB	<12	IU	12	UJzI	5	UJzIJ	10	UJzIJ	7	UJzIJB
Benzene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Bromodichloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Bromoform		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Bromomethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Chlorobenzene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Chloroethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Chloroform		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Chloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Ethylbenzene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Methylene Chloride		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Styrene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU

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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
Tetrachloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Toluene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Trichloroethene		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<12	IU	<11	IU	<12	IU	<10	IU	<12	IU

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LEHR Environmental Restoration
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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
1,1,1-Trichloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1-Dichloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1-Dichloroethene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloropropane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
2-Butanone		ug/kg	<11	IU	<12	IU	<12	IU	8	IJ	6	IJ	<10	IU
2-Hexanone		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Acetone		ug/kg	8	UJzIJ	10	UJzIJ	15	UJzI	45	UJzI	29	UJzIB	12	UJzI
Benzene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromodichloromethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromoform		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromomethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Carbon Disulfide		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Carbon Tetrachloride		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chlorobenzene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloroethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloroform		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloromethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Dibromochloromethane		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Ethylbenzene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Methylene Chloride		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Styrene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU

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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
Tetrachloroethene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Toluene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Trichloroethene		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Vinyl Chloride		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Xylenes (Total)		ug/kg	<11	IU	<12	IU	<12	IU	<12	IU	<12	IU	3	IJ

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Location Date	Background Level	UNITS	LEHR-S-447DL	LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
1,1,1-Trichloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1,2,2-Tetrachloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1,2-Trichloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1-Dichloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,1-Dichloroethene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloroethene (total)		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
1,2-Dichloropropane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
2-Butanone		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
2-Hexanone		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
4-Methyl-2-Pentanone		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Acetone		ug/kg	NA	5	UJzIJ	4	UJzIJ	<12	IU	<12	IU	<10	IU
Benzene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromodichloromethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromoform		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Bromomethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Carbon Disulfide		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Carbon Tetrachloride		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chlorobenzene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloroethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloroform		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Chloromethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
cis-1,3-Dichloropropene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Dibromochloromethane		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Ethylbenzene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Methylene Chloride		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Styrene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-447DL	LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
Tetrachloroethene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Toluene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
trans-1,3-Dichloropropene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Trichloroethene		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Vinyl Chloride		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU
Xylenes (Total)		ug/kg	NA	<12	IU	<12	IU	<12	IU	<12	IU	<10	IU

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Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
1,1,1-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,1-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,1-Dichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
1,2-Dichloropropane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
2-Butanone		ug/kg	<12	IU	<11	UJcIU	<12	UJcIU	<11	UJcIU	<12	UJcIU	<11	IU
2-Hexanone		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<11	UJcIU	<12	IU	<11	IU	<12	IU	<11	IU
Acetone		ug/kg	4	UJzIJB	<11	UJIU	7	UJzIJB	4	UJcIJB	<12	UJcIU	7	UJzIJB
Benzene		ug/kg	<12	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	UJsIU
Bromodichloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Bromoform		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Bromomethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Carbon Disulfide		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Carbon Tetrachloride		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Chlorobenzene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Chloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Chloroform		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Chloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Dibromochloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Ethylbenzene		ug/kg	<12	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	UJsIU
m,p-Xylenes		ug/kg	NA		<1.1	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	UJsIU
Methylene Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU

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Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
o-Xylene		ug/kg	NA		<1.1	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	UJsIU
Styrene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Tetrachloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Toluene		ug/kg	<12	IU	<1.1	IU	<1.2	IU	<1.1	IU	<1.2	IU	<1.1	UJsIU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Trichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Vinyl Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU
Xylenes (Total)		ug/kg	<12	IU	<11	IU	<12	IU	<11	IU	<12	IU	<11	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
1,1,1-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
2-Butanone		ug/kg	<12	UJcIU	<11	IU	8	UJcIJ	7	UJcIJ	NA	8	UJcIJ
2-Hexanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Acetone		ug/kg	4	UJzIJB	17	UJzIB	63	UJcIB	51	UJIB	NA	48	UJzIB
Benzene		ug/kg	<1.2	IU	<1.2	UJsIU	<1.2	IU	<1.2	UJsIU	NA	<1.2	IU
Bromodichloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Bromoform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Bromomethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Carbon Disulfide		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Chlorobenzene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Chloroethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Chloroform		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Chloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Dibromochloromethane		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Ethylbenzene		ug/kg	<1.2	IU	<1.2	UJsIU	<1.2	IU	<1.2	UJsIU	NA	<1.2	IU
m,p-Xylenes		ug/kg	<1.2	IU	<1.2	UJsIU	<1.2	IU	<1.2	UJsIU	NA	<1.2	IU
Methylene Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
o-Xylene		ug/kg	<1.2	IU	<1.2	UJsIU	<1.2	IU	<1.2	UJsIU	NA	<1.2	IU
Styrene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Tetrachloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Toluene		ug/kg	<1.2	IU	<1.2	UJsIU	<1.2	IU	<1.2	UJsIU	NA	<1.2	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Trichloroethene		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Vinyl Chloride		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU
Xylenes (Total)		ug/kg	<12	IU	<11	IU	<12	IU	<12	IU	NA	<12	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498		LEHR-S-499	
1,1,1-Trichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,1-Dichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,1-Dichloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,2-Dichloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
1,2-Dichloropropane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
2-Butanone		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
2-Hexanone		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Acetone		ug/kg	4	UJzIJ	6	UJzIJ	<11	IU	<11	IU
Benzene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Bromodichloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Bromoform		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Bromomethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Carbon Disulfide		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Carbon Tetrachloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Chlorobenzene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Chloroethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Chloroform		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Chloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Dibromochloromethane		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Ethylbenzene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Methylene Chloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Styrene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498		LEHR-S-499	
Tetrachloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Toluene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Trichloroethene		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Vinyl Chloride		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU
Xylenes (Total)		ug/kg	<11	IU	<12	IU	<11	IU	<11	IU

TABLE I-17

RADIUM/STRONTIUM AREA – SEMIVOLATILE ORGANICS BY CLP

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
1,2,4-Trichlorobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
1,2-Dichlorobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
1,3-Dichlorobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
1,4-Dichlorobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,4,5-Trichlorophenol		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
2,4,6-Trichlorophenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,4-Dichlorophenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,4-Dimethylphenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,4-Dinitrophenol		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
2,4-Dinitrotoluene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2,6-Dinitrotoluene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2-Chloronaphthalene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2-Chlorophenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2-Methyl-4,6-dinitrophenol		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
2-Methylnaphthalene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2-Methylphenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
2-Nitroaniline		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
2-Nitrophenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
3,3'-Dichlorobenzidine		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
3-Nitroaniline		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
4-Bromophenyl Phenyl Ether		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
4-Chloro-3-Methylphenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
4-Chloroaniline		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
4-Methylphenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
4-Nitroaniline		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU

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LEHR Environmental Restoration
Radium/Strontium Area
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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
4-Nitrophenol		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
Acenaphthene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Acenaphthylene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Anthracene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	24	JhIJ	<420	UJhIU
Benzo(a)anthracene		ug/kg	<390	UJhIU	30	JhIJ	<400	UJhIU	<380	UJhIU	34	JhIJ	<420	UJhIU
Benzo(a)pyrene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	29	JhIJ	<420	UJhIU
Benzo(b)fluoranthene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Benzo(g,h,i)perylene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Benzo(k)fluoranthene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	27	JhIJ	<420	UJhIU
Benzyl Butyl Phthalate		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Bis(2-Chloroethoxy)methane		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Bis(2-Chloroethyl)ether		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Bis(2-Ethylhexyl)phthalate		ug/kg	21	JhIJ	<380	UJhIU	<400	UJhIU	<380	UJhIU	59	JhIJ	<420	UJhIU
Carbazole		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Chrysene		ug/kg	<390	UJhIU	47	JhIJ	<400	UJhIU	<380	UJhIU	38	JhIJ	<420	UJhIU
Di-n-Butylphthalate		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Di-n-Octylphthalate		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Dibenzo(a,h)anthracene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Dibenzofuran		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Diethyl Phthalate		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Dimethyl Phthalate		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Fluoranthene		ug/kg	<390	UJhIU	82	JhIJ	<400	UJhIU	<380	UJhIU	67	JhIJ	<420	UJhIU
Fluorene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Hexachlorobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Hexachlorobutadiene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Hexachlorocyclopentadiene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Hexachloroethane		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Isophorone		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
N-Nitrosodi-n-propylamine		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Naphthalene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Nitrobenzene		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Pentachlorophenol		ug/kg	<940	UJhIU	<930	UJhIU	<980	UJhIU	<930	UJhIU	<970	UJhIU	<1,000	UJhIU
Phenanthrene		ug/kg	26	JhIJ	33	JhIJ	<400	UJhIU	<380	UJhIU	70	JhIJ	<420	UJhIU
Phenol		ug/kg	<390	UJhIU	<380	UJhIU	<400	UJhIU	<380	UJhIU	<400	UJhIU	<420	UJhIU
Pyrene		ug/kg	23	JhIJ	84	JhIJ	<400	UJhIU	<380	UJhIU	56	JhIJ	<420	UJhIU

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Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
1,2,4-Trichlorobenzene		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
1,2-Dichlorobenzene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
1,3-Dichlorobenzene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
1,4-Dichlorobenzene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,4,5-Trichlorophenol		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU
2,4,6-Trichlorophenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,4-Dichlorophenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,4-Dimethylphenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,4-Dinitrophenol		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU
2,4-Dinitrotoluene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2,6-Dinitrotoluene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2-Chloronaphthalene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2-Chlorophenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU
2-Methylnaphthalene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2-Methylphenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
2-Nitroaniline		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU
2-Nitrophenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
3,3'-Dichlorobenzidine		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
3-Nitroaniline		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU
4-Bromophenyl Phenyl Ether		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
4-Chloro-3-Methylphenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
4-Chloroaniline		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
4-Methylphenol		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
4-Nitroaniline		ug/kg	<960	UJhIU	<970	IU	<960	IU	<950	IU	<960	IU	<970	IU

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Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
4-Nitrophenol		ug/kg	<960	UJhIU	<970	UJhIU	<960	UJhIU	<950	UJhIU	<960	UJhIU	<970	UJhIU
Acenaphthene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Acenaphthylene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Anthracene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzo(a)anthracene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzo(a)pyrene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzo(b)fluoranthene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzo(g,h,i)perylene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzo(k)fluoranthene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Benzyl Butyl Phthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Bis(2-Chloroethoxy)methane		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Bis(2-Chloroethyl)ether		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	29	IJ
Carbazole		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Chrysene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Di-n-Butylphthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Di-n-Octylphthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Dibenzo(a,h)anthracene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Dibenzofuran		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Diethyl Phthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Dimethyl Phthalate		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Fluoranthene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Fluorene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Hexachlorobenzene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Hexachlorobutadiene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Hexachlorocyclopentadiene		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU
Hexachloroethane		ug/kg	<400	UJhIU	<400	IU	<400	IU	<390	IU	<400	IU	<400	IU

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Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
Indeno(1,2,3-cd)pyrene		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Isophorone		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
N-Nitrosodi-n-propylamine		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Naphthalene		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Nitrobenzene		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Pentachlorophenol		ug/kg	<960	UJhIU	<970	UJhIU	<960	UJhIU	<950	UJhIU	<960	UJhIU	<970	UJhIU
Phenanthrene		ug/kg	<400	JhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Phenol		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU
Pyrene		ug/kg	<400	UJhIU	<400	UJhIU	<400	UJhIU	<390	UJhIU	<400	UJhIU	<400	UJhIU

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Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
1,2,4-Trichlorobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
1,2-Dichlorobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
1,3-Dichlorobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
1,4-Dichlorobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,4,5-Trichlorophenol		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
2,4,6-Trichlorophenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,4-Dichlorophenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,4-Dimethylphenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,4-Dinitrophenol		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
2,4-Dinitrotoluene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2,6-Dinitrotoluene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2-Chloronaphthalene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2-Chlorophenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
2-Methylnaphthalene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2-Methylphenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
2-Nitroaniline		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
2-Nitrophenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
3,3'-Dichlorobenzidine		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
3-Nitroaniline		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
4-Bromophenyl Phenyl Ether		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
4-Chloro-3-Methylphenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
4-Chloroaniline		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
4-Methylphenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
4-Nitroaniline		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU

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Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
4-Nitrophenol		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
Acenaphthene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Acenaphthylene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Anthracene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzo(a)anthracene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzo(a)pyrene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzo(b)fluoranthene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzo(g,h,i)perylene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzo(k)fluoranthene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Benzyl Butyl Phthalate		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Bis(2-Chloroethoxy)methane		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Bis(2-Chloroethyl)ether		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<390	UJhIU	<390	UJhIU	21	IJ	<400	IU	<400	IU	<400	IU
Carbazole		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Chrysene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Di-n-Butylphthalate		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Di-n-Octylphthalate		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Dibenzo(a,h)anthracene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Dibenzofuran		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Diethyl Phthalate		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	120	IJ	<400	IU	<400	IU
Dimethyl Phthalate		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Fluoranthene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Fluorene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Hexachlorobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Hexachlorobutadiene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Hexachlorocyclopentadiene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Hexachloroethane		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU

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Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Isophorone		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
N-Nitrosodi-n-propylamine		ug/kg	<390	UJIIU	<390	UJIIU	<400	IU	<400	IU	<400	IU	<400	IU
Naphthalene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Nitrobenzene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Pentachlorophenol		ug/kg	<950	UJhIU	<950	UJhIU	<960	IU	<960	IU	<960	IU	<980	IU
Phenanthrene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Phenol		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU
Pyrene		ug/kg	<390	UJhIU	<390	UJhIU	<400	IU	<400	IU	<400	IU	<400	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
1,2,4-Trichlorobenzene		ug/kg	<410	UJIIU	<400	UJIIU	<360	UJIIU	<410	UJIIU	<380	UJIIU	<390	UJIIU
1,2-Dichlorobenzene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
1,3-Dichlorobenzene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
1,4-Dichlorobenzene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2,4,5-Trichlorophenol		ug/kg	<990	IU	<960	IU	<880	UJsIU	<1,000	IU	<930	IU	<940	IU
2,4,6-Trichlorophenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	UJsIU
2,4-Dichlorophenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
2,4-Dimethylphenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
2,4-Dinitrophenol		ug/kg	<990	IU	<960	IU	<880	UJsIU	<1,000	IU	<930	IU	<940	IU
2,4-Dinitrotoluene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2,6-Dinitrotoluene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2-Chloronaphthalene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2-Chlorophenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<990	IU	<960	IU	<880	IU	<1,000	IU	<930	IU	<940	IU
2-Methylnaphthalene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
2-Methylphenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
2-Nitroaniline		ug/kg	<990	IU	<960	IU	<880	IU	<1,000	IU	<930	IU	<940	IU
2-Nitrophenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
3,3'-Dichlorobenzidine		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
3-Nitroaniline		ug/kg	<990	IU	<960	IU	<880	IU	<1,000	IU	<930	IU	<940	IU
4-Bromophenyl Phenyl Ether		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
4-Chloro-3-Methylphenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
4-Chloroaniline		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
4-Methylphenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
4-Nitroaniline		ug/kg	<990	IU	<960	IU	<880	IU	<1,000	IU	<930	IU	<940	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
4-Nitrophenol		ug/kg	<990	IU	<960	IU	<880	UJsIU	<1,000	UJsIU	<930	IU	<940	IU
Acenaphthene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Acenaphthylene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Anthracene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzo(a)anthracene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzo(a)pyrene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzo(b)fluoranthene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzo(g,h,i)perylene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzo(k)fluoranthene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Benzyl Butyl Phthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Bis(2-Chloroethoxy)methane		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Bis(2-Chloroethyl)ether		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	25	IJ	<390	IU
Carbazole		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Chrysene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Di-n-Butylphthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Di-n-Octylphthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Dibenzo(a,h)anthracene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Dibenzofuran		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Diethyl Phthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Dimethyl Phthalate		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Fluoranthene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Fluorene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Hexachlorobenzene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Hexachlorobutadiene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Hexachlorocyclopentadiene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Hexachloroethane		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
Indeno(1,2,3-cd)pyrene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Isophorone		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
N-Nitrosodi-n-propylamine		ug/kg	<410	UJIIU	<400	IU	<360	UJIIU	<410	UJIIU	<380	IU	<390	UJIIU
Naphthalene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Nitrobenzene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Pentachlorophenol		ug/kg	<990	IU	<960	IU	<880	UJsIU	<1,000	IU	<930	IU	<940	IU
Phenanthrene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU
Phenol		ug/kg	<410	IU	<400	IU	<360	UJsIU	<410	IU	<380	IU	<390	IU
Pyrene		ug/kg	<410	IU	<400	IU	<360	IU	<410	IU	<380	IU	<390	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
1,2,4-Trichlorobenzene		ug/kg	<390	UJIIU	<390	UJIIU	<390	UJIIU	<400	UJIIU	<1,200	UJIIU	<3,500	IU
1,2-Dichlorobenzene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
1,3-Dichlorobenzene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
1,4-Dichlorobenzene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2,4,5-Trichlorophenol		ug/kg	<950	IU	<940	IU	<950	IU	<970	UJsIU	<3,000	IU	<8,600	IU
2,4,6-Trichlorophenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
2,4-Dichlorophenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
2,4-Dimethylphenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
2,4-Dinitrophenol		ug/kg	<950	IU	<940	IU	<950	IU	<970	UJsIU	<3,000	IU	<8,600	IU
2,4-Dinitrotoluene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2,6-Dinitrotoluene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2-Chloronaphthalene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2-Chlorophenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<950	IU	<940	IU	<950	IU	<970	IU	<3,000	IU	<8,600	IU
2-Methylnaphthalene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
2-Methylphenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
2-Nitroaniline		ug/kg	<950	IU	<940	IU	<950	IU	<970	IU	<3,000	IU	<8,600	IU
2-Nitrophenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
3,3'-Dichlorobenzidine		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
3-Nitroaniline		ug/kg	<950	IU	<940	IU	<950	IU	<970	IU	<3,000	IU	<8,600	IU
4-Bromophenyl Phenyl Ether		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
4-Chloro-3-Methylphenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
4-Chloroaniline		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
4-Methylphenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJsIU	<1,200	IU	<3,500	IU
4-Nitroaniline		ug/kg	<950	IU	<940	IU	<950	IU	<970	IU	<3,000	IU	<8,600	IU

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Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
4-Nitrophenol		ug/kg	<950	IU	<940	IU	<950	IU	<970	UJsIU	<3,000	IU	<8,600	IU
Acenaphthene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Acenaphthylene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Anthracene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzo(a)anthracene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzo(a)pyrene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzo(b)fluoranthene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzo(g,h,i)perylene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzo(k)fluoranthene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Benzyl Butyl Phthalate		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Bis(2-Chloroethoxy)methane		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Bis(2-Chloroethyl)ether		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	23	IJ	<390	IU	<390	IU	<400	IU	760	IJ	<3,500	IU
Carbazole		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Chrysene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	82	IJ	<3,500	IU
Di-n-Butylphthalate		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	1,200	IJ	<3,500	IU
Di-n-Octylphthalate		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Dibenzo(a,h)anthracene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Dibenzofuran		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Diethyl Phthalate		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Dimethyl Phthalate		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Fluoranthene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Fluorene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Hexachlorobenzene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Hexachlorobutadiene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Hexachlorocyclopentadiene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Hexachloroethane		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Isophorone		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
N-Nitrosodi-n-propylamine		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	UJ/IU	<3,500	IU
Naphthalene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Nitrobenzene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Pentachlorophenol		ug/kg	<950	IU	<940	IU	<950	IU	<970	UJs/IU	<3,000	IU	<8,600	IU
Phenanthrene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU
Phenol		ug/kg	<390	IU	<390	IU	<390	IU	<400	UJs/IU	<1,200	IU	<3,500	IU
Pyrene		ug/kg	<390	IU	<390	IU	<390	IU	<400	IU	<1,200	IU	<3,500	IU

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Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
1,2,4-Trichlorobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
1,2-Dichlorobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
1,3-Dichlorobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
1,4-Dichlorobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,4,5-Trichlorophenol		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
2,4,6-Trichlorophenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,4-Dichlorophenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,4-Dimethylphenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,4-Dinitrophenol		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
2,4-Dinitrotoluene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2,6-Dinitrotoluene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2-Chloronaphthalene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2-Chlorophenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
2-Methylnaphthalene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2-Methylphenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
2-Nitroaniline		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
2-Nitrophenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
3,3'-Dichlorobenzidine		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
3-Nitroaniline		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
4-Bromophenyl Phenyl Ether		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
4-Chloro-3-Methylphenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
4-Chloroaniline		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
4-Methylphenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
4-Nitroaniline		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU

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Radium/Strontium Area
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Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
4-Nitrophenol		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
Acenaphthene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Acenaphthylene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Anthracene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzo(a)anthracene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzo(a)pyrene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzo(b)fluoranthene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzo(g,h,i)perylene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzo(k)fluoranthene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Benzyl Butyl Phthalate		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Bis(2-Chloroethoxy)methane		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Bis(2-Chloroethyl)ether		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	31	IJ	22	IJ	390		62	IJ	<3,500	IU	23	IJ
Carbazole		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Chrysene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Di-n-Butylphthalate		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Di-n-Octylphthalate		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Dibenzo(a,h)anthracene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Dibenzofuran		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Diethyl Phthalate		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Dimethyl Phthalate		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Fluoranthene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Fluorene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Hexachlorobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Hexachlorobutadiene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Hexachlorocyclopentadiene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Hexachloroethane		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU

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Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Isophorone		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
N-Nitrosodi-n-propylamine		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Naphthalene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Nitrobenzene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Pentachlorophenol		ug/kg	<960	IU	<990	IU	<930	IU	<980	IU	<8,600	IU	<990	IU
Phenanthrene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Phenol		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU
Pyrene		ug/kg	<390	IU	<410	IU	<380	IU	<400	IU	<3,500	IU	<410	IU

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Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
1,2,4-Trichlorobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
1,2-Dichlorobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
1,3-Dichlorobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
1,4-Dichlorobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,4,5-Trichlorophenol		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
2,4,6-Trichlorophenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,4-Dichlorophenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,4-Dimethylphenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,4-Dinitrophenol		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
2,4-Dinitrotoluene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2,6-Dinitrotoluene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2-Chloronaphthalene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2-Chlorophenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
2-Methylnaphthalene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	440	
2-Methylphenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
2-Nitroaniline		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
2-Nitrophenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
3,3'-Dichlorobenzidine		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
3-Nitroaniline		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
4-Bromophenyl Phenyl Ether		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
4-Chloro-3-Methylphenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
4-Chloroaniline		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
4-Methylphenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
4-Nitroaniline		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU

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Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
4-Nitrophenol		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
Acenaphthene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	2,800	IE
Acenaphthylene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Anthracene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	3,500	IE
Benzo(a)anthracene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	13,000	IE
Benzo(a)pyrene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	30,000	IE
Benzo(b)fluoranthene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	34,000	IE
Benzo(g,h,i)perylene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	4,200	IE
Benzo(k)fluoranthene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Benzyl Butyl Phthalate		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Bis(2-Chloroethoxy)methane		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Bis(2-Chloroethyl)ether		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	51	IJ	94	IJ	160	IJ	42	IJ	90	IJ	190	IJ
Carbazole		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	2,400	
Chrysene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	10,000	IE
Di-n-Butylphthalate		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Di-n-Octylphthalate		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Dibenzo(a,h)anthracene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	1,900	
Dibenzofuran		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	600	
Diethyl Phthalate		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Dimethyl Phthalate		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Fluoranthene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	33,000	IE
Fluorene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	1,000	
Hexachlorobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Hexachlorobutadiene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Hexachlorocyclopentadiene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Hexachloroethane		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU

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Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
Indeno(1,2,3-cd)pyrene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	3,900	IE
Isophorone		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
N-Nitrosodi-n-propylamine		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Naphthalene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	1,100	
Nitrobenzene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Pentachlorophenol		ug/kg	<910	IU	<960	IU	<930	IU	<930	IU	<950	IU	<820	IU
Phenanthrene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	14,000	IE
Phenol		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	<340	IU
Pyrene		ug/kg	<380	IU	<400	IU	<380	IU	<380	IU	<390	IU	7,500	IE

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Location Date	Background Level	UNITS	LEHR-S-447DL		LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
1,2,4-Trichlorobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
1,2-Dichlorobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
1,3-Dichlorobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
1,4-Dichlorobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,4,5-Trichlorophenol		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
2,4,6-Trichlorophenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,4-Dichlorophenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,4-Dimethylphenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,4-Dinitrophenol		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
2,4-Dinitrotoluene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2,6-Dinitrotoluene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2-Chloronaphthalene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2-Chlorophenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
2-Methylnaphthalene		ug/kg	490	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2-Methylphenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
2-Nitroaniline		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
2-Nitrophenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
3,3'-Dichlorobenzidine		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
3-Nitroaniline		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
4-Bromophenyl Phenyl Ether		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
4-Chloro-3-Methylphenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
4-Chloroaniline		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
4-Methylphenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
4-Nitroaniline		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU

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Location Date	Background Level	UNITS	LEHR-S-447DL		LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
4-Nitrophenol		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
Acenaphthene		ug/kg	5,800	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Acenaphthylene		ug/kg	1,800	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Anthracene		ug/kg	5,600	IJ	21	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Benzo(a)anthracene		ug/kg	25,000		100	IJ	<380	IU	<400	IU	<390	IU	22	IJ
Benzo(a)pyrene		ug/kg	22,000		97	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Benzo(b)fluoranthene		ug/kg	15,000		130	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Benzo(g,h,i)perylene		ug/kg	8,800		44	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Benzo(k)fluoranthene		ug/kg	20,000		<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Benzyl Butyl Phthalate		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Bis(2-Chloroethoxy)methane		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Bis(2-Chloroethyl)ether		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	510	IJ	19	IJ	31	IJ	28	IJ	22	IJ	75	IJ
Carbazole		ug/kg	2,900	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Chrysene		ug/kg	28,000		130	IJ	<380	IU	<400	IU	<390	IU	45	IJ
Di-n-Butylphthalate		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Di-n-Octylphthalate		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Dibenzo(a,h)anthracene		ug/kg	3,600	IJ	52	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Dibenzofuran		ug/kg	970	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Diethyl Phthalate		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Dimethyl Phthalate		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Fluoranthene		ug/kg	35,000		170	IJ	<380	IU	<400	IU	<390	IU	26	IJ
Fluorene		ug/kg	1,600	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Hexachlorobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Hexachlorobutadiene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Hexachlorocyclopentadiene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Hexachloroethane		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU

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Location Date	Background Level	UNITS	LEHR-S-447DL		LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
Indeno(1,2,3-cd)pyrene		ug/kg	8,500		45	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Isophorone		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
N-Nitrosodi-n-propylamine		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Naphthalene		ug/kg	1,700	IJ	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Nitrobenzene		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Pentachlorophenol		ug/kg	<16,000	IU	<920	IU	<920	IU	<980	IU	<940	IU	<810	IU
Phenanthrene		ug/kg	17,000		63	IJ	<380	IU	<400	IU	<390	IU	<330	IU
Phenol		ug/kg	<6,700	IU	<380	IU	<380	IU	<400	IU	<390	IU	<330	IU
Pyrene		ug/kg	43,000		160	IJ	<380	IU	<400	IU	<390	IU	34	IJ

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Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
1,2,4-Trichlorobenzene		ug/kg	<390	IU	<380	UJIIU	<390	UJIIU	<380	UJIIU	<390	UJIIU	<18,000	UJIIU
1,2-Dichlorobenzene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
1,3-Dichlorobenzene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
1,4-Dichlorobenzene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,4,5-Trichlorophenol		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
2,4,6-Trichlorophenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,4-Dichlorophenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,4-Dimethylphenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,4-Dinitrophenol		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
2,4-Dinitrotoluene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2,6-Dinitrotoluene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2-Chloronaphthalene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2-Chlorophenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
2-Methylnaphthalene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2-Methylphenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
2-Nitroaniline		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
2-Nitrophenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
3,3'-Dichlorobenzidine		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
3-Nitroaniline		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
4-Bromophenyl Phenyl Ether		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
4-Chloro-3-Methylphenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
4-Chloroaniline		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
4-Methylphenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
4-Nitroaniline		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
4-Nitrophenol		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
Acenaphthene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Acenaphthylene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Anthracene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzo(a)anthracene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzo(a)pyrene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzo(b)fluoranthene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzo(g,h,i)perylene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzo(k)fluoranthene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Benzyl Butyl Phthalate		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Bis(2-Chloroethoxy)methane		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Bis(2-Chloroethyl)ether		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	32	IJ	560		65	IJ	27	IJ	<390	IU	<18,000	IU
Carbazole		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Chrysene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Di-n-Butylphthalate		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Di-n-Octylphthalate		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Dibenzo(a,h)anthracene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Dibenzofuran		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Diethyl Phthalate		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Dimethyl Phthalate		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Fluoranthene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Fluorene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Hexachlorobenzene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Hexachlorobutadiene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Hexachlorocyclopentadiene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Hexachloroethane		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Isophorone		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
N-Nitrosodi-n-propylamine		ug/kg	<390	IU	<380	UJIIU	<390	UJIIU	<380	UJIIU	<390	UJIIU	<18,000	UJIIU
Naphthalene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Nitrobenzene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Pentachlorophenol		ug/kg	<940	IU	<920	IU	<950	IU	<920	IU	<950	IU	<43,000	IU
Phenanthrene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Phenol		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU
Pyrene		ug/kg	<390	IU	<380	IU	<390	IU	<380	IU	<390	IU	<18,000	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL		LEHR-S-463	
1,2,4-Trichlorobenzene		ug/kg	<410	UJIIU	<380	UJIIU	<390	UJIIU	<380	UJIIU	<1,500	IU	<400	UJIIU
1,2-Dichlorobenzene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
1,3-Dichlorobenzene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
1,4-Dichlorobenzene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,2'-oxybis(1-Chloropropane)		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,4,5-Trichlorophenol		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
2,4,6-Trichlorophenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,4-Dichlorophenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,4-Dimethylphenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,4-Dinitrophenol		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
2,4-Dinitrotoluene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2,6-Dinitrotoluene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2-Chloronaphthalene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2-Chlorophenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2-Methyl-4,6-dinitrophenol		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
2-Methylnaphthalene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2-Methylphenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
2-Nitroaniline		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
2-Nitrophenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
3,3'-Dichlorobenzidine		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
3-Nitroaniline		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
4-Bromophenyl Phenyl Ether		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
4-Chloro-3-Methylphenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
4-Chloroaniline		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
4-Chlorophenyl Phenyl Ether		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
4-Methylphenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
4-Nitroaniline		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL		LEHR-S-463	
4-Nitrophenol		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
Acenaphthene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Acenaphthylene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Anthracene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzo(a)anthracene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzo(a)pyrene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzo(b)fluoranthene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzo(g,h,i)perylene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzo(k)fluoranthene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Benzyl Butyl Phthalate		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Bis(2-Chloroethoxy)methane		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Bis(2-Chloroethyl)ether		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Bis(2-Ethylhexyl)phthalate		ug/kg	<410	IU	220	IJ	1,200		6,500	IE	7,800		66	IJ
Carbazole		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Chrysene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Di-n-Butylphthalate		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Di-n-Octylphthalate		ug/kg	<410	IU	<380	IU	<390	IU	21	IJ	<1,500	IU	<400	IU
Dibenzo(a,h)anthracene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Dibenzofuran		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Diethyl Phthalate		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Dimethyl Phthalate		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Fluoranthene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Fluorene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Hexachlorobenzene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Hexachlorobutadiene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Hexachlorocyclopentadiene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Hexachloroethane		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL		LEHR-S-463	
Indeno(1,2,3-cd)pyrene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Isophorone		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
N-Nitrosodi-n-propylamine		ug/kg	<410	UJIIU	<380	UJIIU	<390	UJIIU	<380	UJIIU	<1,500	UJIIU	<400	UJIIU
Naphthalene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Nitrobenzene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Pentachlorophenol		ug/kg	<1,000	IU	<930	IU	<930	IU	<930	IU	<3,700	IU	<970	IU
Phenanthrene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Phenol		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU
Pyrene		ug/kg	<410	IU	<380	IU	<390	IU	<380	IU	<1,500	IU	<400	IU

Table I-17
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498	LEHR-S-499
1,2,4-Trichlorobenzene		ug/kg	<360	UJ/IU	<380	UJ/IU	NA	NA
1,2-Dichlorobenzene		ug/kg	<360	IU	<380	IU	NA	NA
1,3-Dichlorobenzene		ug/kg	<360	IU	<380	IU	NA	NA
1,4-Dichlorobenzene		ug/kg	<360	IU	<380	IU	NA	NA
2,2'-oxybis(1-Chloropropane)		ug/kg	<360	IU	<380	IU	NA	NA
2,4,5-Trichlorophenol		ug/kg	<870	IU	<930	IU	NA	NA
2,4,6-Trichlorophenol		ug/kg	<360	IU	<380	IU	NA	NA
2,4-Dichlorophenol		ug/kg	<360	IU	<380	IU	NA	NA
2,4-Dimethylphenol		ug/kg	<360	IU	<380	IU	NA	NA
2,4-Dinitrophenol		ug/kg	<870	IU	<930	IU	NA	NA
2,4-Dinitrotoluene		ug/kg	<360	IU	<380	IU	NA	NA
2,6-Dinitrotoluene		ug/kg	<360	IU	<380	IU	NA	NA
2-Chloronaphthalene		ug/kg	<360	IU	<380	IU	NA	NA
2-Chlorophenol		ug/kg	<360	IU	<380	IU	NA	NA
2-Methyl-4,6-dinitrophenol		ug/kg	<870	IU	<930	IU	NA	NA
2-Methylnaphthalene		ug/kg	<360	IU	<380	IU	NA	NA
2-Methylphenol		ug/kg	<360	IU	<380	IU	NA	NA
2-Nitroaniline		ug/kg	<870	IU	<930	IU	NA	NA
2-Nitrophenol		ug/kg	<360	IU	<380	IU	NA	NA
3,3'-Dichlorobenzidine		ug/kg	<360	IU	<380	IU	NA	NA
3-Nitroaniline		ug/kg	<870	IU	<930	IU	NA	NA
4-Bromophenyl Phenyl Ether		ug/kg	<360	IU	<380	IU	NA	NA
4-Chloro-3-Methylphenol		ug/kg	<360	IU	<380	IU	NA	NA
4-Chloroaniline		ug/kg	<360	IU	<380	IU	NA	NA
4-Chlorophenyl Phenyl Ether		ug/kg	<360	IU	<380	IU	NA	NA
4-Methylphenol		ug/kg	<360	IU	<380	IU	NA	NA
4-Nitroaniline		ug/kg	<870	IU	<930	IU	NA	NA

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498	LEHR-S-499
4-Nitrophenol		ug/kg	<870	IU	<930	IU	NA	NA
Acenaphthene		ug/kg	<360	IU	<380	IU	NA	NA
Acenaphthylene		ug/kg	<360	IU	<380	IU	NA	NA
Anthracene		ug/kg	<360	IU	<380	IU	NA	NA
Benzo(a)anthracene		ug/kg	<360	IU	<380	IU	NA	NA
Benzo(a)pyrene		ug/kg	<360	IU	<380	IU	NA	NA
Benzo(b)fluoranthene		ug/kg	<360	IU	<380	IU	NA	NA
Benzo(g,h,i)perylene		ug/kg	<360	IU	<380	IU	NA	NA
Benzo(k)fluoranthene		ug/kg	<360	IU	<380	IU	NA	NA
Benzyl Butyl Phthalate		ug/kg	<360	IU	<380	IU	NA	NA
Bis(2-Chloroethoxy)methane		ug/kg	<360	IU	<380	IU	NA	NA
Bis(2-Chloroethyl)ether		ug/kg	<360	IU	<380	IU	NA	NA
Bis(2-Ethylhexyl)phthalate		ug/kg	31	IJ	<380	IU	NA	NA
Carbazole		ug/kg	<360	IU	<380	IU	NA	NA
Chrysene		ug/kg	<360	IU	<380	IU	NA	NA
Di-n-Butylphthalate		ug/kg	<360	IU	<380	IU	NA	NA
Di-n-Octylphthalate		ug/kg	<360	IU	<380	IU	NA	NA
Dibenzo(a,h)anthracene		ug/kg	<360	IU	<380	IU	NA	NA
Dibenzofuran		ug/kg	<360	IU	<380	IU	NA	NA
Diethyl Phthalate		ug/kg	<360	IU	<380	IU	NA	NA
Dimethyl Phthalate		ug/kg	<360	IU	<380	IU	NA	NA
Fluoranthene		ug/kg	<360	IU	<380	IU	NA	NA
Fluorene		ug/kg	<360	IU	<380	IU	NA	NA
Hexachlorobenzene		ug/kg	<360	IU	<380	IU	NA	NA
Hexachlorobutadiene		ug/kg	<360	IU	<380	IU	NA	NA
Hexachlorocyclopentadiene		ug/kg	<360	IU	<380	IU	NA	NA
Hexachloroethane		ug/kg	<360	IU	<380	IU	NA	NA

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498	LEHR-S-499
Indeno(1,2,3-cd)pyrene		ug/kg	<360	IU	<380	IU	NA	NA
Isophorone		ug/kg	<360	IU	<380	IU	NA	NA
N-Nitrosodi-n-propylamine		ug/kg	<360	IU	<380	IU	NA	NA
Naphthalene		ug/kg	<360	IU	<380	IU	NA	NA
Nitrobenzene		ug/kg	<360	IU	<380	IU	NA	NA
Pentachlorophenol		ug/kg	<870	IU	<930	IU	NA	NA
Phenanthrene		ug/kg	<360	IU	<380	IU	NA	NA
Phenol		ug/kg	<360	IU	<380	IU	NA	NA
Pyrene		ug/kg	<360	IU	<380	IU	NA	NA

TABLE I-18

RADIUM/STRONTIUM AREA – PESTICIDES AND PCBS BY CLP

Table I-18
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
4,4'-DDD		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
4,4'-DDE		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
4,4'-DDT		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Aldrin		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Alpha-BHC		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Alpha-Chlordane		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Arochlor-1016		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Arochlor-1221		ug/kg	NA		<76	IU	<79	IU	<76	IU	<79	IU	<71	IU
Arochlor-1232		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Arochlor-1242		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Arochlor-1248		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Arochlor-1254		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Arochlor-1260		ug/kg	NA		<38	IU	<40	IU	<38	IU	<40	IU	<35	IU
Beta-BHC		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Delta-BHC		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Dieldrin		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Endosulfan I		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Endosulfan II		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Endosulfan Sulfate		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Endrin		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Endrin Aldehyde		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Endrin Ketone		ug/kg	NA		<3.8	IU	<4	IU	<3.8	IU	<4	IU	<3.5	IU
Gamma-BHC		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Gamma-Chlordane		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Heptachlor		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Heptachlor Epoxide		ug/kg	NA		<1.9	IU	<2	IU	<1.9	IU	<2	IU	<1.8	IU
Methoxychlor		ug/kg	NA		<19	IU	<20	IU	<19	IU	<20	IU	<18	IU

Table I-18
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
Toxaphene		ug/kg	NA		<190	IU	<200	IU	<190	IU	<200	IU	<180	IU

Table I-18
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
4,4'-DDD		ug/kg	<4.2	IU	<3.9	IU	0.32	IJ	<3.9	IU	NA	<4.1	IU
4,4'-DDE		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
4,4'-DDT		ug/kg	<4.2	IU	<3.9	IU	1.8	IJ	<3.9	IU	NA	<4.1	IU
Aldrin		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Alpha-BHC		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Alpha-Chlordane		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Arochlor-1016		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Arochlor-1221		ug/kg	<83	IU	<78	IU	<78	IU	<78	IU	NA	<81	IU
Arochlor-1232		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Arochlor-1242		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Arochlor-1248		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Arochlor-1254		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Arochlor-1260		ug/kg	<42	IU	<39	IU	<39	IU	<39	IU	NA	<41	IU
Beta-BHC		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Delta-BHC		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Dieldrin		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Endosulfan I		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Endosulfan II		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Endosulfan Sulfate		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Endrin		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Endrin Aldehyde		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Endrin Ketone		ug/kg	<4.2	IU	<3.9	IU	<3.9	IU	<3.9	IU	NA	<4.1	IU
Gamma-BHC		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Gamma-Chlordane		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Heptachlor		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Heptachlor Epoxide		ug/kg	<2.1	IU	<1.9	IU	<1.9	IU	<1.9	IU	NA	<2	IU
Methoxychlor		ug/kg	<21	IU	<19	IU	<19	IU	<19	IU	NA	<20	IU

Table I-18
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
Toxaphene		ug/kg	<210	IU	<190	IU	<190	IU	<190	IU	NA	<200	IU

TABLE I-19

RADIUM/STRONTIUM AREA – METALS BY CLP

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
Chromium	178	mg/kg	140	IN	150	IN	120	IN	120	IN	130	IN	120	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
Chromium	178	mg/kg	120	IN	130	IN	120	IN	120	IN	110	IN	120	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
Chromium	178	mg/kg	120	IN	140	IN	**190**	IN	120	IN	120	IN	110	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
Chromium	178	mg/kg	170	IN	140	IN	99	IN	150	IN	130	IN	150	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
Chromium	178	mg/kg	130	IN	110	IN	110	IN	130	IN	**300**	IN	85	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
Chromium	178	mg/kg	140	IN	110	IN	66	IN	120	IN	74	IN	130	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
Chromium	178	mg/kg	130	IN	72	IN	50	IN	67	IN	130	IN	**280**	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-447DL	LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
Chromium	178	mg/kg	NA	66	IN	69	IN	110	IN	77	IN	120	IN
Chromium, Hexavalent (+6)	0.099	mg/kg	NA	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
Antimony	0.74	mg/kg	NA		<0.23	UJIINU	<0.24	UJIINU	<0.23	UJIINU	<0.24	UJIINU	<0.2	UJIIU
Arsenic	9.46	mg/kg	NA		5.3		8		5.7		7.1		2.9	
Barium	237	mg/kg	NA		160	JIIN	160	JIIN	220	JIIN	180	JIIN	120	JIIN
Beryllium	0.66	mg/kg	NA		0.41	UzINB	0.46	UzINB	0.37	UzINB	0.43	UzINB	0.21	UzINB
Cadmium	0.46	mg/kg	NA		<0.23	IU	<0.24	IU	<0.23	IU	<0.24	IU	<0.2	IU
Chromium	178	mg/kg	110	IN	54		64		64		89		62	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	NA		17		19		24		25		9.2	
Copper	50	mg/kg	NA		47		46		**82**		**51**		21	
Iron	42000	mg/kg	NA		29,000	JIIC	35,000	JIIC	31,000	JIIC	37,000	JIIC	20,000	JIIC
Lead	10.1	mg/kg	NA		8.5	IN	10	IN	9.4	IN	10	IN	3	INB
Manganese	720	mg/kg	NA		590	I*	650	I*	**880**	I*	**870**	I*	450	I*
Mercury	0.49	mg/kg	NA		<0.1	IU	<0.11	IU	<0.1	IU	0.15		<0.093	IU
Molybdenum	2	mg/kg	NA		0.26	IB	0.65	IB	0.33	IB	0.37	IB	0.5	IB
Nickel	326	mg/kg	NA		75		100		120		160		72	
Selenium	1	mg/kg	NA		<0.68	IU	<0.72	IU	<0.69	IU	<0.71	IU	<0.61	IU
Silver	0.52	mg/kg	NA		<0.23	UJIIU	<0.24	UJIIU	<0.23	UJIIU	<0.24	UJIIU	<0.2	UJIIU
Thallium	1.36	mg/kg	NA		<0.23	IU	<0.24	IU	<0.23	IU	<0.24	IU	<0.2	IU
Vanadium	73	mg/kg	NA		55	JIIN	61	JIIN	54	JIIN	68	JIIN	40	JIIN
Zinc	82	mg/kg	NA		72	IN	71	IN	**360**	IN	81	IN	38	IN

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
Antimony	0.74	mg/kg	<0.25	UJIIU	<0.22	UJIIU	<0.24	UJIIU	<0.23	UJIIU	NA	<0.25	UJIIU
Arsenic	9.46	mg/kg	4.5		3.5		5.7		5.3		NA	7.6	
Barium	237	mg/kg	210	JIIN	170	JIIN	200	JIIN	170	JIIN	NA	190	JIIN
Beryllium	0.66	mg/kg	0.51	UzINB	0.36	UzINB	0.39	UzINB	0.36	UzINB	NA	0.38	UzINB
Cadmium	0.46	mg/kg	<0.25	IU	<0.22	IU	<0.24	IU	<0.23	IU	NA	<0.25	IU
Chromium	178	mg/kg	100		64		59		66		NA	95	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	NA	<0.5	UJhIUH
Cobalt	29	mg/kg	22		17		21		19		NA	21	
Copper	50	mg/kg	**58**		41		**72**		**160**		NA	**92**	
Iron	42000	mg/kg	40,000	JIIC	31,000	JIIC	29,000	JIIC	29,000	JIIC	NA	40,000	JIIC
Lead	10.1	mg/kg	9.6	IN	9.6	IN	8.9	IN	8.5	IN	NA	8	IN
Manganese	720	mg/kg	550	I*	540	I*	550	I*	600	I*	NA	540	I*
Mercury	0.49	mg/kg	0.13		0.11		0.16		0.19		NA	0.12	
Molybdenum	2	mg/kg	0.32	IB	0.33	IB	0.3	IB	0.44	IB	NA	0.32	IB
Nickel	326	mg/kg	180		96		100		95		NA	170	
Selenium	1	mg/kg	<0.76	IU	<0.67	IU	<0.71	IU	<0.7	IU	NA	<0.74	IU
Silver	0.52	mg/kg	<0.25	UJIIU	<0.22	UJIIU	<0.24	UJIIU	<0.23	UJIIU	NA	<0.25	UJIIU
Thallium	1.36	mg/kg	<0.25	IU	<0.22	IU	<0.24	IU	<0.23	IU	NA	<0.25	IU
Vanadium	73	mg/kg	**75**	JIIN	52	JIIN	53	JIIN	57	JIIN	NA	**75**	JIIN
Zinc	82	mg/kg	**99**	IN	73	IN	73	IN	**120**	IN	NA	**87**	IN

Table I-19
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498		LEHR-S-499	
Chromium	178	mg/kg	**230**		170		160		150	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH	<0.5	UJhlUH

TABLE I-20

RADIUM/STRONTIUM AREA – RADIOCHEMICAL ANALYSES

Table I-20
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-384				LEHR-S-385				LEHR-S-386				LEHR-S-387			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.011		0.015	0.015	0.01		0.014	0.018	0.021		0.025	0.033	0.016		0.015	0.011
Gross Alpha	11.8	pCi/g	4.7	JmlC	4.4	6.7	4.9	JmlC	4.3	6.2	**12**	JmlC	6.3	7.3	5.3	JmlC	4.4	6.4
Gross Beta	17.4	pCi/g	16.3		4.5	6	**20.6**		4.6	5.9	15.8		4.8	6.6	15.1		4.4	6
Plutonium-241	NA	pCi/g	-0.2		1.8	2.5	1		1.9	2.4	-0.3		1.9	2.9	-0.3		2.3	3.7
Radium-226	0.77	pCi/g	0.58		0.21	0.2	0.61		0.22	0.19	0.69		0.25	0.24	0.64		0.24	0.24
Strontium-90	0.36	pCi/g	**1.61**		0.29	0.36	**0.76**		0.26	0.39	**0.86**	Jl	0.39	0.6	0.12	Jl	0.34	0.58
Tritium	105	pCi/L	0.0		110	220	50		120	220	-80		100	220	10		110	210

Table I-20
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-389				LEHR-S-390				LEHR-S-391				LEHR-S-396			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.026		0.023	0.014	0.005		0.02	0.039	0.038		0.026	0.013	0.017		0.017	0.017
Gross Alpha	11.8	pCi/g	7.9	JmIC	5.4	7.4	4	JmIC	4.5	7.3	5.5	JmIC	6.1	9.9	9	IC	5.3	6.4
Gross Beta	17.4	pCi/g	17		4.6	6.3	**17.8**		4.6	6.1	17.2		4.8	6.5	12.4		4.3	6.2
Plutonium-241	NA	pCi/g	-0.8		1.7	2.5	-0.5		1.9	2.8	-0.6		1.8	2.7	-1.1		1.9	3
Radium-226	0.77	pCi/g	**0.8**		0.25	0.21	0.69		0.22	0.17	**0.87**		0.24	0.046	0.17	JII	0.14	0.2
Strontium-90	0.36	pCi/g	**0.59**		0.28	0.44	**0.45**	JI	0.33	0.54	0.27	JI	0.36	0.61	**0.6**	JI	0.34	0.53
Tritium	105	pCi/L	20		110	210	-30		100	210	20		110	210	-10		110	210

Table I-20
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-397				LEHR-S-398				LEHR-S-399				LEHR-S-400			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.012		0.022	0.036	0.019		0.021	0.025	0.021		0.018	0.017	0.013		0.018	0.024
Gross Alpha	11.8	pCi/g	2.8	IC	4.2	7.1	7.2	IC	5	6.6	5.9	IC	4.8	7	9.5	IC	5.8	7.5
Gross Beta	17.4	pCi/g	16.4		4.6	6.3	14		4.5	6.4	14.5		4.2	5.8	13.4		4.5	6.3
Plutonium-241	NA	pCi/g	-0.5		1.9	2.8	0.5		1.9	2.6	0.6		1.9	2.4	-0.8		1.7	2.5
Radium-226	0.77	pCi/g	0.65	JII	0.22	0.18	0.73	JII	0.25	0.22	0.55	JII	0.19	0.14	0.67	JII	0.22	0.2
Strontium-90	0.36	pCi/g	**0.78**	JI	0.36	0.56	0.01	JI	0.33	0.58	**0.63**		0.3	0.46	0.17	JI	0.35	0.6
Tritium	105	pCi/L	10		110	210	40		120	220	-50		100	220	-40		110	220

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Lab_chem	Background Levels	Units	LEHR-S-401				LEHR-S-402				LEHR-S-407				LEHR-S-409			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.018		0.018	0.013	0.021		0.022	0.027	0.03		0.022	0.012	0.012		0.013	0.011
Gross Alpha	11.8	pCi/g	6	IC	6.1	9.9	4.6	IC	4.4	6.6	6.5	IC	4.8	6.8	5.7	IC	4.9	7.3
Gross Beta	17.4	pCi/g	11.4		4.4	6.4	14.9		4.3	5.8	13.5		3.9	5.4	16.4		4.2	5.6
Plutonium-241	NA	pCi/g	-0.1		1.7	2.2	0.3		1.9	2.7	0.2		2	2.9	1		1.9	2.4
Radium-226	0.77	pCi/g	**0.79**	JII	0.23	0.17	0.45	JII	0.19	0.18	**0.99**		0.25	0.18	0.49		0.16	0.12
Strontium-90	0.36	pCi/g	0.02	JI	0.27	0.48	0.27	JI	0.28	0.47	**0.91**	JI	0.31	0.46	**0.59**	JI	0.36	0.57
Tritium	105	pCi/L	20		110	210	-50		110	220	9		70	140	66		84	140

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Lab_chem	Background Levels	Units	LEHR-S-410				LEHR-S-412				LEHR-S-417				LEHR-S-418			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.031		0.025	0.025	0.016		0.016	0.011	0.039		0.025	0.012	0.019		0.018	0.019
Gross Alpha	11.8	pCi/g	6.9	IC	5	7.2	9	IC	5.4	6.8	1.8	IC	4.5	8.1	5.7	IC	4.7	6.8
Gross Beta	17.4	pCi/g	13.8		4	5.4	14.6		4.5	6.3	**18.2**		4.2	5.4	12.8		4	5.6
Plutonium-241	NA	pCi/g	-2.1		2.5	4.7	-0.5		1.8	2.8	0.1		1.9	2.9	0.2		2	3
Radium-226	0.77	pCi/g	0.62		0.19	0.15	**0.88**		0.21	0.14	**1.06**		0.24	0.097	0.64		0.19	0.15
Strontium-90	0.36	pCi/g	**0.65**	JI	0.36	0.58	**0.47**	JI	0.31	0.5	0.22		0.28	0.47	**0.68**	JI	0.35	0.55
Tritium	105	pCi/L	76		87	140	45		78	140	**210**		110	140	39		80	140

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Lab_chem	Background Levels	Units	LEHR-S-419				LEHR-S-420				LEHR-S-421				LEHR-S-422			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.031		0.023	0.019	0.024		0.021	0.021	0.027		0.022	0.012	0.035		0.024	0.019
Gross Alpha	11.8	pCi/g	6.6	IC	5.5	8.1	**11.9**	IC	6	6.9	6.9	IC	5	7.2	**46**	IC	10	7.3
Gross Beta	17.4	pCi/g	12.1		4.6	6.8	17		4.8	6.4	13.5		4	5.5	**28.6**		5	5.6
Plutonium-241	NA	pCi/g	1.7		2.1	2.7	1		2.5	4	1.1		2.1	3	0.6		1.9	2.5
Radium-226	0.77	pCi/g	**0.85**		0.21	0.13	**1.63**		0.3	0.14	0.67		0.19	0.14	**14.7**		1.1	0.18
Strontium-90	0.36	pCi/g	0.19	JI	0.31	0.53	**0.8**	JI	0.39	0.61	**0.81**	JI	0.43	0.69	0.24	JI	0.43	0.73
Tritium	105	pCi/L	48		81	140	**180**		100	140	-10		69	150	70		90	150

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Lab_chem	Background Levels	Units	LEHR-S-423				LEHR-S-424				LEHR-S-425				LEHR-S-426			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Americium-241	NA	pCi/g	0.008		0.011	0.011	0.023		0.022	0.025	0.019		0.018	0.019	0.0023		0.0085	0.019
Gross Alpha	11.8	pCi/g	8.9	IC	5.5	7.2	9.7	IC	5.3	6.2	9.1	IC	5.5	6.9	9.5	IC	5.3	6.2
Gross Beta	17.4	pCi/g	16.4		4.5	6	**18.2**		4.5	5.9	13.7		4.3	6	13.4		4.1	5.7
Plutonium-241	NA	pCi/g	0.9		1.9	2.7	-0.3		1.7	2.4	0.6		2	2.8	1.2		1.8	2.1
Radium-226	0.77	pCi/g	0.59		0.18	0.14	**0.81**		0.24	0.19	**0.79**		0.22	0.17	**0.81**		0.21	0.16
Strontium-90	0.36	pCi/g	0.06	JI	0.41	0.71	0.12	JI	0.33	0.57	**0.37**	JI	0.39	0.66	**1.82**	JI	0.43	0.58
Tritium	105	pCi/L	79		90	150	**110**		100	160	47		80	140	61		86	150

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Lab_chem	Background Levels	Units	LEHR-S-427			LEHR-S-435			LEHR-S-436			LEHR-S-437		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Actinium-228*	0.71	pCi/g	---	---	---	0.304	0.1	0.14	**0.78**	0.18	0.21	0.59	0.17	0.26
Americium-241	NA	pCi/g	0.95	0.42	0.22	0.016	0.018	0.014	0.027	0.025	0.025	0.012	0.017	0.017
Bismuth-212*	NA	pCi/g	---	---	---	0.11	0.17	0.24	0.51	0.3	0.36	0.35	0.29	0.41
Bismuth-214*	0.57	pCi/g	---	---	---	**1.36**	0.16	0.088	**0.67**	0.14	0.13	**6.52**	0.57	0.17
Cesium-137*	0.053	pCi/g	---	---	---	-0.009	0.022	0.046	0.006	0.033	0.052	**0.434**	0.082	0.073
Cobalt-60*	0.016	pCi/g	---	---	---	-0.006	0.012	0.036	-0.007	0.017	0.052	**0.017**	0.028	0.063
Gross Alpha	11.8	pCi/g	**185** IC	24	9	0.6 JIIC	3.2	6.4	6.3 JIIC	4.9	7.2	**46** JIIC	10	6.4
Gross Beta	17.4	pCi/g	**156**	15	9.8	7	3.5	5.4	**19.2**	4.3	5.4	**39.7**	5.6	5.4
Lead-210*	NA	pCi/g	---	---	---	-5	27	43	-1.9	2.7	6.5	5.7	5.1	7.5
Lead-212*	0.74	pCi/g	---	---	---	0.281	0.067	0.075	0.66	0.12	0.1	0.56	0.11	0.11
Lead-214*	0.75	pCi/g	---	---	---	**1.55** Jdl	0.15	0.08	**0.79** Jdl	0.12	0.12	**7.73** Jdl	0.6	0.13
Plutonium-241	NA	pCi/g	-0.2	2.7	3.2	0.9	2.2	3.2	2.1	2.1	2.7	0.1	1.8	2.3
Potassium-40*	13.6	pCi/g	---	---	---	5.31	0.85	0.42	12.5	1.8	0.69	11.9	1.6	0.69
Radium-223*	NA	pCi/g	---	---	---	-0.09	0.19	0.66	-0.11	0.32	1	-0.09	0.35	1.2
Radium-226	0.77	pCi/g	**106.2**	5.8	0.17	**2.42**	0.41	0.12	0.59	0.17	0.092	**8.19**	0.85	0.048
Radium-226*	0.77	pCi/g	---	---	---	**1.08**	0.62	0.85	**0.87**	0.79	1.2	**5**	1.2	1.3
Strontium-90	0.36	pCi/g	**2.18** Jl	0.48	0.63	0.03	0.26	0.45	**0.59**	0.27	0.42	---	---	---
Thallium-208*	0.21	pCi/g	---	---	---	0.097	0.034	0.04	**0.224**	0.059	0.055	**0.231**	0.058	0.06
Thorium-234*	NA	pCi/g	---	---	---	0.13	0.64	5.5	0.54	0.65	2.4	0.11	0.69	3
Tritium	105	pCi/L	**230**	160	230	60	110	190	-10	100	190	-53	91	190
Uranium-235*	0.071	pCi/g	---	---	---	**0.08**	0.15	0.25	0.01	0.15	0.32	0.07	0.26	0.44

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Lab_chem	Background Levels	Units	LEHR-S-438				LEHR-S-439				LEHR-S-440				LEHR-S-441			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.66		0.12	0.12	0.59		0.18	0.23	0.358		0.074	0.089	**0.76**		0.2	0.23
Americium-241	NA	pCi/g	0.014		0.02	0.026	0.002		0.013	0.029	0.039		0.027	0.019	0.028		0.026	0.026
Bismuth-212*	NA	pCi/g	0.32		0.18	0.21	0.28		0.32	0.43	0.12		0.13	0.17	0.51		0.35	0.42
Bismuth-214*	0.57	pCi/g	0.495		0.081	0.068	**1.27**		0.18	0.12	0.499		0.069	0.05	0.53		0.13	0.13
Cesium-137*	0.053	pCi/g	-0.018		0.012	0.032	0.006		0.032	0.054	0.008		0.015	0.021	-0.002		0.034	0.059
Cobalt-60*	0.016	pCi/g	0.004		0.015	0.028	-0.007		0.026	0.066	0.004		0.011	0.023	-0.0018		0.0085	0.06
Gross Alpha	11.8	pCi/g	5.5	JIIC	4.6	6.6	**13.8**	JIIC	6	6.7	3.8	JIIC	3.9	6.1	10.4	JIIC	5.4	6.5
Gross Beta	17.4	pCi/g	15		4.2	5.7	**18.4**		4.3	5.4	3.8		3.3	5.4	15.8		4	5.3
Lead-210*	NA	pCi/g	0.8		2.5	3.5	2.1		1	1.4	12		18	24	0.6		1.1	1.6
Lead-212*	0.74	pCi/g	0.561		0.081	0.056	0.564		0.1	0.091	0.302		0.051	0.043	**0.74**		0.12	0.091
Lead-214*	0.75	pCi/g	0.527	Jdl	0.072	0.067	**1.46**	Jdl	0.17	0.12	0.599	Jdl	0.067	0.046	0.55	Jdl	0.11	0.13
Plutonium-241	NA	pCi/g	0.1		1.9	2.6	0.8		2.1	2.9	0.2		2.1	2.9	-0.4		1.8	2.4
Potassium-40*	13.6	pCi/g	11.2		1.4	0.36	11.3		1.7	0.6	4.53		0.63	0.29	12.9		1.9	0.68
Radium-223*	NA	pCi/g	0.13		0.21	0.53	-0.29		0.3	1	0.05		0.16	0.4	-0.27		0.28	1.1
Radium-226	0.77	pCi/g	0.67		0.2	0.16	**1.38**		0.32	0.21	**0.92**		0.25	0.19	**0.93**		0.24	0.13
Radium-226*	0.77	pCi/g	**1**		0.47	0.61	**1.77**		0.82	1.1	0.13		0.38	0.52	**1.33**		0.85	1.2
Strontium-90	0.36	pCi/g	---		---	---	**0.46**		0.29	0.47	---		---	---	---		---	---
Thallium-208*	0.21	pCi/g	0.164		0.036	0.032	0.196		0.06	0.062	0.101		0.024	0.022	**0.226**		0.066	0.063
Thorium-234*	NA	pCi/g	0.63		0.39	1.3	0.98		0.47	1.3	0.78		0.46	3.3	1.11		0.52	1.5
Tritium	105	pCi/L	10		100	190	10		100	190	-15		98	190	20		100	180
Uranium-235*	0.071	pCi/g	**0.12**		0.11	0.17	0.0		0.16	0.26	-0.03		0.066	0.16	0.0		0.15	0.26

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Lab_chem	Background Levels	Units	LEHR-S-442			LEHR-S-443			LEHR-S-444			LEHR-S-445		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Actinium-228*	0.71	pCi/g	0.481	0.097	0.12	0.68	0.15	0.19	**0.74**	0.15	0.16	0.61	0.15	0.18
Americium-241	NA	pCi/g	0.02	0.019	0.013	0.038	0.028	0.021	0.023	0.027	0.033	0.008	0.017	0.027
Bismuth-212*	NA	pCi/g	0.41	0.17	0.18	0.3	0.26	0.37	0.27	0.24	0.32	0.35	0.25	0.34
Bismuth-214*	0.57	pCi/g	**0.86**	0.11	0.072	**3.03**	0.3	0.13	**0.66**	0.11	0.095	**1.38**	0.18	0.11
Cesium-137*	0.053	pCi/g	-0.014	0.015	0.034	-0.007	0.028	0.058	-0.014	0.02	0.046	-0.021	0.023	0.053
Cobalt-60*	0.016	pCi/g	-0.004	0.012	0.033	-0.01	0.018	0.047	-0.002	0.019	0.042	-0.007	0.016	0.047
Gross Alpha	11.8	pCi/g	**16** JIIC	6.2	5.9	**26.8** JIIC	7.9	6	11.4 JIIC	6.7	9.2	8.7 JIIC	5.3	6.6
Gross Beta	17.4	pCi/g	16.2	4.2	5.6	**28.5**	5	5.7	16.5	4.4	5.8	**20.6**	4.5	5.6
Lead-210*	NA	pCi/g	0.1	2.4	3.5	4.5	3.9	5.6	0.5	3.4	5.3	0.5	3.7	5.7
Lead-212*	0.74	pCi/g	0.434	0.067	0.053	0.519	0.092	0.087	0.609	0.1	0.082	0.497	0.093	0.087
Lead-214*	0.75	pCi/g	**1.16** Jdl	0.11	0.061	**3.6** Jdl	0.3	0.096	**0.81** Jdl	0.11	0.094	**1.67** Jdl	0.17	0.088
Plutonium-241	NA	pCi/g	-0.4	1.9	2.9	1.7	2.3	3.2	-0.2	2	2.8	0.5	2	2.6
Potassium-40*	13.6	pCi/g	9.3	1.2	0.38	12.3	1.6	0.6	12.1	1.6	0.57	10.6	1.5	0.62
Radium-223*	NA	pCi/g	-0.01	0.13	0.51	-0.24	0.28	0.81	-0.02	0.23	0.75	0.15	0.3	0.78
Radium-226	0.77	pCi/g	**1.23**	0.28	0.19	**3.83**	0.49	0.16	**0.84**	0.22	0.13	**1.04**	0.26	0.14
Radium-226*	0.77	pCi/g	**1.31**	0.46	0.57	**3.45**	0.87	1	**1.35**	0.62	0.84	**1.65**	0.68	0.91
Thallium-208*	0.21	pCi/g	0.168	0.035	0.031	0.198	0.048	0.047	0.184	0.048	0.049	0.17	0.047	0.047
Thorium-234*	NA	pCi/g	0.15	0.36	1.3	0.34	0.54	2.4	0.24	0.5	1.8	0.59	0.51	2.1
Tritium	105	pCi/L	3	98	180	-22	97	190	-5	99	190	-68	88	190
Uranium-235*	0.071	pCi/g	**0.15**	0.12	0.17	-0.07	0.18	0.33	**0.12**	0.16	0.25	-0.12	0.12	0.28

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Lab_chem	Background Levels	Units	LEHR-S-446			LEHR-S-447			LEHR-S-448			LEHR-S-449		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Actinium-228*	0.71	pCi/g	0.56	0.24	0.37	0.227	0.078	0.12	0.67	0.16	0.2	**0.72**	0.15	0.17
Americium-241	NA	pCi/g	0.04	0.048	0.059	0.006	0.014	0.023	0.01	0.017	0.025	0.0	0.0	0.016
Bismuth-212*	NA	pCi/g	0.71	0.48	0.5	0.26	0.14	0.16	0.61	0.27	0.29	0.41	0.25	0.3
Bismuth-214*	0.57	pCi/g	**1.09**	0.21	0.17	**1.21**	0.14	0.074	**0.59**	0.11	0.1	0.489	0.1	0.095
Cesium-137*	0.053	pCi/g	-0.057	0.041	0.11	-0.005	0.014	0.031	-0.019	0.022	0.052	-0.003	0.03	0.049
Cobalt-60*	0.016	pCi/g	-0.026	0.028	0.099	0.0	0.0022	0.029	-0.013	0.016	0.05	0.002	0.017	0.046
Gross Alpha	11.8	pCi/g	**13.3** JIIC	6.1	7.1	9.7 JIIC	5.5	6.9	11.7 JIIC	6	7.4	6.9 JIIC	5	7
Gross Beta	17.4	pCi/g	14.6	4	5.4	11.4	3.9	5.5	14.6	4.2	5.7	15.2	4.2	5.7
Lead-210*	NA	pCi/g	1.6	2.1	3.1	15	23	35	-0.6	3.3	5.2	-0.9	3.1	5
Lead-212*	0.74	pCi/g	0.49	0.12	0.12	0.181	0.051	0.063	0.629	0.1	0.083	0.583	0.098	0.082
Lead-214*	0.75	pCi/g	**1.16** Jdl	0.18	0.17	**1.42** Jdl	0.13	0.059	0.693 Jdl	0.1	0.095	0.605 Jdl	0.094	0.086
Plutonium-241	NA	pCi/g	0.1	2	2.8	-1.3	1.9	3	1.3	2.2	3	0.1	1.8	2.4
Potassium-40*	13.6	pCi/g	11.5	2	1	4.73	0.72	0.31	12.3	1.7	0.59	11.8	1.6	0.53
Radium-223*	NA	pCi/g	-0.04	0.55	1.5	0.17	0.19	0.57	0.27	0.28	0.78	-0.01	0.21	0.68
Radium-226	0.77	pCi/g	**1.5**	0.36	0.25	**3.69**	0.49	0.18	0.68	0.21	0.18	**0.89**	0.23	0.1
Radium-226*	0.77	pCi/g	0.3	1.1	1.5	**1.69**	0.56	0.69	0.75	0.65	0.96	0.53	0.6	0.92
Strontium-90	0.36	pCi/g	**0.75**	0.3	0.45	0.22	0.27	0.45	---	---	---	---	---	---
Thallium-208*	0.21	pCi/g	0.157	0.08	0.093	0.076	0.027	0.031	0.203	0.051	0.046	0.206	0.052	0.048
Thorium-234*	NA	pCi/g	0.27	0.58	1.4	-0.09	0.56	4.5	0.47	0.53	1.8	-0.04	0.54	2
Tritium	105	pCi/L	30	110	190	50	100	180	-45	92	190	40	110	200
Uranium-235*	0.071	pCi/g	**0.11**	0.25	0.38	0.04	0.13	0.22	-0.02	0.15	0.28	0.0	0.11	0.25

Table I-20
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-450				LEHR-S-451				LEHR-S-452				LEHR-S-453			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.68		0.21	0.27	0.57		0.21	0.3	0.156		0.078	0.12	0.61		0.16	0.22
Americium-241	NA	pCi/g	0.028		0.024	0.021	0.033		0.026	0.015	0.013		0.018	0.018	0.012		0.016	0.02
Bismuth-212*	NA	pCi/g	0.31		0.33	0.38	0.07		0.4	0.52	0.31		0.17	0.19	0.21		0.29	0.39
Bismuth-214*	0.57	pCi/g	0.5		0.13	0.12	0.54		0.14	0.14	0.204		0.06	0.07	0.53		0.11	0.11
Cesium-137*	0.053	pCi/g	-0.027		0.042	0.074	-0.003		0.026	0.07	-0.003		0.02	0.033	-0.008		0.019	0.048
Cobalt-60*	0.016	pCi/g	0.014		0.03	0.053	-0.023		0.022	0.078	0.012		0.012	0.024	0.015		0.028	0.053
Gross Alpha	11.8	pCi/g	5.8	JIIC	5.8	9.2	9.9	JIIC	5.4	6.5	1.3	JIIC	3.5	6.6	**13.8**	JIIC	6.5	8.1
Gross Beta	17.4	pCi/g	10.3		3.9	5.8	**20.2**		4.3	5.3	9.5		3.7	5.4	15.5		4.1	5.4
Lead-210*	NA	pCi/g	2.5		3	4.2	2.2		1.7	2.3	-19		13	34	1.02		0.77	1.1
Lead-212*	0.74	pCi/g	0.445		0.099	0.093	0.58		0.11	0.093	0.248		0.056	0.059	0.73		0.11	0.079
Lead-214*	0.75	pCi/g	0.5	Jdl	0.11	0.12	0.55	Jdl	0.11	0.13	0.294	Jdl	0.056	0.058	0.7	Jdl	0.11	0.093
Plutonium-241	NA	pCi/g	-0.5		2	2.9	0.2		2	2.8	0.5		2	2.7	0.2		2	2.7
Potassium-40*	13.6	pCi/g	9.3		1.6	0.77	11.9		1.8	0.72	5.81		0.87	0.33	11.8		1.7	0.54
Radium-223*	NA	pCi/g	-0.25		0.19	1.1	-0.37		0.24	1.1	-0.01		0.16	0.54	0.1		0.32	0.89
Radium-226	0.77	pCi/g	0.41		0.19	0.22	**1.13**		0.31	0.22	0.31		0.14	0.12	**1.35**		0.38	0.28
Radium-226*	0.77	pCi/g	**0.9**		0.81	1.1	0.21		0.88	1.2	0.49		0.43	0.63	**1.91**		0.74	0.94
Strontium-90	0.36	pCi/g	---		---	---	-0.13		0.26	0.46	-0.01		0.25	0.44	0.09		0.25	0.43
Thallium-208*	0.21	pCi/g	0.139		0.062	0.067	0.207		0.067	0.063	0.087		0.029	0.031	0.194		0.053	0.049
Thorium-234*	NA	pCi/g	0.56		0.47	1.1	0.28		0.48	1.1	0.66		0.57	4.1	0.67		0.41	1.1
Tritium	105	pCi/L	-52		91	190	0.0		100	190	17		84	150	60		110	190
Uranium-235*	0.071	pCi/g	-0.1		0.15	0.27	0.04		0.2	0.29	-0.035		0.086	0.2	0.0		0.15	0.23

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Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-454			LEHR-S-455			LEHR-S-456			LEHR-S-457		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Actinium-228*	0.71	pCi/g	0.69	0.17	0.22	0.59	0.12	0.14	0.93	0.2	0.21	0.72	0.17	0.18
Bismuth-212*	NA	pCi/g	0.42	0.27	0.4	0.31	0.21	0.25	0.38	0.32	0.4	0.3	0.24	0.36
Bismuth-214*	0.57	pCi/g	0.55	0.12	0.11	0.41	0.082	0.082	0.46	0.11	0.11	0.47	0.11	0.11
Carbon-14	0.87	pCi/g	-0.9	5.8	11	-3.1	5.6	11	-4.7	5.4	11	-4.7	5.4	11
Cesium-137*	0.053	pCi/g	0.021	0.038	0.051	0.005	0.018	0.03	-0.016	0.033	0.061	-0.006	0.023	0.055
Cobalt-60*	0.016	pCi/g	0.005	0.026	0.064	0.013	0.017	0.025	-0.016	0.022	0.061	-0.019	0.026	0.066
Gross Alpha	11.8	pCi/g	12.9 IC	5.9	6.2	5.9 IC	4.7	6.8	8 IC	5.1	6.9	7.4 IC	4.9	6.5
Gross Beta	17.4	pCi/g	15.2	4.2	5.6	12.1	4	5.7	17.1	4.3	5.6	13.2	3.9	5.3
Lead-210*	NA	pCi/g	0.66	0.83	1.2	3	8	11	0.69	0.93	1.4	0.92	0.83	1.2
Lead-212*	0.74	pCi/g	0.89	0.13	0.087	0.498	0.077	0.06	0.72	0.11	0.086	0.67	0.11	0.092
Lead-214*	0.75	pCi/g	0.64	0.1	0.1	0.476	0.071	0.067	0.511	0.097	0.088	0.557	0.1	0.11
Potassium-40*	13.6	pCi/g	13.6	1.9	0.54	11.7	1.4	0.39	14.3	2	0.56	11.5	1.7	0.49
Radium-223*	NA	pCi/g	0.1	0.3	0.9	0.09	0.22	0.59	-0.05	0.23	0.92	0.13	0.28	0.83
Radium-226	0.77	pCi/g	0.68 Jdl	0.23	0.17	0.54 Jdl	0.21	0.18	0.045	0.098	0.18	0.87 Jdl	0.24	0.15
Radium-226*	0.77	pCi/g	1.33	0.74	1	0.94	0.53	0.68	0.35 Jdl	0.71	0.98	1.48	0.75	1
Strontium-90	0.36	pCi/g	0.1 Jl	0.35	0.6	0.09 Jl	0.3	0.52	0.11 Jl	0.33	0.57	0.12 Jl	0.32	0.54
Thallium-208*	0.21	pCi/g	0.238	0.061	0.058	0.196	0.041	0.033	0.219	0.06	0.058	0.18	0.054	0.053
Thorium-234*	NA	pCi/g	0.96	0.44	1.1	0.3	0.38	1.1	0.76	0.44	1.3	0.64	0.43	1.2
Tritium	105	pCi/L	52	98	170	10	100	200	60	120	210	-40	100	210
Uranium-235*	0.071	pCi/g	0.02	0.14	0.24	0.03	0.14	0.2	0.07	0.16	0.25	-0.02	0.16	0.25

Table I-20
LEHR Environmental Restoration
Radium/Strontium Area
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Lab_chem	Background Levels	Units	LEHR-S-458				LEHR-S-459				LEHR-S-460				LEHR-S-461			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.18		0.14	0.22	0.66		0.13	0.15	**0.84**		0.22	0.23	0.58		0.16	0.21
Bismuth-212*	NA	pCi/g	0.12		0.29	0.4	0.36		0.22	0.29	1.05		0.35	0.39	0.36		0.28	0.36
Bismuth-214*	0.57	pCi/g	**0.94**		0.15	0.1	**3.08**		0.28	0.092	**1.33**		0.19	0.14	**1.37**		0.18	0.097
Carbon-14	0.87	pCi/g	**16**		22	37	-1.9		5.2	9.8	-2.1		5.7	11	-4.1		5.6	11
Cesium-137*	0.053	pCi/g	0.006		0.033	0.057	0.039		0.027	0.042	0.03		0.047	0.063	0.014		0.031	0.052
Cobalt-60*	0.016	pCi/g	-0.015		0.024	0.063	0.015		0.018	0.034	0.004		0.035	0.084	0.002		0.023	0.051
Gross Alpha	11.8	pCi/g	10.7	IC	6.7	9.5	**25.4**	IC	7.8	6.4	**13.4**	IC	6.3	7.5	**12.6**	IC	5.9	6.8
Gross Beta	17.4	pCi/g	5.1		3.7	5.8	**24.7**		4.7	5.5	**20.6**		4.6	5.8	**24.5**		4.7	5.5
Lead-210*	NA	pCi/g	0.83		0.9	1.3	5.4		3.4	4.5	1.9		1.1	1.5	1.48		0.94	1.3
Lead-212*	0.74	pCi/g	0.276		0.079	0.091	0.61		0.091	0.073	**0.94**		0.15	0.098	0.637		0.1	0.082
Lead-214*	0.75	pCi/g	**1.1**		0.14	0.1	**3.82**		0.3	0.086	**1.49**		0.18	0.14	**1.64**		0.17	0.11
Potassium-40*	13.6	pCi/g	5.5		1.1	0.59	11.3		1.4	0.4	**15.3**		2.1	0.74	11.8		1.6	0.54
Radium-223*	NA	pCi/g	-0.01		0.34	0.88	0.1		0.26	0.73	0.37		0.36	1	0.05		0.34	0.91
Radium-226	0.77	pCi/g	**2.43**	Jdl	0.43	0.17	**5.89**	Jdl	0.67	0.2	**1.11**	Jdl	0.29	0.22	**1.68**	Jdl	0.34	0.21
Radium-226*	0.77	pCi/g	**2.05**		0.81	1.1	**4.44**		0.85	0.87	**2.45**		0.93	1.2	**2.31**		0.75	0.93
Strontium-90	0.36	pCi/g	0.17		0.28	0.47	**1.17**	Jl	0.34	0.48	**0.72**	Jl	0.34	0.53	**0.6**	Jl	0.3	0.46
Thallium-208*	0.21	pCi/g	0.08		0.046	0.057	0.196		0.042	0.04	**0.253**		0.068	0.064	0.187		0.054	0.057
Thorium-234*	NA	pCi/g	0.71		0.43	1.2	0.42		0.48	1.9	1.41		0.54	1.5	1.21		0.44	1.2
Tritium	105	pCi/L	50		120	210	30		110	200	20		110	210	-20		110	210
Uranium-235*	0.071	pCi/g	0.03		0.16	0.24	-0.06		0.15	0.26	0.03		0.18	0.31	-0.05		0.16	0.26

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Radium/Strontium Area
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Lab_chem	Background Levels	Units	LEHR-S-462				LEHR-S-463				LEHR-S-496				LEHR-S-497			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.63		0.18	0.2	0.6		0.21	0.27	0.443		0.1	0.11	0.56		0.11	0.12
Americium-241	NA	pCi/g	---		---	---	---		---	---	0.018		0.02	0.021	0.005		0.015	0.027
Bismuth-212*	NA	pCi/g	0.47		0.25	0.33	0.18		0.37	0.51	0.34		0.18	0.2	0.35		0.19	0.21
Bismuth-214*	0.57	pCi/g	**0.64**		0.12	0.11	**0.76**		0.15	0.14	0.492		0.082	0.072	0.486		0.083	0.069
Carbon-14	0.87	pCi/g	-4.4		5.4	11	-0.2		5.8	11	---		---	---	---		---	---
Cesium-137*	0.053	pCi/g	-0.022		0.021	0.054	0.043		0.039	0.061	**0.054**		0.028	0.034	0.002		0.021	0.031
Cobalt-60*	0.016	pCi/g	-0.003		0.025	0.058	-0.002		0.025	0.058	0.003		0.015	0.028	0.008		0.015	0.027
Gross Alpha	11.8	pCi/g	8.5	IC	5.7	8.1	9.4	IC	5.3	6.7	2		1.2	1.5	0.9		1.2	2
Gross Beta	17.4	pCi/g	14		4	5.4	14.5		4.1	5.6	2.18		0.99	1.5	0.69		0.91	1.5
Gross Beta	17.4	pCi/g	---		---	---	---		---	---	**19.6**		4.6	5.9	14.1		4.2	5.8
Lead-210*	NA	pCi/g	1.28		0.81	1.1	1.7		1.2	1.7	0.1		2.5	3.6	1.4		2.6	3.6
Lead-212*	0.74	pCi/g	**0.8**		0.12	0.087	0.59		0.11	0.1	0.419		0.068	0.056	0.481		0.075	0.057
Lead-214*	0.75	pCi/g	**0.87**		0.12	0.11	**0.99**		0.14	0.13	0.547	Jdl	0.073	0.064	0.532	Jdl	0.073	0.067
Plutonium-241	NA	pCi/g	---		---	---	---		---	---	0.3		2.5	2.9	1.5		2.5	2.6
Potassium-40*	13.6	pCi/g	11.7		1.7	0.59	12.2		1.9	0.74	11.7		1.4	0.45	10.7		1.3	0.42
Radium-223*	NA	pCi/g	0.05		0.29	0.96	-0.05		0.29	0.98	0.04		0.17	0.54	-0.1		0.13	0.51
Radium-226	0.77	pCi/g	0.72	Jdl	0.22	0.14	0.48	Jdl	0.2	0.18	0.51		0.2	0.2	**1.22**		0.31	0.21
Radium-226*	0.77	pCi/g	**1.46**		0.76	1	**1.41**		0.88	1.2	**0.94**		0.47	0.62	0.6		0.48	0.64
Strontium-90	0.36	pCi/g	**0.75**	Jl	0.32	0.5	**0.99**	Jl	0.36	0.53	0.35	JzlB	0.26	0.42	0.33	JzlB	0.26	0.42
Thallium-208*	0.21	pCi/g	0.187		0.054	0.053	0.201		0.065	0.067	0.166		0.036	0.03	0.171		0.037	0.032
Thorium-234*	NA	pCi/g	0.7		0.42	1.2	1.03		0.54	1.5	0.52		0.4	1.3	0.54		0.41	1.3
Tritium	105	pCi/L	-10		110	210	-10		100	200	50		120	210	-20		110	210
Uranium-235*	0.071	pCi/g	-0.02		0.16	0.25	0.03		0.19	0.29	0.05		0.12	0.18	0.05		0.12	0.18

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Lab_chem	Background Levels	Units	LEHR-S-498				LEHR-S-499			
			Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.49		0.14	0.18	0.52		0.14	0.16
Americium-241	NA	pCi/g	0.018		0.02	0.021	0.024		0.022	0.022
Bismuth-212*	NA	pCi/g	0.18		0.25	0.35	0.38		0.24	0.29
Bismuth-214*	0.57	pCi/g	0.302		0.094	0.11	0.471		0.1	0.098
Cesium-137*	0.053	pCi/g	-0.012		0.019	0.047	0.02		0.035	0.052
Cobalt-60*	0.016	pCi/g	-0.011		0.017	0.036	-0.003		0.016	0.046
Gross Alpha	11.8	pCi/g	3.6	IC	4.5	7.5	4	IC	4.5	7.2
Gross Beta	17.4	pCi/g	16.1		4.3	5.8	13.8		4.4	6.2
Lead-210*	NA	pCi/g	1.3	JzI B	3.2	4.8	-1.3	JzI B	3.5	5.6
Lead-212*	0.74	pCi/g	0.437		0.086	0.081	0.523		0.094	0.082
Lead-214*	0.75	pCi/g	0.472		0.087	0.091	0.533		0.09	0.094
Plutonium-241	NA	pCi/g	-0.2		2.3	2.7	-0.4		2.4	3.9
Potassium-40*	13.6	pCi/g	10.2		1.5	0.59	11.1		1.6	0.63
Radium-223*	NA	pCi/g	-0.35		0.2	0.9	0.001		0.076	0.69
Radium-226	0.77	pCi/g	1.73		0.36	0.13	0.52		0.19	0.17
Radium-226*	0.77	pCi/g	0.58		0.57	0.86	0.0		0.61	0.86
Strontium-90	0.36	pCi/g	0.21	JdI	0.31	0.52	0.13	JdI	0.28	0.48
Thallium-208*	0.21	pCi/g	0.163		0.046	0.045	0.14		0.043	0.043
Thorium-234*	NA	pCi/g	0.55		0.51	1.9	0.47		0.51	1.9
Tritium	105	pCi/L	-43		99	200	-53		99	210
Uranium-235*	0.071	pCi/g	0.02		0.15	0.25	0.12		0.15	0.23

TABLE I-21

RADIUM/STRONTIUM AREA – CATIONS/ANIONS

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-384		LEHR-S-385		LEHR-S-386		LEHR-S-387		LEHR-S-389		LEHR-S-390	
Chloride	14	mg/kg	0.85	Jhl	0.58	Jhl	5.6	Jhl	2.7	Jhl	**25**	Jhl	**29**	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	7.9	JhlH	5.4	JhlH	**14**	JhlH	**10**	JhlH	**42**	JhlH	**33**	JhlH
Sulfate	36	mg/kg	9.8	Jhl	5.4	Jhl	11	Jhl	10	Jhl	**51**	Jhl	**40**	Jhl

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-391		LEHR-S-396		LEHR-S-397		LEHR-S-398		LEHR-S-399		LEHR-S-400	
Chloride	14	mg/kg	11	Jhl	<0.2	RhlU	0.24	Jhl	<0.2	RhlU	<0.2	RhlU	<0.2	RhlU
Nitrogen, Nitrate (as N)	10	mg/kg	8.3	JhlH	0.3	JhlH	0.99	JhlH	0.36	JhlH	0.24	JhlH	0.4	JhlH
Sulfate	36	mg/kg	5.1	Jhl	<1	RhlU	2	Jhl	1.2	Jhl	<1	Rhl .	1.3	Jhl

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LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-401		LEHR-S-402		LEHR-S-407		LEHR-S-409		LEHR-S-410		LEHR-S-412	
Chloride	14	mg/kg	<0.2	RhlU	<0.2	RhlU	0.39	Jhl	0.89	Jhl	<0.2	RhlU	<0.2	RhlU
Nitrogen, Nitrate (as N)	10	mg/kg	0.67	JhlH	0.91	JhlH	4.9	JhlH	0.42	JhlH	0.54	JhlH	0.22	JhlH
Sulfate	36	mg/kg	1.5	Jhl	4.9	Jhl	4.9	Jhl	1.1	Jhl	1.8	Jhl	<1	RhlU

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
Chloride	14	mg/kg	0.22	Jhl	0.23	Jhl	0.27	Jhl	0.99	Jhl	0.49	Jhl	9.5	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	1.1	JhlH	0.58	JhlH	0.42	JhlH	**26**	JhlH	6.4	JhlH	**65**	JhlH
Sulfate	36	mg/kg	2.6	Jhl	1.4	Jhl	1.5	Jhl	**49**	Jhl	17	Jhl	**71**	Jhl

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-423		LEHR-S-424		LEHR-S-425		LEHR-S-426		LEHR-S-427		LEHR-S-435	
Chloride	14	mg/kg	4.3	Jhl	5.2	Jhl	9.1	Jhl	3.3	Jhl	2.1	Jhl	3.1	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**46**	JhlH	**29**	JhlH	**59**	JhlH	**34**	JhlH	**110**	JhlH	**79**	JhlH
Sulfate	36	mg/kg	33	Jhl	23	Jhl	**42**	Jhl	**40**	Jhl	**400**	Jhl	**150**	Jhl

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-436		LEHR-S-437		LEHR-S-438		LEHR-S-439		LEHR-S-440		LEHR-S-441	
Chloride	14	mg/kg	0.25	Jhl	0.23	Jhl	<0.2	RhlU	<0.2	RhlU	3.4	Jhl	0.5	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**11**	JhlH	**18**	JhlH	2.4	JhlH	**14**	JhlH	**110**	JhlH	6.4	JhlH
Sulfate	36	mg/kg	**83**	Jhl	**54**	Jhl	**69**	Jhl	**49**	Jhl	**100**	Jhl	20	Jhl

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-442		LEHR-S-443		LEHR-S-444		LEHR-S-445		LEHR-S-446		LEHR-S-447	
Chloride	14	mg/kg	0.69	Jhl	<0.2	RhlU	0.2	Jhl	0.25	Jhl	0.48	Jhl	0.78	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	7	JhlH	2.3	JhlH	0.85	JhlH	<0.2	RhlUH	<0.2	RhlUH	1.2	JhlH
Sulfate	36	mg/kg	**45**	Jhl	**47**	Jhl	24	Jhl	33	Jhl	11	Jhl	15	Jhl

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-447DL	LEHR-S-448		LEHR-S-449		LEHR-S-450		LEHR-S-451		LEHR-S-452	
Chloride	14	mg/kg	NA	<0.2	RhI	0.32	JhI	0.76	JhI	0.83	JhI	<0.2	RhI
Nitrogen, Nitrate (as N)	10	mg/kg	NA	<0.2	RhIUH	**27**	JhIH	**24**	JhIH	**16**	JhIH	<0.2	RhIUH
Sulfate	36	mg/kg	NA	1.8	JhI	<1	RhIU	1.9	JhI	3.2	JhI	6.5	JhI

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
Chloride	14	mg/kg	0.033	JhI	0.84	JhI	0.8	JhI	0.39	JhI	2.3	JhI	12	JhI
Nitrogen, Nitrate (as N)	10	mg/kg	**18**	JhIH	**20**	JhIH	**17**	JhIH	**22**	JhIH	**28**	JhIH	**95**	JhIH
Sulfate	36	mg/kg	**150**	JhI	<1	RIU	<1	RIU	<1	RIU	2.9	JhI	**190**	JhI

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
Chloride	14	mg/kg	0.62	Jhl	0.2	Jhl	0.3	Jhl	0.5	Jhl	NA	0.56	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**13**	JhlH	**28**	JhlH	4.5	JhlH	**11**	JhlH	NA	0.28	JhlH
Sulfate	36	mg/kg	**97**	Jhl	**110**	Jhl	**250**	Jhl	**270**	Jhl	NA	**220**	Jhl

Table I-21
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-496		LEHR-S-497		LEHR-S-498		LEHR-S-499	
Chloride	14	mg/kg	1.6	Jhl	1.2	Jhl	1.6	Jhl	0.49	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	4.9	JhlH	3.2	JhlH	2.9	JhlH	7.6	JhlH
Sulfate	36	mg/kg	2.5	Jhl	1.3	Jhl	1.8	Jhl	1.7	Jhl

TABLE I-22

RADIUM/STRONTIUM AREA – GENERAL CHEMISTRY

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-384	LEHR-S-385	LEHR-S-386	LEHR-S-387	LEHR-S-389	LEHR-S-390
pH		pH Un	5.1	5.9	7.5	8.3	5.1	6.9

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-391	LEHR-S-396	LEHR-S-397	LEHR-S-398	LEHR-S-399	LEHR-S-400
pH		pH Un	7.9	8.2	8.2	8.7	8.7	8.6

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-401	LEHR-S-402	LEHR-S-407	LEHR-S-409	LEHR-S-410	LEHR-S-412
pH		pH Un	8.6	8.8	8.7	8.4	8.7	8.5

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-417		LEHR-S-418		LEHR-S-419		LEHR-S-420		LEHR-S-421		LEHR-S-422	
pH		pH Un	8.5	JhlH	8.3	JhlH	8.8	JhlH	8.1	JhlH	8.2	JhlH	7.5	JhlH

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-423	LEHR-S-424	LEHR-S-425	LEHR-S-426	LEHR-S-427	LEHR-S-435
pH		pH Un	7.7	8.3	8.2	8.5	5.2	12

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-436	LEHR-S-437	LEHR-S-438	LEHR-S-439	LEHR-S-440	LEHR-S-441
pH		pH Un	8.2	7.5	8.9	7.7	12	8.4

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-442	LEHR-S-443	LEHR-S-444	LEHR-S-445	LEHR-S-446	LEHR-S-447
pH		pH Un	10	8	9.1	9.1	8.9	7.7

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-447DL	LEHR-S-448	LEHR-S-449	LEHR-S-450	LEHR-S-451	LEHR-S-452
pH		pH Un	NA	7.3	7.6	7.6	7.3	8.1

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-453		LEHR-S-454		LEHR-S-455		LEHR-S-456		LEHR-S-457		LEHR-S-458	
Formaldehyde		mg/kg	NA		<1	IUN	<1	IUN	<1	IUN	<1	IUN	<1	IUN
pH		pH Un	7.3		7.5		7.4		6.6		7.8		12	

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-459		LEHR-S-460		LEHR-S-461		LEHR-S-462		LEHR-S-462DL	LEHR-S-463	
Formaldehyde		mg/kg	<1	IUN	<1	IUN	<1	IUN	<1	IUN	NA	<1	IUN
pH		pH Un	8.1		7.5		9		8.7		NA	8.8	

Table I-22
LEHR Environmental Restoration
Radium/Strontium Area
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-496	LEHR-S-497	LEHR-S-498	LEHR-S-499
pH		pH Un	6.9	7.5	7.6	7.3

TABLE I-23

SEPTIC TANK AREAS – VOLATILE ORGANICS BY CLP

Table I-23
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
1,1,1-Trichloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,1,2-Trichloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,1-Dichloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,1-Dichloroethene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,2-Dichloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,2-Dichloroethene (total)		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
1,2-Dichloropropane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
2-Butanone		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
2-Hexanone		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
4-Methyl-2-Pentanone		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Acetone		ug/kg	7	UJzIJB	3	UJzIJB	11	UJzIJB	<11	IU	<11	IU	<12	IU
Benzene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Bromodichloromethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Bromoform		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Bromomethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Carbon Disulfide		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Carbon Tetrachloride		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Chlorobenzene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Chloroethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Chloroform		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Chloromethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
cis-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Dibromochloromethane		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Ethylbenzene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Methylene Chloride		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Styrene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU

Table I-23
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Tetrachloroethene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Toluene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
trans-1,3-Dichloropropene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Trichloroethene		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Vinyl Chloride		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU
Xylenes (Total)		ug/kg	<11	IU	<11	IU	<12	IU	<11	IU	<11	IU	<12	IU

Table I-23
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
1,1,1-Trichloroethane		ug/kg	<12	IU
1,1,2,2-Tetrachloroethane		ug/kg	<12	IU
1,1,2-Trichloroethane		ug/kg	<12	IU
1,1-Dichloroethane		ug/kg	<12	IU
1,1-Dichloroethene		ug/kg	<12	IU
1,2-Dichloroethane		ug/kg	<12	IU
1,2-Dichloroethene (total)		ug/kg	<12	IU
1,2-Dichloropropane		ug/kg	<12	IU
2-Butanone		ug/kg	<12	IU
2-Hexanone		ug/kg	<12	IU
4-Methyl-2-Pentanone		ug/kg	<12	IU
Acetone		ug/kg	<12	IU
Benzene		ug/kg	<12	IU
Bromodichloromethane		ug/kg	<12	IU
Bromoform		ug/kg	<12	IU
Bromomethane		ug/kg	<12	IU
Carbon Disulfide		ug/kg	<12	IU
Carbon Tetrachloride		ug/kg	<12	IU
Chlorobenzene		ug/kg	<12	IU
Chloroethane		ug/kg	<12	IU
Chloroform		ug/kg	<12	IU
Chloromethane		ug/kg	<12	IU
cis-1,3-Dichloropropene		ug/kg	<12	IU
Dibromochloromethane		ug/kg	<12	IU
Ethylbenzene		ug/kg	<12	IU
Methylene Chloride		ug/kg	<12	IU
Styrene		ug/kg	<12	IU

Table I-23
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Volatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
Tetrachloroethene		ug/kg	<12	IU
Toluene		ug/kg	<12	IU
trans-1,3-Dichloropropene		ug/kg	<12	IU
Trichloroethene		ug/kg	<12	IU
Vinyl Chloride		ug/kg	<12	IU
Xylenes (Total)		ug/kg	<12	IU

TABLE I-24

SEPTIC TANK AREAS – SEMIVOLATILE ORGANICS BY CLP

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
1,2,4-Trichlorobenzene		ug/kg	<380	RIIU	<380	RIIU	<390	RIIU	<380	RIIU	<370	RIIU	<390	RIIU
1,2-Dichlorobenzene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
1,3-Dichlorobenzene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
1,4-Dichlorobenzene		ug/kg	<380	RIIU	<380	RIIU	<390	RIIU	<380	RIIU	<370	RIIU	<390	RIIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2,4,5-Trichlorophenol		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	UJsIU	<900	IU	<940	UJsIU
2,4,6-Trichlorophenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2,4-Dichlorophenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2,4-Dimethylphenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2,4-Dinitrophenol		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	IU	<900	IU	<940	UJsIU
2,4-Dinitrotoluene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJsIU
2,6-Dinitrotoluene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2-Chloronaphthalene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2-Chlorophenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2-Methyl-4,6-dinitrophenol		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	IU	<900	IU	<940	UJsIU
2-Methylnaphthalene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2-Methylphenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
2-Nitroaniline		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	UJsIU	<900	IU	<940	UJsIU
2-Nitrophenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
3,3'-Dichlorobenzidine		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJsIU
3-Nitroaniline		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	UJsIU	<900	IU	<940	UJsIU
4-Bromophenyl Phenyl Ether		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJsIU
4-Chloro-3-Methylphenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
4-Chloroaniline		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
4-Chlorophenyl Phenyl Ether		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJsIU
4-Methylphenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
4-Nitroaniline		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	IU	<900	IU	<940	UJsIU

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
4-Nitrophenol		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	IU	<900	IU	<940	UJIIU
Acenaphthene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Acenaphthylene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Anthracene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzo(a)anthracene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzo(a)pyrene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzo(b)fluoranthene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzo(g,h,i)perylene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzo(k)fluoranthene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Benzyl Butyl Phthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Bis(2-Chloroethoxy)methane		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Bis(2-Chloroethyl)ether		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Bis(2-Ethylhexyl)phthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Carbazole		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Chrysene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Di-n-Butylphthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Di-n-Octylphthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Dibenzo(a,h)anthracene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Dibenzofuran		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Diethyl Phthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Dimethyl Phthalate		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Fluoranthene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Fluorene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Hexachlorobenzene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Hexachlorobutadiene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJIIU
Hexachlorocyclopentadiene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Hexachloroethane		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Indeno(1,2,3-cd)pyrene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU
Isophorone		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
N-Nitrosodi-n-propylamine		ug/kg	<380	UJIIU	<380	UJIIU	<390	UJIIU	<380	UJIIU	<370	UJIIU	<390	UJIIU
Naphthalene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Nitrobenzene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Pentachlorophenol		ug/kg	<920	IU	<920	UJsIU	<950	IU	<930	IU	<900	IU	<940	UJIIU
Phenanthrene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJsIU
Phenol		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	UJsIU	<370	IU	<390	UJsIU
Pyrene		ug/kg	<380	IU	<380	UJsIU	<390	IU	<380	IU	<370	IU	<390	UJIIU

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
1,2,4-Trichlorobenzene		ug/kg	<390	RIIU
1,2-Dichlorobenzene		ug/kg	<390	UJsIU
1,3-Dichlorobenzene		ug/kg	<390	UJsIU
1,4-Dichlorobenzene		ug/kg	<390	RIIU
2,2'-oxybis(1-Chloropropane)		ug/kg	<390	UJsIU
2,4,5-Trichlorophenol		ug/kg	<950	UJsIU
2,4,6-Trichlorophenol		ug/kg	<390	UJsIU
2,4-Dichlorophenol		ug/kg	<390	UJsIU
2,4-Dimethylphenol		ug/kg	<390	UJsIU
2,4-Dinitrophenol		ug/kg	<950	UJsIU
2,4-Dinitrotoluene		ug/kg	<390	UJsIU
2,6-Dinitrotoluene		ug/kg	<390	UJsIU
2-Chloronaphthalene		ug/kg	<390	UJsIU
2-Chlorophenol		ug/kg	<390	UJsIU
2-Methyl-4,6-dinitrophenol		ug/kg	<950	UJsIU
2-Methylnaphthalene		ug/kg	<390	UJsIU
2-Methylphenol		ug/kg	<390	UJsIU
2-Nitroaniline		ug/kg	<950	UJsIU
2-Nitrophenol		ug/kg	<390	UJsIU
3,3'-Dichlorobenzidine		ug/kg	<390	UJsIU
3-Nitroaniline		ug/kg	<950	UJsIU
4-Bromophenyl Phenyl Ether		ug/kg	<390	UJsIU
4-Chloro-3-Methylphenol		ug/kg	<390	UJsIU
4-Chloroaniline		ug/kg	<390	UJsIU
4-Chlorophenyl Phenyl Ether		ug/kg	<390	UJsIU
4-Methylphenol		ug/kg	<390	UJsIU
4-Nitroaniline		ug/kg	<950	UJsIU

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
4-Nitrophenol		ug/kg	<950	UJsIU
Acenaphthene		ug/kg	<390	UJsIU
Acenaphthylene		ug/kg	<390	UJsIU
Anthracene		ug/kg	<390	UJsIU
Benzo(a)anthracene		ug/kg	<390	UJsIU
Benzo(a)pyrene		ug/kg	<390	UJsIU
Benzo(b)fluoranthene		ug/kg	<390	UJsIU
Benzo(g,h,i)perylene		ug/kg	<390	UJsIU
Benzo(k)fluoranthene		ug/kg	<390	UJsIU
Benzyl Butyl Phthalate		ug/kg	<390	UJsIU
Bis(2-Chloroethoxy)methane		ug/kg	<390	UJsIU
Bis(2-Chloroethyl)ether		ug/kg	<390	UJsIU
Bis(2-Ethylhexyl)phthalate		ug/kg	<390	UJsIU
Carbazole		ug/kg	<390	UJsIU
Chrysene		ug/kg	<390	UJsIU
Di-n-Butylphthalate		ug/kg	<390	UJsIU
Di-n-Octylphthalate		ug/kg	<390	UJsIU
Dibenzo(a,h)anthracene		ug/kg	<390	UJsIU
Dibenzofuran		ug/kg	<390	UJsIU
Diethyl Phthalate		ug/kg	<390	UJsIU
Dimethyl Phthalate		ug/kg	<390	UJsIU
Fluoranthene		ug/kg	<390	UJsIU
Fluorene		ug/kg	<390	UJsIU
Hexachlorobenzene		ug/kg	<390	UJsIU
Hexachlorobutadiene		ug/kg	<390	UJsIU
Hexachlorocyclopentadiene		ug/kg	<390	UJsIU
Hexachloroethane		ug/kg	<390	UJsIU

Table I-24
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Semivolatile Organics by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
Indeno(1,2,3-cd)pyrene		ug/kg	<390	UJsIU
Isophorone		ug/kg	<390	UJsIU
N-Nitrosodi-n-propylamine		ug/kg	<390	UJIIU
Naphthalene		ug/kg	<390	UJsIU
Nitrobenzene		ug/kg	<390	UJsIU
Pentachlorophenol		ug/kg	<950	UJsIU
Phenanthrene		ug/kg	<390	UJsIU
Phenol		ug/kg	<390	UJsIU
Pyrene		ug/kg	<390	UJsIU

TABLE I-25

SEPTIC TANK AREAS – PESTICIDES AND PCBS BY CLP

Table I-25
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
4,4'-DDD		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
4,4'-DDE		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
4,4'-DDT		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Aldrin		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Alpha-BHC		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Alpha-Chlordane		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Arochlor-1016		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Arochlor-1221		ug/kg	<76	IU	<76	IU	<78	IU	<77	IU	<75	IU	<78	IU
Arochlor-1232		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Arochlor-1242		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Arochlor-1248		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Arochlor-1254		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Arochlor-1260		ug/kg	<38	IU	<38	IU	<39	IU	<39	IU	<37	IU	<39	IU
Beta-BHC		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Delta-BHC		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Dieldrin		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Endosulfan I		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Endosulfan II		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Endosulfan Sulfate		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Endrin		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Endrin Aldehyde		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Endrin Ketone		ug/kg	<3.8	IU	<3.8	IU	<3.9	IU	<3.9	IU	<3.7	IU	<3.9	IU
Gamma-BHC		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Gamma-Chlordane		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Heptachlor		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Heptachlor Epoxide		ug/kg	<1.9	IU	<1.9	IU	<2	IU	<1.9	IU	<1.9	IU	<1.9	IU
Methoxychlor		ug/kg	<19	IU	<19	IU	<20	IU	<19	IU	<19	IU	<19	IU

Table I-25
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Toxaphene		ug/kg	<190	IU	<190	IU	<200	IU	<190	IU	<190	IU	<190	IU

Table I-25
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
4,4'-DDD		ug/kg	<3.9	IU
4,4'-DDE		ug/kg	<3.9	IU
4,4'-DDT		ug/kg	<3.9	IU
Aldrin		ug/kg	<2	IU
Alpha-BHC		ug/kg	<2	IU
Alpha-Chlordane		ug/kg	<2	IU
Arochlor-1016		ug/kg	<39	IU
Arochlor-1221		ug/kg	<78	IU
Arochlor-1232		ug/kg	<39	IU
Arochlor-1242		ug/kg	<39	IU
Arochlor-1248		ug/kg	<39	IU
Arochlor-1254		ug/kg	<39	IU
Arochlor-1260		ug/kg	<39	IU
Beta-BHC		ug/kg	<2	IU
Delta-BHC		ug/kg	<2	IU
Dieldrin		ug/kg	<3.9	IU
Endosulfan I		ug/kg	<2	IU
Endosulfan II		ug/kg	<3.9	IU
Endosulfan Sulfate		ug/kg	<3.9	IU
Endrin		ug/kg	<3.9	IU
Endrin Aldehyde		ug/kg	<3.9	IU
Endrin Ketone		ug/kg	<3.9	IU
Gamma-BHC		ug/kg	<2	IU
Gamma-Chlordane		ug/kg	<2	IU
Heptachlor		ug/kg	<2	IU
Heptachlor Epoxide		ug/kg	<2	IU
Methoxychlor		ug/kg	<20	IU

Table I-25
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Pesticides by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
Toxaphene		ug/kg	<200	IU

TABLE I-26

SEPTIC TANK AREAS – METALS BY CLP

Table I-26
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Antimony	0.74	mg/kg	<0.23	UJIINU	<0.23	UJIINU	<0.23	UJIINU	<0.23	UJIINU	<0.23	UJIINU	<0.23	UJIINU
Arsenic	9.46	mg/kg	8.2		8.6		8		8.1		7.6		8.1	
Barium	237	mg/kg	**240**	JII	**270**	JII	230	JII	220	JII	190	JII	170	JII
Beryllium	0.66	mg/kg	0.45	IB	0.4	IB	0.38	IB	0.39	IB	0.36	IB	0.43	IB
Cadmium	0.46	mg/kg	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU
Chromium	178	mg/kg	120		110		110		100		100		100	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH	<0.5	UJhIUH
Cobalt	29	mg/kg	27		26		23		25		24		24	
Copper	50	mg/kg	**60**		**59**		**55**		**54**		**56**		**55**	
Iron	42000	mg/kg	39,000	JIIC	36,000	JIIC	36,000	JIIC	35,000	JIIC	32,000	JIIC	36,000	JIIC
Lead	10.1	mg/kg	9.3		8.9		8.6		9		7.8		8.9	
Manganese	720	mg/kg	**790**		700		680		560		670		**770**	
Mercury	0.49	mg/kg	<0.11	IU	0.35		0.14		<0.12	IU	<0.11	IU	<0.11	IU
Molybdenum	2	mg/kg	0.51	IB	0.51	IB	0.46	IB	0.29	IB	0.39	IB	0.45	IB
Nickel	326	mg/kg	250		250		240		220		220		230	
Selenium	1	mg/kg	<0.69	IU	<0.7	IU	<0.69	IU	<0.68	IU	<0.68	IU	<0.68	IU
Silver	0.52	mg/kg	<0.23	UJIIU	<0.23	UJIIU	<0.23	UJIIU	<0.23	UJIIU	<0.23	UJIIU	<0.23	UJIIU
Thallium	1.36	mg/kg	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU	<0.23	IU
Vanadium	73	mg/kg	66	JII	64	JII	65	JII	65	JII	57	JII	64	JII
Zinc	82	mg/kg	**92**		**85**		**110**		**84**		75		**82**	

Table I-26
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Metals by CLP

Location Date	Background Level	UNITS	LEHR-S-434	
Antimony	0.74	mg/kg	<0.24	UJIINU
Arsenic	9.46	mg/kg	7.9	
Barium	237	mg/kg	170	JII
Beryllium	0.66	mg/kg	0.42	IB
Cadmium	0.46	mg/kg	<0.24	IU
Chromium	178	mg/kg	96	
Chromium, Hexavalent (+6)	0.099	mg/kg	<0.5	UJhIUH
Cobalt	29	mg/kg	24	
Copper	50	mg/kg	**53**	
Iron	42000	mg/kg	35,000	JIIC
Lead	10.1	mg/kg	8.9	
Manganese	720	mg/kg	710	
Mercury	0.49	mg/kg	<0.11	IU
Molybdenum	2	mg/kg	0.44	IB
Nickel	326	mg/kg	220	
Selenium	1	mg/kg	<0.71	IU
Silver	0.52	mg/kg	<0.24	UJIIU
Thallium	1.36	mg/kg	<0.24	IU
Vanadium	73	mg/kg	60	JII
Zinc	82	mg/kg	77	

TABLE I-27

SEPTIC TANK AREAS – RADIOCHEMICAL ANALYSES

Table I-27
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-428				LEHR-S-429				LEHR-S-430				LEHR-S-431			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.47		0.13	0.18	0.57		0.12	0.14	0.47		0.11	0.14	0.53		0.12	0.16
Bismuth-212*	NA	pCi/g	0.33		0.25	0.31	0.32		0.19	0.22	0.44		0.2	0.22	0.33		0.23	0.29
Bismuth-214*	0.57	pCi/g	0.306		0.085	0.1	0.322		0.073	0.078	0.312		0.073	0.075	0.311		0.075	0.083
Carbon-14	0.87	pCi/g	-2.1		5.8	11	-1.7		5.4	10	-2		5.5	10	**2.1**		6.3	11
Cesium-137*	0.053	pCi/g	-0.019		0.023	0.044	0.003		0.017	0.03	-0.004		0.018	0.032	-0.004		0.018	0.033
Cobalt-60*	0.016	pCi/g	0.009		0.015	0.034	0.0083		0.01	0.019	-0.009		0.013	0.036	0.0		0.016	0.038
Gross Alpha	11.8	pCi/g	6.6	IC	5.2	7.6	9.9	IC	5.7	7.4	9.7	IC	5.5	6.7	9.3	IC	5.4	6.7
Gross Beta	17.4	pCi/g	13.4		4.4	6.2	17.3		4.3	5.6	10.9		4.1	5.9	16.7		4.4	5.9
Lead-210*	NA	pCi/g	4.1		9.1	12	3.2		7.1	9.8	5.5		7.1	9.5	-4.5		1.7	12
Lead-212*	0.74	pCi/g	0.482		0.085	0.075	0.476		0.074	0.058	0.514		0.077	0.057	0.496		0.078	0.058
Lead-214*	0.75	pCi/g	0.391		0.077	0.087	0.356		0.062	0.069	0.431		0.067	0.068	0.349		0.067	0.077
Potassium-40*	13.6	pCi/g	12.4		1.6	0.51	11.2		1.4	0.35	11.2		1.4	0.4	10.2		1.3	0.44
Radium-223*	NA	pCi/g	0.04		0.21	0.66	0.16		0.17	0.52	-0.05		0.18	0.59	0.13		0.19	0.58
Radium-226	0.77	pCi/g	0.72		0.18	0.096	0.48		0.15	0.12	**0.85**		0.2	0.12	0.55		0.15	0.093
Radium-226*	0.77	pCi/g	0.73		0.59	0.81	0.75		0.47	0.64	**0.81**		0.47	0.63	0.38		0.51	0.72
Strontium-90	0.36	pCi/g	0.26	JI	0.14	0.22	0.27	JI	0.17	0.26	**0.45**	JI	0.17	0.25	0.16	JI	0.15	0.26
Thallium-208*	0.21	pCi/g	0.138		0.044	0.047	0.162		0.038	0.035	0.118		0.036	0.04	0.167		0.04	0.037
Thorium-234*	NA	pCi/g	0.35		0.44	1.3	0.5		0.34	0.98	0.34		0.36	1	0.19		0.38	1.1
Tritium	105	pCi/L	50		120	210	-51		94	200	60		120	210	20		110	200
Uranium-235*	0.071	pCi/g	**0.1**		0.15	0.24	0.04		0.12	0.19	-0.05		0.11	0.19	0.0		0.12	0.2

Table I-27
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996

Lab_chem	Background Levels	Units	LEHR-S-432				LEHR-S-433				LEHR-S-434			
			Value		Uncert	MDA	Value		Uncert	MDA	Value		Uncert	MDA
Actinium-228*	0.71	pCi/g	0.59		0.12	0.13	0.52		0.11	0.12	0.47		0.11	0.14
Bismuth-212*	NA	pCi/g	0.31		0.21	0.25	0.21		0.17	0.21	0.24		0.19	0.25
Bismuth-214*	0.57	pCi/g	0.343		0.079	0.085	0.332		0.071	0.075	0.334		0.074	0.078
Carbon-14	0.87	pCi/g	0.4		5.6	10	-4.4		5.6	11	-2.7		6.4	12
Cesium-137*	0.053	pCi/g	-0.024		0.018	0.036	-0.006		0.017	0.031	0.002		0.018	0.031
Cobalt-60*	0.016	pCi/g	0.008		0.014	0.03	0.001		0.014	0.03	-0.011		0.016	0.042
Gross Alpha	11.8	pCi/g	5.5	IC	5	7.8	7.8	IC	5.1	6.8	5.1	IC	4.8	7.4
Gross Beta	17.4	pCi/g	**17.6**		4.2	5.4	12		4	5.6	12.6		4	5.7
Lead-210*	NA	pCi/g	1.8		7.8	11	3		6.9	9.5	-0.1		6.8	9.8
Lead-212*	0.74	pCi/g	0.442		0.074	0.061	0.446		0.07	0.056	0.486		0.074	0.058
Lead-214*	0.75	pCi/g	0.369		0.067	0.076	0.369		0.061	0.059	0.366		0.061	0.065
Potassium-40*	13.6	pCi/g	9.3		1.2	0.47	10.5		1.3	0.35	10.1		1.3	0.37
Radium-223*	NA	pCi/g	0.13		0.18	0.53	-0.01		0.17	0.5	0.01		0.17	0.47
Radium-226	0.77	pCi/g	0.62		0.16	0.078	0.49		0.15	0.11	**0.78**		0.19	0.12
Radium-226*	0.77	pCi/g	0.5		0.5	0.71	0.59		0.45	0.62	**0.91**		0.46	0.6
Strontium-90	0.36	pCi/g	**0.4**	JI	0.16	0.24	**0.4**	JI	0.16	0.24	0.07	JI	0.13	0.23
Thallium-208*	0.21	pCi/g	0.167		0.04	0.038	0.158		0.036	0.032	0.152		0.037	0.035
Thorium-234*	NA	pCi/g	0.51		0.37	1.1	0.43		0.33	0.96	0.41		0.35	1
Tritium	105	pCi/L	100		120	200	10		110	210	40		120	210
Uranium-235*	0.071	pCi/g	0.01		0.12	0.2	-0.045		0.056	0.19	-0.091		0.073	0.19

TABLE I-28

SEPTIC TANK AREAS – CATIONS/ANIONS

Table I-28
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Chloride	14	mg/kg	9.7	Jhl	**22**	Jhl	**100**	Jhl	0.68	Jhl	0.38	Jhl	0.84	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	**30**	JhlH	**120**	JhlH	**34**	JhlH	<0.2	RhlUH	<0.2	RhlUH	0.25	JhlH
Sulfate	36	mg/kg	29	Jhl	**69**	Jhl	**65**	Jhl	6.4	Jhl	1.9	Jhl	13	Jhl

Table I-28
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
Cations/Anions

Location Date	Background Level	UNITS	LEHR-S-434	
Chloride	14	mg/kg	2.4	Jhl
Nitrogen, Nitrate (as N)	10	mg/kg	0.37	JhlH
Sulfate	36	mg/kg	31	Jhl

TABLE I-29

SEPTIC TANK AREAS – GENERAL

Table I-29
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-428		LEHR-S-429		LEHR-S-430		LEHR-S-431		LEHR-S-432		LEHR-S-433	
Formaldehyde		mg/kg	<1	IUN	<1	IUN	2.2	IN	<1	IUN	<1	IUN	<1	IUN
pH		pH Un	8.1		8		8.1		8.2		8.4		8.8	

Table I-29
LEHR Environmental Restoration
Septic Tank
Analytic Results of LFI Site Characterization 1996
General

Location Date	Background Level	UNITS	LEHR-S-434	
Formaldehyde		mg/kg	<1	!UN
pH		pH Un	8.6	

APPENDIX J

LFI GEOTECHNICAL REPORT SUMMARY

Battelle
Pacific Northwest Laboratories
University of California, Davis
M.S. ITEH-Battelle
Old Davis Road
Davis, CA 95616
Telephone (916) 752-7777

November 14, 1996

Bob Devany
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608

Subject: Hydraulic Properties of LEHR/UC Davis Soil Samples

Dear Bob:

Enclosed please find a copy of the subject document. An electronic copy will be forwarded to you as soon as it becomes available.

If you have any questions, or need additional copies, please feel free to contact me at (916) 752-4023.

Sincerely,

Dawn Mitchell
Project Manager, PNNL/LEHR

DM:mbr

Enclosure

cc: Salem Attiga, EMS
Susan Fields, DOE/OAK

g:\wp\dm\hydprpWA.ltr

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

LEHR
RECEIVED
NOV 14 1996

Hydraulic Properties of LEHR/UC Davis Soil Samples

Prepared for

Battelle PNL/ITEH

Davis, California

November 12, 1996

6020 ACADEMY NE • SUITE 100 • ALBUQUERQUE, NM 87109 • (505) 822-9400

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A Initial Moisture Content, Bulk Density, and Porosity

B Saturated Hydraulic Conductivity

C Moisture Characteristics

D Unsaturated Hydraulic Properties

E Particle Density

F Laboratory Methods

Summary

The Hydrologic Testing Laboratory at Daniel B. Stephens & Associates, Inc. (DBS&A) has completed laboratory tests on LEHR/UC Davis soil samples as specified by Ms. Dawn Mitchell and summarized in Table 1. Tables 2 through 6 give the results of the specified analyses. Raw laboratory data and graphical plots of data (where appropriate) are contained in Appendices A through E. Appendix F lists the methods used in these analyses. A detailed description of each method is available upon request.

The samples were removed from their packaging, cut to consistent dimensions, and immediately weighed for determination of initial moisture content. The GEO1 sample was disturbed from either shipping or sampling and was repacked to the bulk density of the original sample. We tested an undisturbed portion of the sample to determine bulk density and then repacked the sample to that density. After all other testing had been completed, the samples were oven dried for 24 hours to determine dry weights for calculation of dry bulk densities.

Saturated hydraulic conductivity was measured using constant and falling head permeameters. Falling head permeameters are used to determine saturated hydraulic conductivity on low permeability materials. The permeabilities ranged from 4.7×10^{-3} to 1.1×10^{-8} cm/s. All samples, except the GEO1 sample, were tested using falling head permeameters.

Moisture characteristics were determined using hanging column, pressure plate, and thermocouple psychrometer analysis. The samples were saturated by placing them in pans and slowly adding degassed water until the water level was even with the top of the sample. Using degassed water and wetting the samples from the bottom reduces the amount of entrapped gas in the samples. Unsaturated hydraulic parameters were determined by curve fitting the moisture retention data with the RETC code for determination of hydraulic parameters of unsaturated soils (van Genuchten, 1991).

Particle densities were determined using water pycnometers. Measured particle densities were used to calculate the total porosity of each sample.

Overall, the results appear reasonable and internally consistent. However, DBS&A cannot guarantee that these results are representative of the undisturbed materials at the field site, nor can we assume any responsibility for interpretations or analyses based on these data. We recommend that careful evaluation of these laboratory results be made for your particular application.

Table 1. Summary of Tests Performed

Laboratory Sample Number	Initial Moisture Content	Dry Bulk Density	Calculated Porosity	Saturated Hydraulic Conductivity	Moisture Characteristics			Unsaturated Hydraulic Conductivity	Particle Density
					Hanging Column	Pressure Plate	Thermocouple Psychrometer		
GEO1	X	X	X	X	X	X	X	X	X
GEO2	X	X	X	X	X	X	X	X	X
GEO3	X	X	X	X	X	X	X	X	X
GEO4	X	X	X	X	X	X	X	X	X
GEO5	X	X	X	X	X	X	X	X	X
GEO6	X	X	X	X	X	X	X	X	X
GEO7	X	X	X	X	X	X	X	X	X
GEO8	X	X	X	X	X	X	X	X	X
GEO9	X	X	X	X	X	X	X	X	X

Table 2. Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density, and Calculated Porosity

Sample Number	Initial Moisture Content Gravimetric (%, g/g)	Initial Moisture Content Volumetric (%, cm^3/cm^3)	Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
GEO1	2.2	4.2	1.92	1.96	29.3
GEO2	17.8	29.9	1.68	1.98	37.1
GEO3	13.2	24.0	1.81	2.05	32.7
GEO4	23.8	36.1	1.51	1.87	43.6
GEO5	21.5	34.3	1.60	1.94	40.6
GEO6	19.3	31.8	1.65	1.96	39.3
GEO7	14.9	27.3	1.84	2.11	30.8
GEO8	17.7	30.1	1.70	2.00	37.9
GEO9	13.3	23.4	1.76	1.99	33.9

Table 3. Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Method of Analysis	
		Constant Head	Falling Head
GEO1	4.7E-03	X	
GEO2	6.7E-05		X
GEO3	1.4E-08		X
GEO4	6.4E-05		X
GEO5	1.0E-08		X
GEO6	5.8E-08		X
GEO7	3.1E-08		X
GEO8	1.1E-08		X
GEO9	5.6E-08		X

Table 4. Summary of Moisture Characteristics of the Initial Drainage Curve

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
GEO1	1	28.8
	9	24.5
	29	12.9
	78	8.0
	204	5.3
	2448	5.1
	20192	3.1
GEO2	1	35.6
	17	33.1
	50	30.8
	151	28.3
	510	25.6
	1020	24.1
	14073	17.4
GEO3	1	38.2
	55	37.1
	120	36.8
	1020	33.1
	3161	32.0
	5099	29.1
	18050	23.6
GEO4	1	48.0
	21	46.7
	55	45.0
	154	42.4
	510	39.0
	1020	36.9
	12034	22.8

Table 4. Summary of Moisture Characteristics of the Initial Drainage Curve (Continued)

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
GEO5	1	42.7
	51	42.2
	102	41.9
	1020	37.0
	3671	31.0
	4793	27.4
	13257	25.0
GEO6	1	38.9
	55	38.9
	106	38.7
	1019	35.1
	2550	31.6
	5303	28.5
	16929	20.5
GEO7	1	36.1
	54	33.9
	107	33.6
	1020	29.5
	3875	24.1
	5609	23.3
	14481	20.0
GEO8	1	43.6
	54	43.6
	119	43.6
	1020	41.8
	3977	37.0
	5915	33.9
	12238	30.4

Table 4. Summary of Moisture Characteristics of the Initial Drainage Curve (Continued)

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
GEO9	1	39.5
	54	39.5
	113	39.2
	1020	35.6
	2651	32.2
	5201	28.2
	15195	23.5

Table 5. Summary of Unsaturated Hydraulic Properties (Calculated)

Sample Number	α (cm^{-1}) Calculated Value	α 95% Confidence Limits Lower	α 95% Confidence Limits Upper	N (dimensionless) Calculated Value	N 95% Confidence Limits Lower	N 95% Confidence Limits Upper	θr (%)	θs (%)
GEO1	0.0852	0.0556	0.1149	1.9072	1.6210	2.1933	3.1	28.8
GEO2	0.0326	-0.0087	0.0739	1.3252	1.1404	1.5101	17.4	35.6
GEO3	0.0011	-0.0007	0.0029	1.6083	0.9361	2.2804	23.6	38.2
GEO4	0.0043	-0.0017	0.0102	1.5079	1.0069	2.0090	22.8	48.0
GEO5	0.0010	0.0005	0.0015	2.0480	1.4904	2.6056	25.0	42.7
GEO6	0.0005	-0.0007	0.0018	1.7676	1.2803	2.2549	20.5	38.9
GEO7	0.0019	-0.0008	0.0046	1.7045	1.0837	2.3252	20.0	36.1
GEO8	0.0003	0.0002	0.0005	2.8519	1.4239	4.2799	30.4	43.6
GEO9	0.0007	0.0003	0.0010	2.0018	1.4192	2.5844	23.5	39.5

Table 6. Summary of Particle Density Tests

Sample Number	Particle Density (g/cm^3)
GEO1	2.71
GEO2	2.68
GEO3	2.69
GEO4	2.68
GEO5	2.69
GEO6	2.71
GEO7	2.66
GEO8	2.74
GEO9	2.66

APPENDIX K

RESPONSES TO AGENCY COMMENTS

RESPONSES TO US ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON DRAFT FINAL SITE CHARACTERIZATION REPORT FOR LEHR SITE E-MAILED TO SUSAN FIELDS ON MARCH 10, 1997

U.S. EPA Comment 1. The point to be used for background comparison should be 80% lower confidence limit of the 95 percentile.

Response: WA has re-evaluated all data presented in the Draft Final Site Characterization Summary Report using the 80% lower confidence limits of the 95th percentiles as background levels. The Final report includes this re-evaluation.

U.S. EPA Comment 2. As discussed at the last project managers meeting, the inclusion of a risk based evaluation of radionuclides and the evaluation of both on-site industrial and unrestricted land use i.e. residential, risk should be included. By the way, the document lists two bismuth isotopes, 214 and 212. (Bi-212 may be a typo in section 3.2.3.2.1) Riscalc does not address bismuth and we therefore do not have a PRG. Also the half-life for these are 20 minutes and 60 minutes, respectively. I did not see a use for bismuth in the operational descriptions but they did include bismuth 214 in the background determinations.

Response: The Draft Final Determination of Risk-Based Action Standards report includes a risk-based evaluation of radionuclides for three scenarios: an onsite researcher scenario and two offsite use scenarios. The Draft Engineering Evaluation/Cost Analysis considers these three scenarios and also includes residential PRGs for onsite use as a fourth scenario. Regarding the second issue, you are correct that "Bi-212" in Section 3.2.3.2.1 is a typo and should be "Bi-214"; and this has been corrected in the Final report.

U.S. EPA Comment 3. Throughout the document the chromium VI value is listed. It should be made clear if this is truly a speciated chromium evaluation in all cases and not total Cr. In the case where Cr+6 was measured, the total Cr should also be presented. Both were analyzed for in the background evaluation.

Response: Both total Cr and Cr+6 were analyzed in most samples. In a few samples, the reported Cr+6 concentration slightly exceeded background (and therefore was shown on the figures), while the total Cr concentration was slightly below background (and therefore was not presented on the figures). All total Cr and Cr+6 data were presented in tables in Appendix I, however. WA has reviewed all references to Cr+6 and total Cr concentrations to ensure they are correct in the Final report.

U.S. EPA Comment 4. As noted in table 3-11, what is &crontonaldehyde8 reported in the UCD soil waste trenches?

Response: The compound crontonaldehyde was misspelled in the table and should be crotonaldehyde, which is an aldehyde with a chemical formula of C_4H_6O, and is used, among other things, as a solvent in the purification of insecticides.

U.S. EPA Comment 5. The project team should decide how they want ground water plumes depicted as was done in Figure 3-11. This report uses the MCL as a reference. I would recommend the tap water PRG be used since these are more risk-based and allow for the additivity of impacts.

Response: We have not changed the MCL references on Figure 3-11 or other figures showing ground water data because MCLs are the reference points used by UC Davis, who is taking responsibility for ground water remediation. Consideration of PRGs or other risk-based levels for ground water is the responsibility of UC Davis.

U.S. EPA Comment 6. This report concludes that all these sites are not significantly impacting groundwater. Does this mean that vadose zone impact to ground water is not going to be expressly evaluated? Is the hydrogeology and contaminate [sic] distribution well enough understood to support this conclusion?

Response: The vadose zone has been expressly evaluated in WA's One-Dimensional Vadose Zone Modeling Report (Draft Final), which was submitted to DOE and the regulatory agencies on April 9, 1997. The results of this modeling were considered in developing the Risk-based Action Standards. We believe the hydrogeology is consistent enough and well enough understood to develop a valid model; however, we still need to collect some additional samples to get a fuller understanding of the vadose zone contamination in all DOE areas at the LEHR site. Additional samples collected during the Western Dog Pens Data Gaps Investigations and during removal actions in the SW trench, Ra/Sr system, and domestic septic system areas will provide these data.

RESPONSES TO CALIFORNIA-EPA DEPARTMENT OF TOXIC SUBSTANCE CONTROL COMMENTS ON DRAFT FINAL SITE CHARACTERIZATION REPORT FOR LEHR SITE SENT TO SUSAN FIELDS, DOE-OAK, FROM DUNCAN AUSTIN, DATED MARCH 25, 1997

General Comments

The draft report provides a good summary of the information on soil contamination from past investigations. The results of the Limited Field Investigation (LFI) program are also well presented. However, we do not concur with many of the statements made in Section 6, Data Evaluation, and Section 7, Conclusions and Recommendations.

The reason for proceeding with the LFI was that previous investigations had been conducted and much was already known about disposal activities at LEHR DOE areas. After numerous meetings, and with great effort by the project managers and former DOE contractors, a consensus was reached on the nature of the LFI. Based on a joint review of the available information, it was thought that levels of contamination which are not protective of groundwater would be easily discovered through a limited additional amount of sampling. On confirmation of the expected excess levels, three categories of potential remedies for that area of Operable Unit have been identified which would require evaluation: 1) excavation and disposal, 2) treatment, or 3) containment. The LFI was also designed to gain the information necessary to select between these remedies. However, if the limited investigations did not reveal the presence of contaminants which clearly present a threat to groundwater, a decision would be made as to what additional information would be needed to justify a limited action remedy. Please see our letter dated February 7, 1996, which explains the approach agreed to at that time (copy attached).

The later sections of the report (and requests for regulatory approval for taking "a few" surface soil samples) indicate that DOE and its contractors now wish to "complete" the risk assessment. In light of the background information presented above, it should be clear that risk assessment activities are only appropriate in-so-far as they are designed to determine cleanup levels based upon threats to human health. Cleanup numbers based upon the California's Groundwater Anti-Degradation Policy must also be developed. LFI program was not designed to provide data which would be adequate to support a risk assessment for any of the operable units.

We acknowledge that contaminants in the DOE areas have not been completely characterized by the investigations described in the Draft Final Site Characterization Summary Report, and that risk assessments for these areas cannot be "completed" at this time. To further characterize the domestic septic systems and radium-226 leach line, additional Data Gaps Investigations were conducted in June. With these additional data, the Ra/Sr system, SW trench, and domestic septic system areas are sufficiently characterized to design removal actions. During the removal actions, additional data will be collected to provide further characterization data for risk assessment and to determine if the removal actions are sufficient. Additional investigations are currently being conducted in the Western Dog Pens Area. These data will be used in developing an EE/CA for this area in 1998. Additional investigations in the Eastern Dog Pens Area will be conducted at a later date.

The data from the radium dry wells/leach line merits special attention. Strontium and radium contamination levels are significant and the strontium appears to be leaching to deeper levels. We urge DOE to evaluate a near term removal action for the area. We also note that there is a paucity of groundwater information in the immediate down gradient vicinity of the radium dry wells/leach line area.

Regarding the elevated strontium-90 and radium-226 levels reported for the radium dry wells/leach line: as you know, LAS determined that at least 10 of the highest Sr-90 results for samples in the Ra-226 treatment system area are invalid, and that other LFI sample Sr-90 activities may also be in error. LAS reanalyzed 30 LFI split samples that we obtained from the Department of Health Services (DHS), including four of the five Ra system samples with anomalously high results. The new results for two of these four were below background and for the other two were less than two times background. Excluding only the data we know to be erroneous, the highest Sr-90 activity detected in the Ra System leach trenches and surrounding soil is 1.82 pCi/g and the highest Ra-226 activity is 14.7 pCi/g. The removal action proposed for this area will eliminate most of the material with above-background Ra-226 and Sr-90 activities.

Specific Comments

Section 3.1, Background Investigations: For the purposes of developing cleanup levels, and where those levels may be based upon background concentrations, we do not approve of the 95% upper confidence limit levels presented in Table 3-1 as background until such time as appropriate support information is provided. We understand that DOE's contractor is in the process of preparing further information on background levels which will be provided in the context of the risk assessment work.

Response: In the Draft Final Site Characterization Summary Report, WA was not developing cleanup levels based on background concentrations. WA was using the 95% upper confidence limit levels simply as threshold levels for limiting the data presented in the text and on figures. In the Final document, WA has revised the background levels to reflect the agreed-upon 80% lower confidence level of the 95th percentile.

Section 3.2, DOE Operable Units: Table 3-2 on Page 3-6 includes a reference to the soil gas survey conducted in the southwest trenches area. Chloroform, Freon-12, toluene and xylene were said to be detected. The report, however, does not provide the details or results of the study nor are these compounds discussed further in Section 6.1.1, Contaminants of Concern.

Response: Details on the low levels of chloroform, toluene, xylene, and Freon-12 detected in soil gas samples from the Southwest Trenches Area have been added in Section 3.2, and are listed in Section 6.1.1 of the Final document.

Section 3.2, DOE Operable Units: On page 3-7, in Subsection 3.2.1.2.2, Ground Water Sampling Results, the report mentions detections of chloroform, SVOCs, mercury and radionuclides in the groundwater beneath the southwest trenches area. Further discussion of these results should be discussed in Section 6.1.1, Contaminants of Concern

Response: The sections on Contaminants of Concern (now called Constituents of Concern Above Background) focus on constituents detected above background levels in soil. Although chloroform was not detected in any soil samples, it is now included as a Constituent of Concern Above Background because it has been detected at trace levels in both soil gas and ground water. None of the radionuclides and metals detected in ground water from these wells are above MCLs nor are they significantly above background. Those radionuclides and metals detected in ground water that were also detected above background in soil are included as Constituents of Concern Above Background; the others were not. The trace SVOC concentrations detected in 1995 ground water samples were not detected in 1996 samples, and are probably laboratory contaminants.

Section 5.3, Ra/Sr Leach Systems: In section 5.3.2 on Page 5-23, the shallow soil samples collected on Old Davis Road are described. We expected those samples to be surface samples (defined in the LFI workplan as "soil collected between a depth or (sic) zero and six inches") and not from 0.8 feet below the surface as stated. The fact that radium-226 was detected in the ditch at concentrations greater than background, even at that depth, indicate the presence of a confirmed off-site pathway which merits additional investigations. Please also note that the reference to Figure 5-7 on Page 5-23 should have been a reference to Figure 5-14. On Page 5-25, the samples taken along Old Davis Road are incorrectly called surface samples.

Response: The Old Davis Road samples were planned to be surface soil samples, but after a field evaluation of the soil horizon it was decided that the samples be collected slightly deeper to provide a more representative sample. The top few inches of soil were fairly loose and easily transportable by wind and water; therefore, these soils may not reflect historical treatment system overflows. Additional samples from the surface to 1.5 ft below ground surface are being collected along the Old Davis Road, and analytical results will be available in January 1998.

The reference to Figure 5-7 on Page 5-23 has been corrected to reference Figure 5-14 in the Final report. The samples taken along Old Davis Road have been referred to as "near-surface samples" in the Final report.

Section 6.1.1, Contaminants of Potential Concern: This section lists a number of contaminants found above background and then proceeds to narrow the list of potential contaminants of concern to six because the amounts of the other contaminants were found at trace levels, only slightly exceeding background or were not "laterally persistent". DOE then states that "the vadose zone modeling and risk assessment will determine which contaminants are of actual concern". We disagree with this approach. LFI has demonstrated that the wastes disposed in the southwest trenches are highly variable. Some of the wastes are potentially threatening to human health and the environment. DOE may wish to perform some vadose zone modeling using LFI results to demonstrate that actions are necessary to protect ground water and to establish cleanup levels that may be protective of groundwater. However, vadose zone modeling results that purport to show no threat to groundwater based on the LFI data must be treated with skepticism as it is highly likely that higher concentrations, or other contaminants which threaten groundwater, exist in the area.

Response: Section 6.1.1 has been renamed "Constituents of Concern Above Background". This section list all the contaminants detected above background and then narrows the list to the most prevalent contaminants in that area. As you are aware, removal actions for the Ra/Sr system,

SW trench, and domestic septic system areas have been proposed based on the available data and proposed risk-based action standards. As part of the removal actions, additional soil samples will be collected and analyzed to provide additional characterization data and information needed to evaluate whether or not the removal actions are sufficient to protect ground water as well as human health and the environment.

Section 6.1.4.1, No Action: This subsection describing one of the remedies for the Southwest Trenches fails to distinguish between "no action", which literally means nothing needs to be done, and "limited action", which includes institutional controls.

Response: Comment noted. This section has been deleted because remedial alternatives are now addressed in the Draft EE/CA.

Section 6.1.4.2, Hotspot Removal and Capping: On page 6-7, the last paragraph of this subsection, we do not agree with the statement, "considerable additional investigative efforts would be required to adequately estimate the waste volume for cost comparison purposes". Also, what is the basis for the statement, "radionuclide activities/contaminant concentrations in the wastes sampled during the LFI may not represent a significant risk". We hold the opposite view.

Response: Comment noted. This section has been deleted because remedial alternatives are now addressed in the Draft EE/CA.

Section 6.1.4.3, Removal, Segregation, and Disposal: During the identification of likely remedies and the subsequent development of LFI, the purpose of this alternative was not, as stated in the report, "to separate soil from solid waste and debris" The purpose was to separate materials into their appropriate categories in order to provide disposal options particular to each type of material. Categories include low-level radioactive wastes, hazardous wastes, designated level wastes and mixed wastes. This comment also applies to Subsection 6.1.4.4, Removal, Segregation, Treatment and Disposal.

Response: Comment noted. This section has been deleted because remedial alternatives are now addressed in the Draft EE/CA.

Section 6.2.1, Section 6.3.2 and Section 6.4.2, Contaminants of Potential Concern: See comment on Section 6.1.1 above.

Response: See changes made for Section 6..1.1.

Section 6.2.4.1, Section 6.3.4.1 and Section 6.4.4.1, No Action: See comment on Section 6.1.4.1 above.

Response: Comment noted. These sections have been deleted because remedial alternatives are now addressed in the Draft EE/CA.

Section 7, Conclusions and Recommendations: This section needs to be revised in accordance with the comments provided above concerning contaminants of concern and the need for additional surface samples to "complete the risk assessment". The last bullet under the Southwest

Trenches Area summary indicating that the area is sufficiently defined is inconsistent with Section 6.1.4.2 which indicates more information is necessary for cost comparison purposes. The second bullet under the Ra/Sr Treatment System Area summary indicating that contamination is confined or immediately adjacent to the leach lines and dry wells is inconsistent with the next bullet which points out the significant Sr contamination at depth. The next (fourth) bullet incorrectly states that potential impact of Sr to the ground water is not significant, based upon water quality in monitoring well UCD1-22. That monitoring well is not down gradient of the area nor screened in the appropriate hydrostratigraphic unit such that it would provide any indication of Sr contamination of the ground water.

Response: Section 7 has been modified to address these concerns.