U.S. Department of Energy

Oakland Operations Office, Oakland, California

TECHNICAL MEMORANDUM
RESULTS OF DATA GAPS INVESTIGATION – DOMESTIC SEPTIC TANK SYSTEMS

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

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Emeryville, CA 94608-2411

January 1998
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DOE Oakland Operations Contract DE-AC03-96SF20686

Weiss Associates
Environmental and Geologic Services

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ACRONYMS

bgs	Below ground surface
mg/kg	Milligram/kilogram
ug/L	Microgram/liter
OU-4	Operable Unit 4
DGI	Data Gaps Investigation
IT	IT Corporation
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
LAS	LAS Laboratories
LEHR	Laboratory for Energy-Related Health Research
LFI	Limited Field Investigation
pCi/L	PicoCurie(s) per liter
pCi/g	PicoCurie(s) per gram
RI/FS	Remedial Investigation/Feasibility Study
UC Davis	University of California at Davis
VOCs	Volatile Organic Compounds
PRGs	Preliminary Remediation Goals
1,2-DCE	1,2-Dichloroethene
TCE	Trichloroethene
WA	Weiss Associates

1. INTRODUCTION

1.1 Objective

This Technical Memorandum presents the results of the Data Gaps Investigation (DGI) conducted at the Laboratory for Energy-Related Health Research (LEHR) at the University of California, Davis, California (UC Davis). DGI field work was conducted the week of June 8, 1997 and in accordance with the specifications prepared by IT Corporation (IT) of Martinez, California and presented in the Final Work Plan for the Data Gaps Investigation (IT, 1997).

The primary objective of the DGI was to collect the necessary information to determine if any of the five domestic septic systems and/or the northern extent of the Radium-226 seepage trench pose unacceptable risk to human health or the environment (Figure 1). The proposed soil sample locations were selected to target locations of likely maximum contaminant concentration based on the current conceptual model of each work area, and on field screening measurements and analyses associated with the Limited Field Investigation (LFI) conducted in 1996.

A brief description of the domestic septic tank systems and the radium treatment system is provided in Section 2. More comprehensive and detailed descriptions of the septic tank systems and radium seepage system are presented in the Final Work Plan for Data Gaps Investigation (IT, 1997), LFI Work Plan (IT, 1996), Site Characterization Summary Report (WA, 1997), and the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Dames and Moore, 1994).

2. DESCRIPTION OF DOMESTIC SEPTIC TANK SYSTEMS (OU-4) AND PREVIOUS INVESTIGATIONS

2.1 Background

There are seven known domestic septic tanks located throughout the LEHR site (OU-4) (Figure 1). Five of the seven septic tanks were identified for DGI and are numbered 1, 3, 4, 5 and 6. Septic tanks numbered 2 and 7 were not included in this investigation because they had been previously assessed (Dames and Moore, 1993; WA, 1997).

The domestic septic tanks served LEHR offices and laboratories prior to the site's connection to the UC Davis Wastewater Treatment Plant in 1970. After the facility was connected to the UC Davis Wastewater Treatment Plant, the domestic septic tanks were reportedly abandoned in-place and filled with sand (Dames and Moore, 1993). No formal closure records confirming the abandonment of the domestic septic tanks have been identified (Dames and Moore, 1994).

2.2 Summary of Domestic Septic Tank Investigations Prior to 1997 DGI

A summary of what was known about each septic tank prior to the June – September DGI is presented below.

Table 2-1. Investigative Status Summary of Domestic Septic Tanks (OU-4) Prior to 1997 DGI

Septic Tank	Location Status	Dates Investigated	Significant Findings
No. 1	Positively located in 1990 using shovel, probe, and backhoe.	Phase II Site Characterization (Dames and Moore, 1993): • Located Tank No. 1.	• Original tank contents had been removed. Tank found to be backfilled with clean, sandy gravel. No tank sediment samples were collected.

Table 2-1. Investigative Status Summary of Domestic Septic Tanks (OU-4) Prior to 1997 DGI (continued)

Septic Tank	Location Status	Dates Investigated	Significant Findings
		1996 Limited Field Investigation: • Tank opened, contents sampled. • Soil sampled beneath Tank 1.	• A cast iron effluent line that discharged from Tank No. 1 was identified. • The cast iron effluent line was traced 80 ft south of Tank No. 1 using a transmitter mounted on a fiberglass rod. • Data suggest that the effluent line was truncated about 4.25 ft below ground surface (bgs) and left uncapped during the installation of a sanitary sewer line. • Distal end (south of the sanitary sewer line truncation) of cast iron pipe and leach field associated with Septic Tank No. 1 were not located; therefore, soil samples adjacent to the Tank 1 leach field were not collected.
2	Positively located in 1990 using shovel, probe and backhoe.	1995 Backhoe Exploration and Sampling. 1996 Limited Field Investigation: • Soil samples were collected from the trench located between Septic Tank No. 2 and the Radium Treatment System distribution box.	• Analysis of soil samples collected from within the tank did not identify any contaminants of concern in concentrations exceeding the US EPA Preliminary Remediation Goals (PRGs). • Radionuclide activities detected above background include Ra-226 up to 1.63 pCi/L and tritium at 180 pCi/L. Nitrate (up to 34 mg/kg) and sulfate (up to 49 mg/kg) were also detected above background.

Table 2-1. Investigative Status Summary of Domestic Septic Tanks (OU-4) Prior to 1997 DGI (continued)

Septic Tank	Location Status	Dates Investigated	Significant Findings
3	Positively located in 1990 using shovel, probe and backhoe.	Phase II Site Characterization: • No tank sediments, leach field material, or adjacent soils were sampled. 1996 Limited Field Investigation: • Underground utilities limited planned LFI exploration, thus septic tank sediment, leach line material, and adjacent soils were not sampled.	• No analytical data to characterize the contents or evaluate the potential impacts to the environment from these systems exists (WA, 1997).
4	Approximately known – based on installation records and personnel interviews.	Phase II Site Characterization: • No tank sediments, leach field material, or adjacent soils were sampled. 1996 Limited Field Investigation: • Underground utilities limited planned LFI exploration, thus septic tank sediment, leach line material, and adjacent soils were not sampled.	• No analytical data to characterize the contents or evaluate the potential impacts to the environment from these systems exists (WA, 1997).
5	Approximately known – based on installation records and personnel interviews.	Phase II Site Characterization: • No tank sediments, leach field material, or adjacent soils were sampled. 1996 Limited Field Investigation: • Underground utilities limited planned LFI exploration, thus septic tank sediment, leach line material, and adjacent soils were not sampled.	• No analytical data to characterize the contents or evaluate the potential impacts to the environment from these systems exists (WA, 1997).

Table 2-1. Investigative Status Summary of Domestic Septic Tanks (OU-4) Prior to 1997 DGI (continued)

Septic Tank	Location Status	Dates Investigated	Significant Findings
6	Approximately known – based on installation records and personnel interviews.	Phase II Site Characterization: • No tank sediments, leach field material, or adjacent soils were sampled. 1996 Limited Field Investigation: • Underground utilities limited planned LFI exploration, thus septic tank sediment, leach line material, and adjacent soils were not sampled.	• No analytical data to characterize the contents or evaluate the potential impacts to the environment from these systems exists (WA, 1997).
7	Installed adjacent to Cobalt-60 field – tank reportedly not used – abandoned in 1988 by Dames & Moore.	• Filled in place by Dames & Moore in 1988 (Dames & Moore, 1994). 1996 Limited Field Investigation: • Three soil samples collected adjacent to tank location	• Ra-226, Sr-90, and U-235 detected slightly above background. Nitrate, sulfate, and chloride also detected slightly above background. Trace concentrations of Formaldehyde(2.2 mg/kg) were detected in one sample (Figure 6).
Radium Treatment System	Positively located - consists of four radium treatment tanks, one distribution box, three dry wells, and one seepage trench.	1996 Limited Field Investigation: • Soil samples were collected from the seepage trench and near the dry wells from exploratory trenches and boreholes.	• The radionuclide activities reported in soil include Ra-226 up to 14.7 pCi/g and Sr-90 up to 1.8 pCi/g. • The northern extent of the seepage trench (whether it extends north of the northernmost dry well) is unknown.

3. DESCRIPTION OF 1997 DATA GAPS INVESTIGATION OF DOMESTIC SEPTIC TANK SYSTEMS (OU-4)

3.1 Summary of June 1997 Data Gaps Investigation Work Plan

In June 1997, IT prepared and submitted a Final Work Plan for the Data Gaps Investigation at LEHR. The 1997 DGI Work Plan was designed to satisfy the outstanding environmental issues and questions highlighted in Table 2-1.

Table 3-1, shown below, presents a brief summary of the goals, field activities, and significant findings of the 1997 DGI.

Table 3-1. Goals, Field Activities and Significant Findings of 1997 DGI

Domestic Septic Tank No.	Goal/Proposed DGI Field Activity	Actual Field Activity/ Sample Numbers	Significant Findings
1	Determine southern extent of Tank 1 cast iron effluent line south of point of truncation by sanitary sewer (Figure 2).	Excavated trenches T1, T1A, and T2 (Figure 2). Collected soil samples T1A01, T1A02, T1A03, and T1A04 from trench TIA, at 5.0, 7.5, and 12-ft depth.	• T1- no indication of Tank 1 effluent line or leach-field material. • T2 – located Tank 1 effluent line and leach-field material. • T1A – located southern extension of Tank 1 effluent line and leach-field material. At T1A, the Tank 1 effluent line appears truncated by newer sanitary sewer, trending at a high angle to the former Tank 1 effluent line. • Constituents detected above background are presented on Figure 2 and are summarized on Tables 4-1 and 4-2.
2	Not included in 1997 DGI		

Table 3-1. Goals, Field Activities and Significant Findings of 1997 DGI (continued)

Domestic Septic Tank No.	Goal/Proposed DGI Field Activity	Actual Field Activity/ Sample Numbers	Significant Findings
3	Locate domestic Septic Tank No. 3 and its associated leach-field.	• Hand-augered 13 borings to 5-ft depth. • Collected soil samples T301, T302 and T303 from leach-field at 8.0, 11.0, and 15.5-ft depth.	• Unable to locate the exact location of Tank No. 3. • Located and sampled Tank No. 3 leach-field. Constituents detected above background are presented in Figure 3 and are summarized in Tables 4-1 and 4-2.
4	Locate domestic Septic Tank No. 4 and its associated leach-field.	• Hand-augered 10 borings to 5 ft depth. • Collected samples T401, T402, and T403 from leach-field at 5.5, 8.0, and 13.0-ft depth.	• Unable to locate the exact location of Tank No. 4. • Located and sampled Tank No. 4 leach-field. Constituents detected above background are presented on Figure 3 and are summarized on Tables 4-1 and 4-2.
5	Locate the leach-field associated with domestic Septic Tank No. 5	• Hand-augered 5 borings to 5-ft depth. • No samples collected from Tank No. 5.	• Exact location of Tank No. 5 remains unknown (Figure 4). • No leach field material was encountered in DGI borings. • Subsequent review of DGI data and site drawings strongly suggest that: 1) Tank No. 5 is probably located in the paved area north of AH1; and, 2) Tank No. 5 may share a common leach field with Tank No. 1. Evidence supporting this relationship between Tank Nos. 1 and 5 are based on the excavation and identification of a second, westerly-directed 4-inch cast iron discharge pipe in trench TIA.

Table 3-1. Goals, Field Activities and Significant Findings of 1997 DGI (continued)

Domestic Septic Tank No.	Goal/Proposed DGI Field Activity	Actual Field Activity/ Sample Numbers	Significant Findings
6	Locate domestic Septic Tank No. 6 and its associated leach-field.	• Hand augered 14 borings to 5.0-ft depth. • Collected soil samples T601, T602, and T603 from leach-field at 5.5, 8.0 and 13.0 ft depth.	• Unable to locate the exact location of Tank No. 6. • Located and sampled Tank No. 6 leach-field. Constituents detected above background are presented in Figure 5 and are summarized in Tables 4-1 and 4-2.
Radium - 226 Seepage Trench	Determine northern extent of the Radium-226 Seepage Trench.	• Hand augered eight borings to 5-ft depth in order to find leach field material (i.e. sand, drain rock, gravel).	• No. 3 sand pack identified at depth in Boring Nos. 1, 3, 6, and 8 (Figure 2). No sand identified in Boring Nos. 5 and 2.
September 1997 Resampling of select boring locations	Resampled soil for VOCs, and pesticides/PCBs at domestic Septic Tank Nos. 1, 3, 4 and 6 (6/97 VOC data did not meet CLP standard quality measures; 6/97 pesticides/ PCBs data did not meet analytical holding time).	• Hand-augered borings at Septic Tank Nos. 1, 3, 4 and 6. • Collected soil samples T1A05, T1A06, T1A07 in the vicinity of trench T1A; T304, T305, T306 in the vicinity of domestic Septic Tank No. 3; T404, T405, T406 in the vicinity of domestic Septic Tank No. 4; and T604, T605, and T606 in the vicinity of domestic Septic Tank No. 6.	• All soil samples collected during the September 1997 resampling event were analyzed for pesticides/PCBs and VOCs. Additionally, samples T404 and T601 were analyzed for mercury and lead. Constituents detected above background are presented on Figures 2, 3 and 5 and are summarized on Tables 4-1 and 4-2.

3.2 Investigation Methodology

For the DGI, exploratory hand-augered borings were drilled in areas suspected of containing either a septic tank or associated leach line. Hand-augered exploration was selected over other sampling methods because it was anticipated that either the top of the septic tank or its associated leach line would be encountered at a shallow depth, within 3 to 5 ft of the ground surface. Furthermore, hand-augering is least likely to damage unmarked subsurface utilities, is amendable to limited access areas, and is cost effective.

As hand auger borings were installed, the field geologist described and logged the subsurface materials encountered in the borehole. In the event a solid surface (i.e., septic tank cover), or clean sand/gravel material, possibly indicative of an associated septic tank leach line were encountered, the

Table 3-1. Goals, Field Activities and Significant Findings of 1997 DGI (continued)

lateral extent of the feature was future investigated by installing additional hand-augered boreholes in the general vicinity of the feature encountered.

Native soil would cause abandonment of the borehole. A sand or gravel pack would indicate the possible presence of a leach line and would dictate further investigation. The findings of the DGI hand-augering program are summarized on Figures 2, 3, 4, 5 and 6.

4. EXTENT OF CONTAMINATION

4.1 Summary and Significant Findings

Tables 4-1 and 4-2, presented below, summarize the results of the 1997 DGI and previous domestic septic system investigations and present the radionuclides, metals and other chemicals detected at levels above their respective background concentrations. Attachment A presents the complete analytical data set for the DGI.

Table 4-1. Significant Findings for the seven domestic septic systems.

Domestic Septic Tank No.	Significant 1997 DGI Findings
1	• Investigation of trench T1A, located south of Septic Tank No. 1, detected radium-226, bismuth-214, thallium-208, uranium-235, gross alpha, manganese, vanadium, and zinc at activities/concentrations that are less than two times the background levels (Figure 2). Nitrate was detected at 23.5 mg/kg in the sample at 7.5-ft depth, less than three times the background level of 10 mg/kg. Tritium was detected at 340 pCi/L in the sample at 5-ft depth; the background level is 105 pCi/L. 1,2-Dichloroethene (1,2-DCE), trichloroethene (TCE), and Aroclor-1254 were also detected in the sample collected from 12.5-ft depth, at low concentrations of 0.004, 0.010, and 0.091 mg/kg respectively.
2	• Not sampled during 1997 DGI. Samples collected adjacent to the Ra-226 Treatment System distribution box during the Limited Field Investigation addressed this septic system. For the purposes of removal actions, this system will be included with the Ra-220 Treatment System.
3	• Radium-226, bismuth-214, thallium-208, uranium-235, arsenic, chromium (VI), copper, iron, manganese, and vanadium were detected in some soil samples at activities/concentrations that are less than two times the background levels (Figure 3). Zinc was detected at 258 mg/kg in the sample at 8-ft depth, slightly more than three times the background level of 82 mg/kg. Cesium-137 was detected at 0.126 pCi/g in the sample at 8-ft depth, less than three times the background level of 0.053 pCi/g.

Table 4-1. Significant Findings of the June 1997 and September 1997 Data Gaps Investigation (continued)

Domestic Septic Tank No.	Significant 1997 DGI Findings
4	• Total chromium, cadmium, lead, nickel, vanadium, and zinc were detected in some soil samples at concentrations that are less than two times the background levels (Figure 3). Mercury was detected at 1.52 mg/kg in the sample at 5.5-ft depth, slightly more than three times the background level of 0.49 mg/kg. Mercury was detected at a concentration of 0.99 mg/kg (less than two times background) for the co-located sample collected on 9/17/97 (LEHR-S-T404). Mercury was detected below background at sample depths of 8.0 and 13.0 ft. Tritium was detected at 1270 pCi/L in the sample at 8-ft depth; the background level is 105 pCi/L. Uranium-235 was detected at 0.16 pCi/g in the sample at 5.5-ft depth, less than three times the background level of 0.071 pCi/g.
5	• Although hand auger borings were advanced in the vicinity of Tank No. 5, no samples were collected for chemical analysis (Figure 4). The location of the tank was undetermined. However, it is believed that a building has been constructed atop Tank 5 and that the effluent drained to the Septic System No. 1 leach-field. Facility drawings indicate the effluent line from Tank 5 was installed at an angle in the approximate direction of Domestic Septic System No. 1 leach-field and a pipe was field located draining into the leach-field from the purported direction of Tank No. 5.
6	• Bismuth-214, thallium-208, iron, vanadium, and zinc were detected in some soil samples at activities/concentrations that are less than two times the background levels (Figure 5). Tritium was detected at 460 pCi/L in the sample at 8-ft depth; the background level is 105 pCi/L. Uranium-235 was detected at 0.16 pCi/g in the sample at 8-ft depth, less than three times the background level of 0.071 pCi/g. Trichloroethene (TCE) was also detected in the sample collected from 8.0-ft depth, at a low concentration of 0.004 mg/kg. • Mercury was detected at a concentration of 49.4 mg/kg in the sample collected from 5.5-ft depth on 6/12/97 (LEHR-S-T601) (Figure 5). However, a significantly lower concentration (0.15 mg/kg) was detected for a 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 (outside the holding time and therefore not validated) separately, on 11/7/97 and 11/12/97 respectively. Mercury was not detected in the clayey silt soil but was detected in the sand/gravel material at 16.8 mg/kg. The background level for mercury is 0.49 mg/kg.

Table 4-1. Significant Findings of the June 1997 and September 1997 Data Gaps Investigation (continued)

Domestic Septic Tank No.	Significant 1997 DGI Findings
7	• Not sampled during 1997 DGI. During the 1996 Limited Field Investigation, three soil samples were collected adjacent to the tank. • Radium-226, Strontium-90, Uranium-235, barium, copper, zinc, manganese, nitrate, sulfate, and chloride were undetected in soils at levels above background. Of these, only nitrate and one chloride concentration exceeded two time background. Formaldehyde was also detected in one sample at 2.2 mg/kg.

Table 4-2. Analytes Detected in Soil above Background, Domestic Septic Systems

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 4-2. Analytes Detected in Soil Above Background, Domestic Septic Systems (continued)

Analyte	Background	Max. Conc./Activity	Location	Depth	Date
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	12	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	-	0.010	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 (mg/kg)	-	2.2	Tank 7	12	8/16/96

5. REFERENCES

Dames & Moore, 1993, Phase II Site Characterization Report, Laboratory for Energy-Related Health Research (LEHR) Environmental Restoration, University of California, Davis (UC Davis).

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

IT Corporation, 1996, Limited Field Investigation Work Plan, LEHR, UC Davis.

IT Corporation, 1997, Final Work Plan for Data Gaps Investigation at LEHR, UC Davis.

WA, 1997, Final Site Characterization Summary Report for the DOE Areas at LEHR, UC Davis.

FIGURES

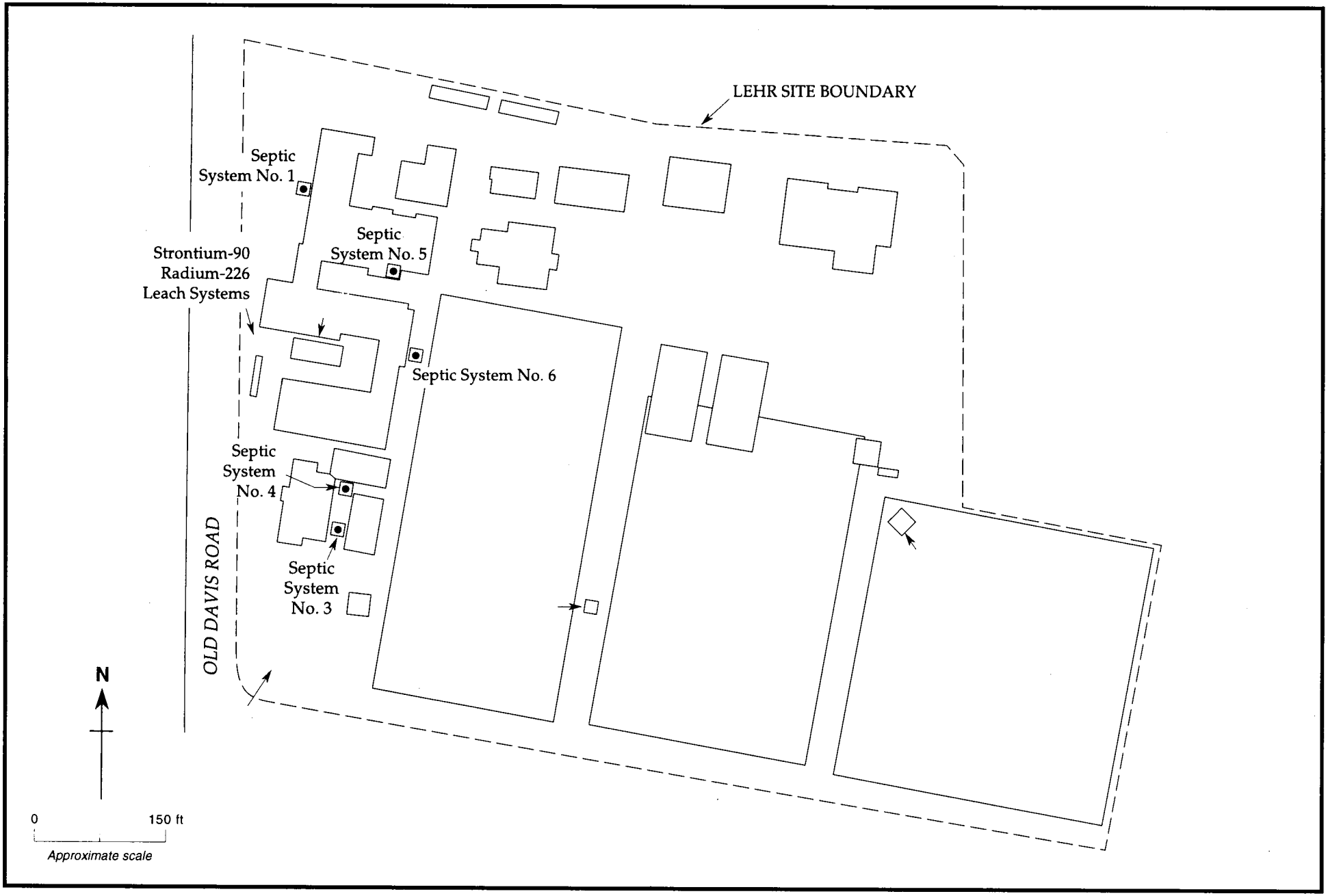

Figure 1. Locations of Domestic Septic Tanks and Radium-226 Seepage Trench Sampled During 1997 Data Gaps Investigation

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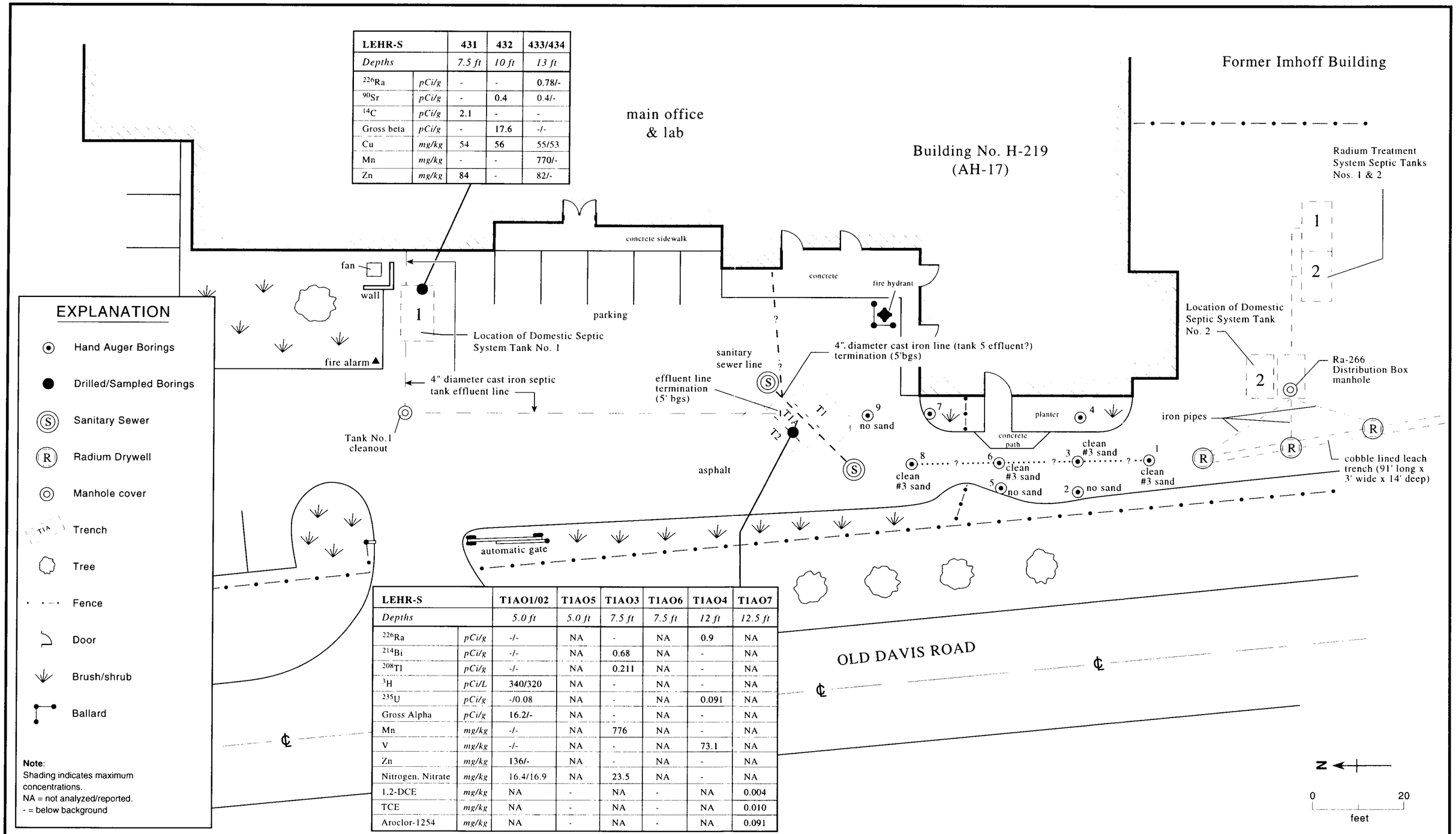
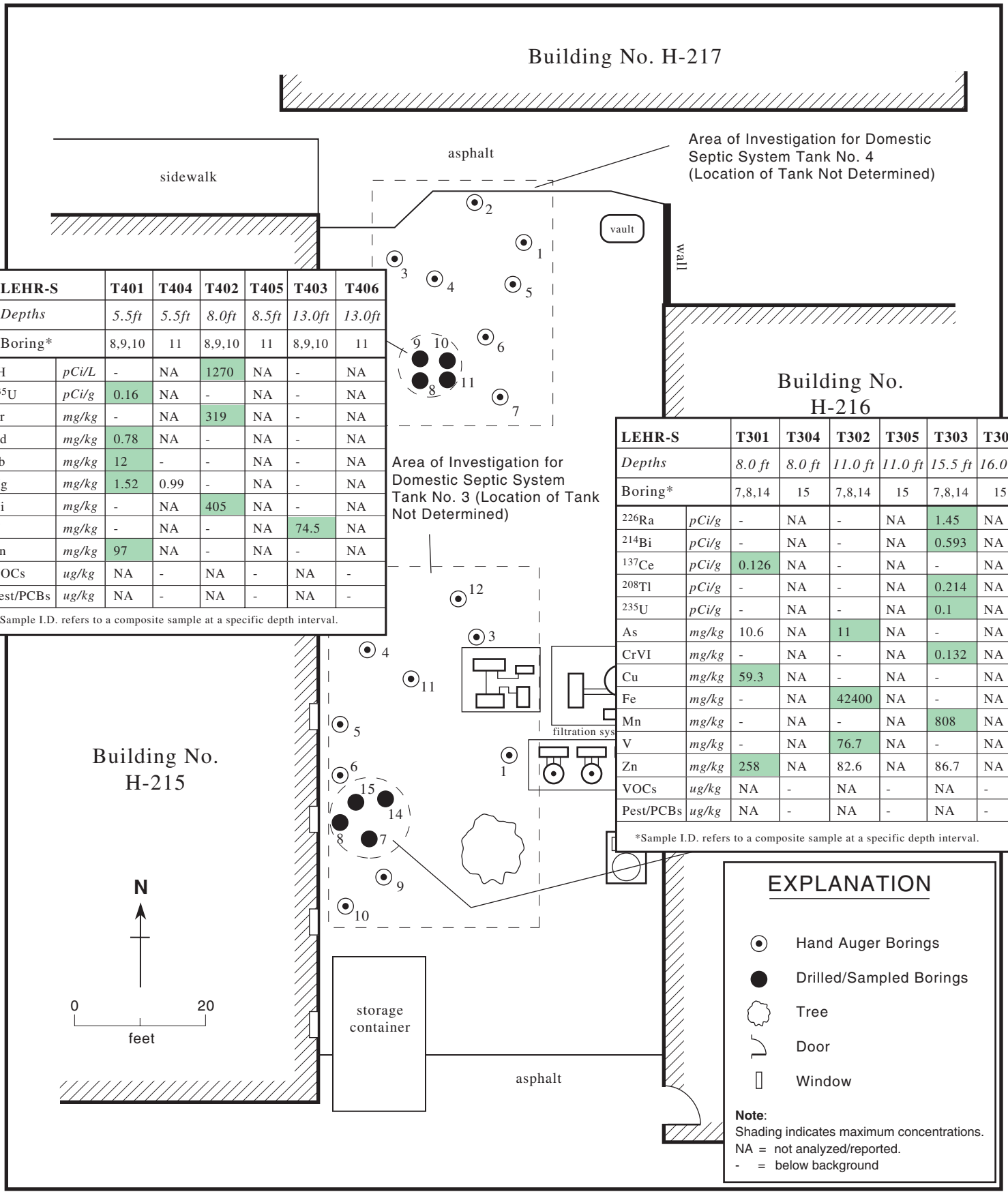


LEHR-S		431	432	433/434
Depths		*7.5 ft*	*10 ft*	*13 ft*
^{226}Ra	*pCi/g*	-	-	0.78/-
^{90}Sr	*pCi/g*	-	0.4	0.4/-
^{14}C	*pCi/g*	2.1	-	-
Gross beta	*pCi/g*	-	17.6	-/-
Cu	*mg/kg*	54	56	55/53
Mn	*mg/kg*	-	-	770/-
Zn	*mg/kg*	84	-	82/-

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 2. Boring Locations, Trench Locations, and Analytic Results Above Background for Soil Samples, Domestic Septic System No.1 and Radium-226 Leach System

Weiss Associates



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	1270	NA	-	NA
^{235}U	*pCi/g*	0.16	NA	-	NA	-	NA
Cr	*mg/kg*	-	NA	319	NA	-	NA
Cd	*mg/kg*	0.78	NA	-	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}Ce	*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	42400	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 3. Boring Locations and Analytic Results Above Background for Soil Samples, Domestic Septic Systems Nos. 3 and 4

Weiss Associates

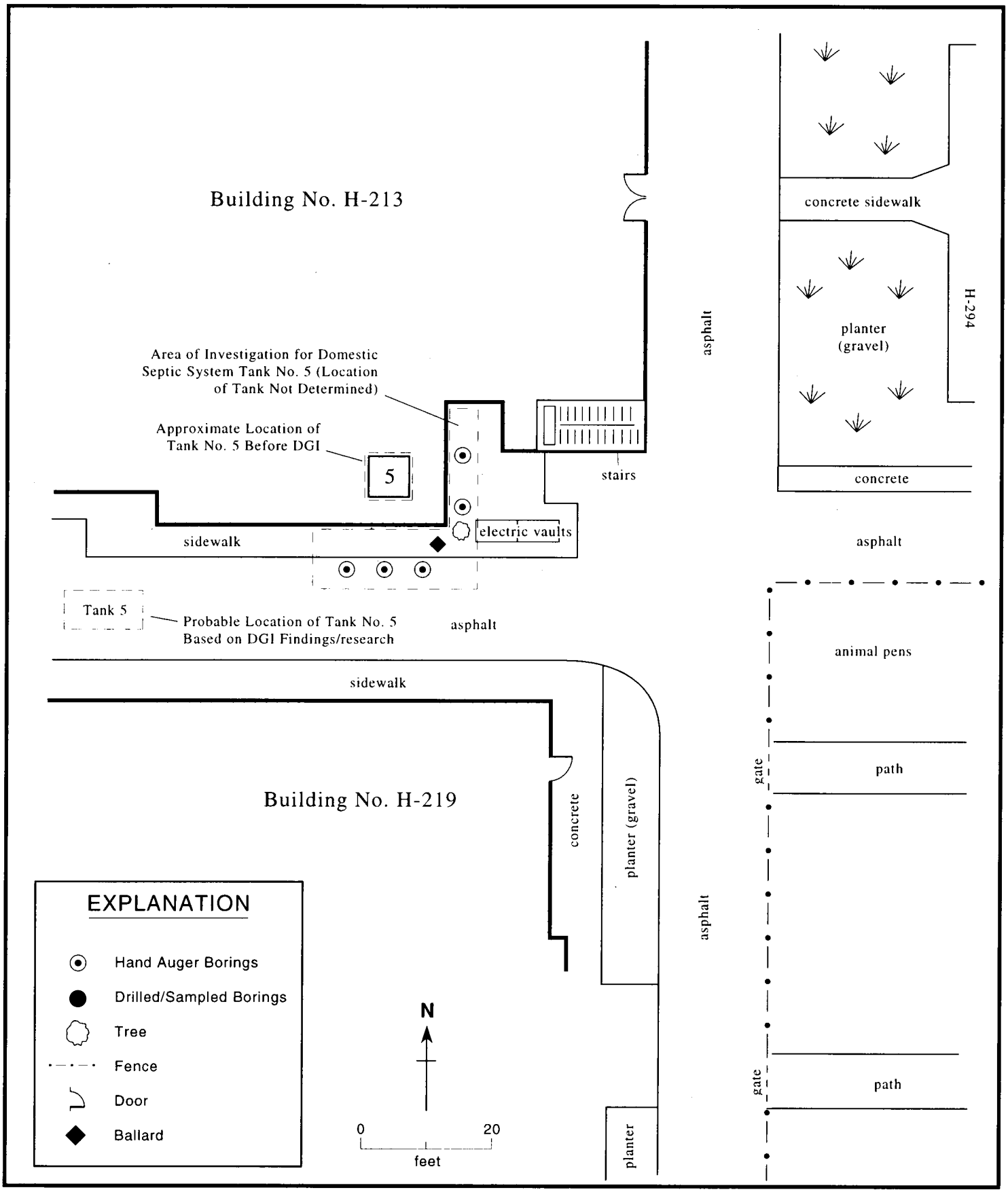
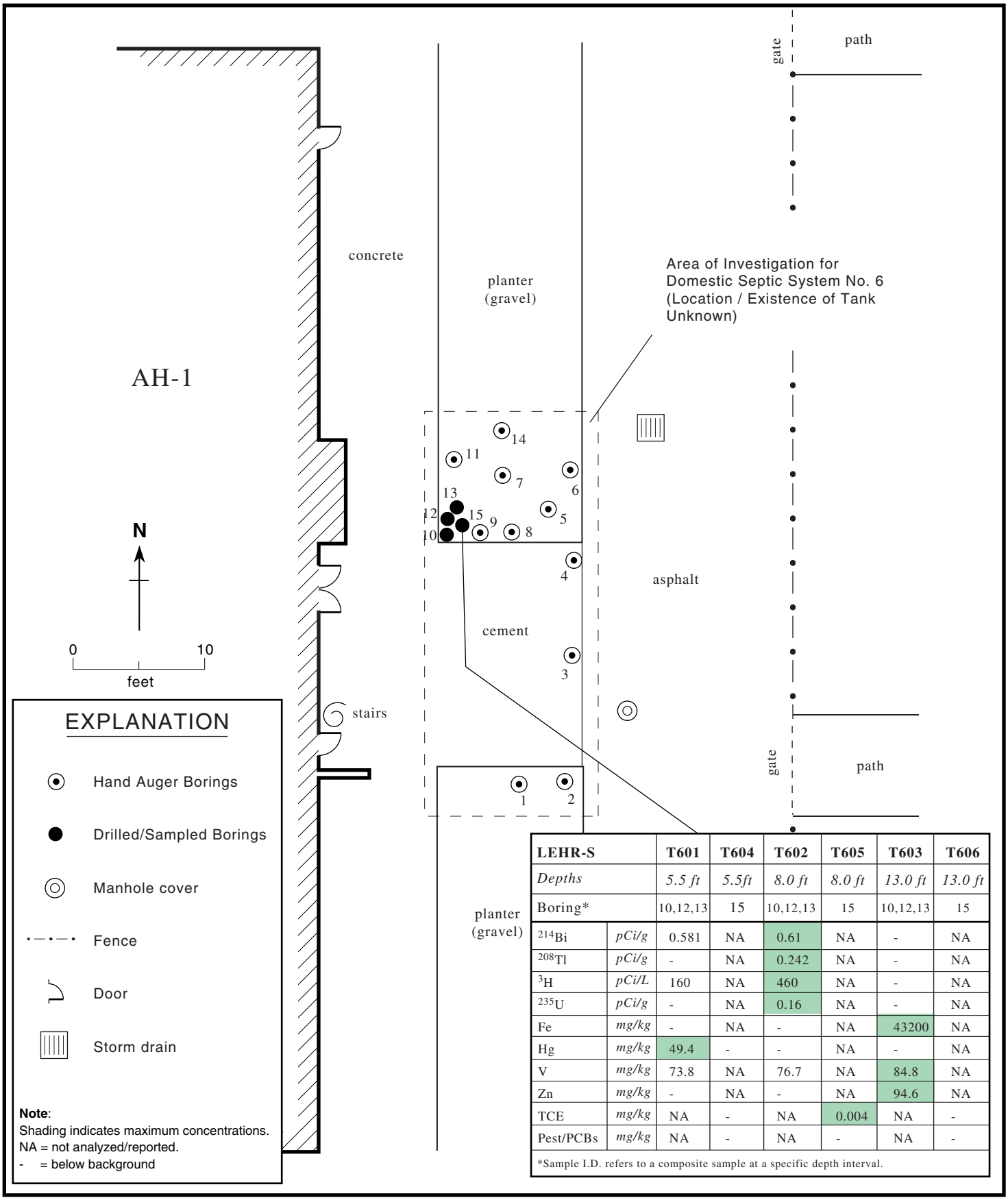


Figure 4. Boring Locations in the Vicinity of Domestic Septic Tank 5

Weiss Associates

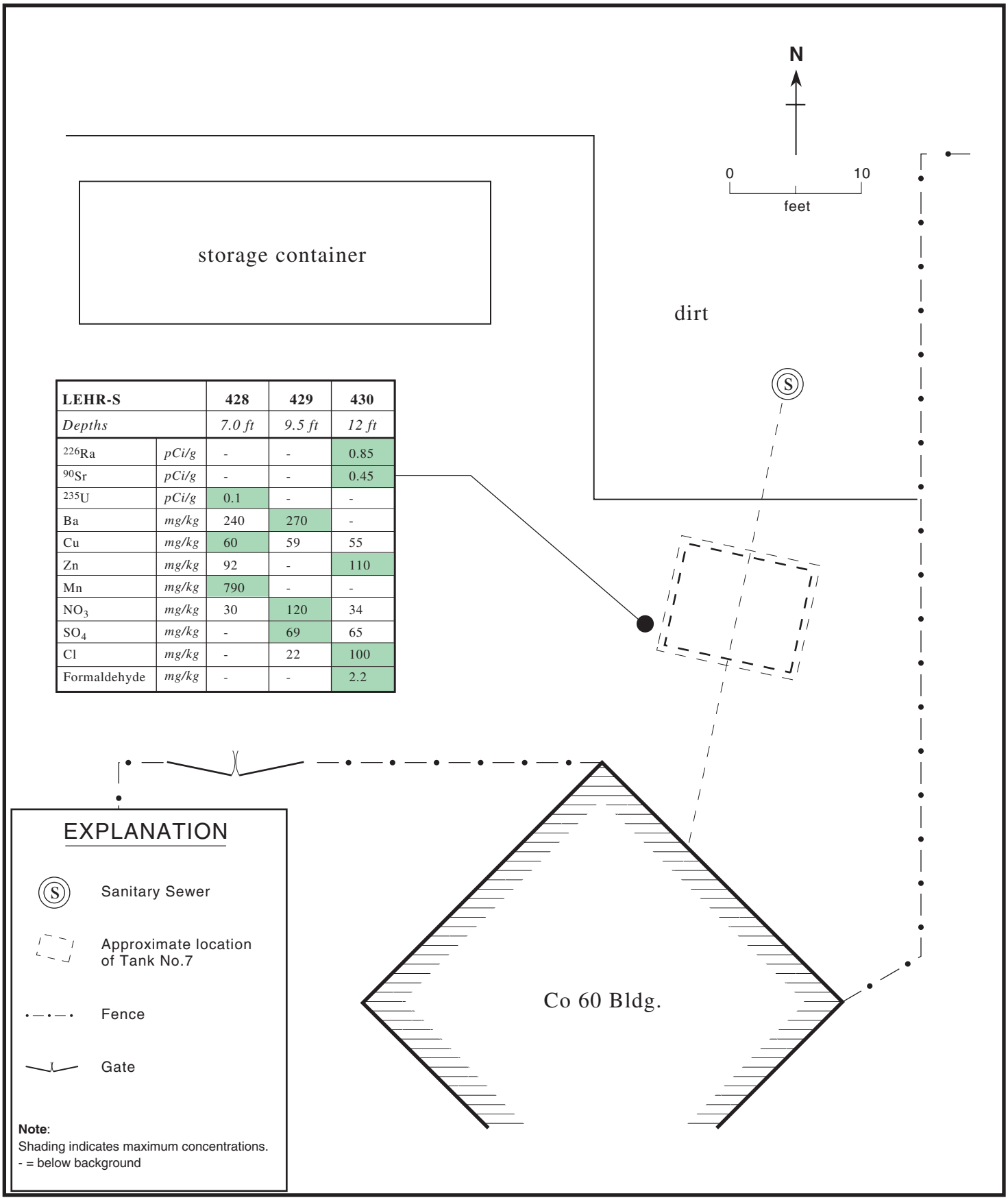


LEHR-S		T601	T604	T602	T605	T603	T606
Depths		*5.5 ft*	*5.5ft*	*8.0 ft*	*8.0 ft*	*13.0 ft*	*13.0 ft*
Boring*		10,12,13	15	10,12,13	15	10,12,13	15
^{214}Bi	*pCi/g*	0.581	NA	0.61	NA	-	NA
^{208}Tl	*pCi/g*	-	NA	0.242	NA	-	NA
^{3}H	*pCi/L*	160	NA	460	NA	-	NA
^{235}U	*pCi/g*	-	NA	0.16	NA	-	NA
Fe	*mg/kg*	-	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. Boring Locations and Analytic Results Above Background for Soil Samples, Domestic Septic System No. 6

Weiss Associates



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 6. Analytic Results Above Background for LFI Soil Samples, Domestic Septic System No. 7

Weiss Associates

ATTACHMENT A

Data Gap Investigation - Analytical Results for Direct Sampling Systems

Lab_chem	Units	LEHR-S-T105	LEHR-S-T1[illegible]	[illegible]	[illegible]	[illegible]	LEHR-S-T306	LEHR-S-T404
Volatile Organics								
1,1,1-Trichloroethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,1,2,2-Tetrachloroethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,1,2-Trichloroethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,1-Dichloroethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,1-Dichloroethene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,2-Dichloroethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,2-Dichloroethene (total)	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
1,2-Dichloropropane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
2-Butanone	ug/kg	<20 UJilU	7 UJilU	<12 UJilU	4 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
2-Hexanone	ug/kg	<20 UJilU	12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
4-Methyl-2-Pentanone	ug/kg	<20 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Acetone	ug/kg	14 UJzilB	11 UJzilBJ	<12 UJilU	9 UJzilBJ	9 UJzilBJ	17 UJzilB	11 UJzilBJ
Benzene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Bromodichloromethane	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Bromoform	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Bromomethane	ug/kg	10 UJzilBJ	9 UJzilBJ	<12 UJilU	23 UJzlB	21 UJzilB	10 UJzilBJ	7 UJzilBJ
Carbon Disulfide	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Carbon Tetrachloride	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Chlorobenzene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Chloroethane	ug/kg	<10 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Chloroform	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Chloromethane	ug/kg	4 UJzilB	6 UJ	[illegible]	[illegible]	10 UJzilB	<12 UJilU	<12 UJilU
cis-1,3-Dichloropropene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Dibromochloromethane	ug/kg	<5 UJilU	12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
EthylBenzene	ug/kg	5 UJilU	<12 UJilU	12 UJilU	[illegible]	<11 UJilU	<12 UJilU	<12 UJilU
Methylene Chloride	ug/kg	5 UJilU	1 UJilU	<12 UJilU	<12	1 UJilU	<12 UJilU	<12 UJilU
Styrene	ug/kg	<5 UJilU	12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Tetrachloroethene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
Toluene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU
trans-1,3-Dichloropropene	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 UJilU	<11 UJilU	<12 UJilU	<12 UJilU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A05	LEHR-S-T1A06	LEHR-S-T1A07	LEHR-S-T304	LEHR-S-T305	LEHR-S-T306	LEHR-S-T404
Volatile Organics								
Trichloroethene	ug/kg	<5 UJilU	<12 UJilU	10 JilJ	<12 IU	<11 UJilU	<12 UJilU	<12 UJilU
Vinyl Chloride	ug/kg	<10 UJilU	<12 UJilU	<12 UJilU	<12 IU	<11 UJilU	<12 UJilU	<12 UJilU
Xylenes (Total)	ug/kg	<5 UJilU	<12 UJilU	<12 UJilU	<12 IU	<11 UJilU	<12 UJilU	<12 UJilU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T105	LEHR-S-T203	LEHR-S-T204	LEHR-S-T205	LEHR-S-T306	LEHR-S-T404

Data Validation Qualifier Definitions:

The following definitions provide brief explanations of the data validation qualifiers assigned to results in the data review process.

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.

Data Validation Reason Code Definitions:

The following descriptions provide brief explanation of the cause for qualification of the results determined in the data review process. These reason codes are used in combination with data qualifier, i.e. "Uz" indicated the analyte is non-detect due to method blank contamination.

c = Calibration failure; poor or unstable response.
d = Matrix duplicate imprecision or matrix spike/matrix spike duplicate imprecision.
f = Field replicate or duplicate imprecision.
h = Holding time violation.
i = Internal standard failure.
l = Laboratory control sample (LCS) recovery failure.
m = Matrix spike/matrix spike duplicate (MS/MSD) recovery failure.
s = Surrogate spike recovery failure.
z = Method blank contamination

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T405	LEHR-S-T406	LEHR-S-T604	LEHR-S-T605	LEHR-S-T606
Volatile Organics						
1,1,1-Trichloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,1,2,2-Tetrachloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,1,2-Trichloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,1-Dichloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,1-Dichloroethene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,2-Dichloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,2-Dichloroethene (total)	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
1,2-Dichloropropane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
2-Butanone	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
2-Hexanone	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
4-Methyl-2-Pentanone	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Acetone	ug/kg	23 UJzlB	9 UJzlBJ	13 UJzilB	5 UJzlBJ	10 UJzlBJ
Benzene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Bromodichloromethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Bromoform	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Bromomethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Carbon Disulfide	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Carbon Tetrachloride	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Chlorobenzene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Chloroethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Chloroform	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Chloromethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
cis-1,3-Dichloropropene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Dibromochloromethane	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
EthylBenzene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Methylene Chloride	ug/kg	27 UJzlB	<12 IU	<13 UJilU	<12 IU	<13 IU
Styrene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Tetrachloroethene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
Toluene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU
trans-1,3-Dichloropropene	ug/kg	<12 IU	<12 IU	<13 UJilU	<12 IU	<13 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T405	LEHR-S-T406	LEHR-S-T604	LEHR-S-T605	LEHR-S-T606
				Volatile Organics		
Trichloroethene	ug/kg	<12 UJ	<12 UJ	<13 UJ	<12 UJ	<13 UJ
Vinyl Chloride	ug/kg	<12 UJ	<12 UJ	<13 UJ	<12 UJ	<13 UJ
Xylenes (Total)	ug/kg	<12 UJ	<12 UJ	<13 UJ	<12 UJ	<13 UJ

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T405	LEHR-S-T406	LEHR-S-T604	LEHR-S-T605	LEHR-S-T606

Data Validation Qualifier Definitions:

The following definitions provide brief explanations of the data validation qualifiers assigned to results in the data review process.

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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.

Data Validation Reason Code Definitions:

The following descriptions provide brief explanation of the cause for qualification of the results determined in the data review process. These reason codes are used in combination with data qualifier, i.e. "Uz" indicated the analyte is non-detect due to method blank contamination.

c = Calibration failure; poor or unstable response.
d = Matrix duplicate imprecision or matrix spike/matrix spike duplicate imprecision.
f = Field replicate or duplicate imprecision.
h = Holding time violation.
i = Internal standard failure.
l = Laboratory control sample (LCS) recovery failure.
m = Matrix spike/matrix spike duplicate (MS/MSD) recovery failure.
s = Surrogate spike recovery failure.
z = Method blank contamination

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303
Semivolatile Organics								
1,2,4-Trichlorobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
1,2-Dichlorobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
1,3-Dichlorobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
1,4-Dichlorobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,2'-oxybis(1-Chloropropane)	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,4,5-Trichlorophenol	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
2,4,6-Trichlorophenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,4-Dichlorophenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,4-Dimethylphenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,4-Dinitrophenol	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
2,4-Dinitrotoluene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2,6-Dinitrotoluene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2-Chloronaphthalene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2-Chlorophenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2-Methyl-4,6-dinitrophenol	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
2-Methylnaphthalene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2-Methylphenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
2-Nitroaniline	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
2-Nitrophenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
3,3'-Dichlorobenzidine	ug/kg	<360 UJclU	<360 UJclU	<370 UJclU	<390 UJclU	<360 UJclU	<390 UJclU	<390 UJclU
3-Nitroaniline	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
4-Bromophenyl Phenyl Ether	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
4-Chloro-3-Methylphenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
4-Chloroaniline	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
4-Chlorophenyl Phenyl Ether	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
4-Methylphenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
4-Nitroaniline	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
4-Nitrophenol	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
Acenaphthene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Acenaphthylene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303
Semivolatile Organics								
Anthracene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzo(a)anthracene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzo(a)pyrene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzo(b)fluoranthene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzo(g,h,i)perylene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzo(k)fluoranthene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Benzyl Butyl Phthalate	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Bis(2-Chloroethoxy)methane	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Bis(2-Chloroethyl)ether	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Bis(2-Ethylhexyl)phthalate	ug/kg	<360 IU	<360 IU	<370 IU	23 JB	45 JB	53 JB	45 JB
Carbazole	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Chrysene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Di-n-Butylphthalate	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Di-n-Octylphthalate	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Dibenzo(a,h)anthracene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Dibenzofuran	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Diethyl Phthalate	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Dimethyl Phthalate	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Fluoranthene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Fluorene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Hexachlorobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Hexachlorobutadiene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Hexachlorocyclopentadiene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Hexachloroethane	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Indeno(1,2,3-cd)pyrene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Isophorone	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
N-Nitrosodi-n-propylamine	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
N-Nitrosodiphenylamine	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Naphthalene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Nitrobenzene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303
Semivolatile Organics								
Pentachlorophenol	ug/kg	<880 IU	<880 IU	<910 IU	<950 IU	<870 IU	<950 IU	<950 IU
Phenanthrene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Phenol	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU
Pyrene	ug/kg	<360 IU	<360 IU	<370 IU	<390 IU	<360 IU	<390 IU	<390 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303

Data Validation Qualifier Definitions:

The following definitions provide brief explanations of the data validation qualifiers assigned to results in the data review process.

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.

Data Validation Reason Code Definitions:

The following descriptions provide brief explanation of the cause for qualification of the results determined in the data review process. These reason codes are used in combination with data qualifier, i.e. "Uz" indicated the analyte is non-detect due to method blank contamination.

c = Calibration failure; poor or unstable response.
d = Matrix duplicate imprecision or matrix spike/matrix spike duplicate imprecision.
f = Field replicate or duplicate imprecision.
h = Holding time violation.
i = Internal standard failure.
l = Laboratory control sample (LCS) recovery failure.
m = Matrix spike/matrix spike duplicate (MS/MSD) recovery failure.
s = Surrogate spike recovery failure.
z = Method blank contamination

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603
			Semivolatile Organics				
1,2,4-Trichlorobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
1,2-Dichlorobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
1,3-Dichlorobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
1,4-Dichlorobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,2'-oxybis(1-Chloropropane)	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,4,5-Trichlorophenol	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
2,4,6-Trichlorophenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,4-Dichlorophenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,4-Dimethylphenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,4-Dinitrophenol	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
2,4-Dinitrotoluene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2,6-Dinitrotoluene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2-Chloronaphthalene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2-Chlorophenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2-Methyl-4,6-dinitrophenol	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
2-Methylnaphthalene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2-Methylphenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
2-Nitroaniline	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
2-Nitrophenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
3,3'-Dichlorobenzidine	ug/kg	<360 UJcIU	<350 UJcIU	<390 UJcIU	<380 UJcIU	<390 UJcIU	<410 UJcIU
3-Nitroaniline	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
4-Bromophenyl Phenyl Ether	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
4-Chloro-3-Methylphenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
4-Chloroaniline	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
4-Chlorophenyl Phenyl Ether	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
4-Methylphenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
4-Nitroaniline	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
4-Nitrophenol	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
Acenaphthene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Acenaphthylene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603
Semivolatile Organics							
Anthracene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzo(a)anthracene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzo(a)pyrene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzo(b)fluoranthene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzo(g,h,i)perylene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzo(k)fluoranthene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Benzyl Butyl Phthalate	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Bis(2-Chloroethoxy)methane	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Bis(2-Chloroethyl)ether	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Bis(2-Ethylhexyl)phthalate	ug/kg	59 JU	65 JU	89 JU	120 JU	380 JU	250 JU
Carbazole	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Chrysene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Di-n-Butylphthalate	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Di-n-Octylphthalate	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Dibenzo(a,h)anthracene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Dibenzofuran	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Diethyl Phthalate	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Dimethyl Phthalate	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Fluoranthene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Fluorene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Hexachlorobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Hexachlorobutadiene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Hexachlorocyclopentadiene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Hexachloroethane	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Indeno(1,2,3-cd)pyrene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Isophorone	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
N-Nitrosodi-n-propylamine	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
N-Nitrosodiphenylamine	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Naphthalene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Nitrobenzene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603
Semivolatile Organics							
Pentachlorophenol	ug/kg	<870 IU	<850 IU	<940 IU	<910 IU	<950 IU	<1,000 IU
Phenanthrene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Phenol	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU
Pyrene	ug/kg	<360 IU	<350 IU	<390 IU	<380 IU	<390 IU	<410 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603

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f = Field replicate or duplicate imprecision.
h = Holding time violation.
i = Internal standard failure.
l = Laboratory control sample (LCS) recovery failure.
m = Matrix spike/matrix spike duplicate (MS/MSD) recovery failure.
s = Surrogate spike recovery failure.
z = Method blank contamination

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A05	LEHR-S-T1A06	LEHR-S-T1A07	LEHR-S-T304	LEHR-S-T305	LEHR-S-T306	LEHR-S-T404
Pesticides and PCBs								
4,4'-DDD	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
4,4'-DDE	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
4,4'-DDT	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Aldrin	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
alpha-BHC	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
alpha-Chlordane	ug/kg	<2.2 UJslU	<2.1 IU	<2 UJIUX	<2 IU	<1.9 IU	<2 IU	<2 IU
Arochlor-1016	ug/kg	<43 UJslU	<41 IU	<39 IU	<38 IU	<37 IU	<39 IU	<38 IU
Arochlor-1221	ug/kg	<86 UJslU	<83 IU	<80 IU	<78 IU	<75 IU	<79 IU	<78 IU
Arochlor-1232	ug/kg	<43 UJslU	<41 IU	<39 IU	<38 IU	<37 IU	<39 IU	<38 IU
Arochlor-1242	ug/kg	<43 UJslU	<41 IU	<39 IU	<38 IU	<37 IU	<39 IU	<38 IU
Arochlor-1248	ug/kg	<43 UJslU	<41 IU	<39 IU	<38 IU	<37 IU	<39 IU	<38 IU
Arochlor-1254	ug/kg	<43 UJslU	<41 IU	91 JIP	<38 IU	<37 IU	<39 IU	<38 IU
Arochlor-1260	ug/kg	<43 UJslU	<41 IU	<39 IU	<38 IU	<37 IU	<39 IU	<38 IU
beta-BHC	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
delta-BHC	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
Dieldrin	ug/kg	<4.3 UJslU	<4.1 IU	4 JIPX	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Endosulfan I	ug/kg	<4.3 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
Endosulfan II	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Endosulfan Sulfate	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Endrin	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Endrin Aldehyde	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Endrin Ketone	ug/kg	<4.3 UJslU	<4.1 IU	<3.9 IU	<3.8 IU	<3.7 IU	<3.9 IU	<3.8 IU
Gamma-BHC	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
gamma-Chlordane	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
Heptachlor	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
Heptachlor Epoxide	ug/kg	<2.2 UJslU	<2.1 IU	<2 IU	<2 IU	<1.9 IU	<2 IU	<2 IU
Methoxychlor	ug/kg	<22 UJslU	<21 IU	<20 IU	<20 IU	<19 IU	<20 IU	<20 IU
Toxaphene	ug/kg	<220 UJslU	<210 IU	<200 IU	<200 IU	<190 IU	<200 IU	<200 IU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A05	LEHR-S-T1A06	LEHR-S-T1A07	LEHR-S-T304	LEHR-S-T305	LEHR-S-T306	LEHR-S-T404

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i = Internal standard failure.
l = Laboratory control sample (LCS) recovery failure.
m = Matrix spike/matrix spike duplicate (MS/MSD) recovery failure.
s = Surrogate spike recovery failure.
z = Method blank contamination

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T405	LEHR-S-T406	LEHR-S-T604	LEHR-S-T605	LEHR-S-T606
			Pesticides and PCBs			
4,4'-DDD	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
4,4'-DDE	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
4,4'-DDT	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Aldrin	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
alpha-BHC	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
alpha-Chlordane	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Arochlor-1016	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
Arochlor-1221	ug/kg	<82 IU	<79 IU	<85 IU	<81 IU	<87 UJsIU
Arochlor-1232	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
Arochlor-1242	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
Arochlor-1248	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
Arochlor-1254	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
Arochlor-1260	ug/kg	<40 IU	<39 IU	<42 IU	<40 IU	<43 UJsIU
beta-BHC	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
delta-BHC	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Dieldrin	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Endosulfan I	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Endosulfan II	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Endosulfan Sulfate	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Endrin	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Endrin Aldehyde	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Endrin Ketone	ug/kg	<4 IU	<3.9 IU	<4.2 IU	<4 IU	<4.3 UJsIU
Gamma-BHC	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
gamma-Chlordane	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Heptachlor	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Heptachlor Epoxide	ug/kg	<2.1 IU	<2 IU	<2.2 IU	<2.1 IU	<2.2 UJsIU
Methoxychlor	ug/kg	<21 IU	<20 IU	<22 IU	<21 IU	<22 UJsIU
Toxaphene	ug/kg	<210 IU	<200 IU	<220 IU	<210 IU	<220 UJsIU

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T405	LEHR-S-T406	LEHR-S-T604	LEHR-S-T605	LEHR-S-T606

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303
Metals								
Antimony	mg/kg	<0.39 UJmlUN	<0.44 UJmlUN	<0.44 UJmlUN	<0.47 UJmlUN	<0.43 UJmlUN	<0.46 UJmlUN	<0.45 UJmlUN
Arsenic	mg/kg	6.13 Jdl*	7 Jdl*	7.42 Jdl*	8.2 Jdl*	10.6 Jdl*	11 Jdl*	8.84 Jdl*
Barium	mg/kg	148 Jdl*	195 Jdl*	206 Jdl*	197 Jdl*	141 Jdl*	188 Jdl*	227 Jdl*
Beryllium	mg/kg	0.31	0.38	0.42	0.44	0.32	0.5	0.52
Cadmium	mg/kg	<0.58 IU	<0.65 IU	<0.66 IU	<0.71 IU	<0.65 IU	<0.69 IU	<0.68 IU
Chromium	mg/kg	93.3 Jdl*	140 Jdl*	130 Jdl*	112 Jdl*	140 Jdl*	139 Jdl*	85.1 Jdl*
Chromium, Hexavalent (+6)	mg/kg	<0.033 IU	<0.033 IU	<0.034 IU	0.044 IB	0.048	0.0848	0.132
Cobalt	mg/kg	16.7 Jdl*	20.9 Jdl*	19.8 Jdl*	24 Jdl*	19.3 Jdl*	23.9 Jdl*	23.1 Jdl*
Copper	mg/kg	30.5 Jdl*	35.5 Jdl*	39.3 Jdl*	41 Jdl*	59.3 Jdl*	44.8 Jdl*	44.4 Jdl*
Iron	mg/kg	30,200 Jdl*	36,400 Jdl*	37,200 Jdl*	36,800 Jdl*	34,900 Jdl*	42,400 Jdl*	39,000 Jdl*
Lead	mg/kg	5.5 Jdl*	6.11 Jdl*	6.33 Jdl*	7.01 Jdl*	7.19 Jdl*	7.21 Jdl*	8.32 Jdl*
Manganese	mg/kg	528	629	776	695	680	663	808
Mercury	mg/kg	<0.11 IU	0.4	<0.11 IU	<0.11 IU	0.41	<0.1 IU	<0.11 IU
Nickel	mg/kg	159 Jdl*	240 Jdl*	204 Jdl*	182 Jdl*	226 Jdl*	248 Jdl*	165 Jdl*
Selenium	mg/kg	<0.58 IU	<0.65 IU	<0.66 IU	<0.71 IU	<0.65 IU	<0.69 IU	<0.68 IU
Silver	mg/kg	<0.77 IU	<0.87 IU	<0.88 IU	<0.95 IU	<0.87 IU	<0.92 IU	<0.91 IU
Thallium	mg/kg	<0.77 IU	<0.87 IU	<0.88 IU	<0.95 IU	<0.87 IU	<0.92 IU	1.1 JIB
Vanadium	mg/kg	56.8	66.7	69.2	73.1	63.2	76.7	72.2
Zinc	mg/kg	136 JmcdlEN	74.1 Jmcdl*N	78.7 Jmcdl*N	79.9 Jmcdl*N	258 Jmcdl*E	82.6 Jmcdl*E	86.7 Jmcdl*E

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603
				Metals			
Antimony	mg/kg	<0.42 UJmlUN	<0.42 UJmlUN	<0.44 UJmlUN	<0.43 UJmlUN	<0.47 UJmlUN	<0.5 UJmlUN
Arsenic	mg/kg	8.3 Jdl*	7.2 Jdl*	8.9 Jdl*	7.93 Jdl*	9.2 Jdl*	9.3 Jdl*
Barium	mg/kg	179 Jdl*	133 Jdl*	209 Jdl*	195 Jdl*	221 Jdl*	214 Jdl*
Beryllium	mg/kg	0.4	0.29	0.45	0.44	0.45	0.54
Cadmium	mg/kg	0.78	<0.64 IU	<0.66 IU	<0.65 IU	<0.71 IU	<0.75 IU
Chromium	mg/kg	163 Jdl*	319 Jdl*	140 Jdl*	126 Jdl*	112 Jdl*	113 Jdl*
Chromium, Hexavalent (+6)	mg/kg	0.036	0.076	0.099	0.082	0.086	0.089
Cobalt	mg/kg	21.2 Jdl*	24.3 Jdl*	22.4 Jdl*	21.6 Jdl*	25.9 Jdl*	22.3 Jdl*
Copper	mg/kg	48.1 Jdl*	25.1 Jdl*	38.7 Jdl*	38.6 Jdl*	44.4 Jdl*	47.4 Jdl*
Iron	mg/kg	37,300 Jdl*	37,800 Jdl*	39,400 Jdl*	38,600 Jdl*	39,900 Jdl*	43,200 Jdl*
Lead	mg/kg	12 Jdl*	5.32 Jdl*	6.8 Jdl*	6.7 Jdl*	7.2 Jdl*	8.1 Jdl*
Manganese	mg/kg	638	643	643	562	670	709
Mercury	mg/kg	1.52	0.24	<0.11 IU	49.4	<0.11 IU	<0.12 IU
Nickel	mg/kg	249 Jdl*	405 Jdl*	217 Jdl*	228 Jdl*	198 Jdl*	211 Jdl*
Selenium	mg/kg	<0.63 IU	<0.64 IU	<0.66 IU	<0.65 IU	<0.71 IU	<0.75 IU
Silver	mg/kg	<0.84 IU	<0.85 IU	<0.88 IU	<0.86 IU	<0.95 IU	<1 IU
Thallium	mg/kg	<0.84 IU	<0.85 IU	<0.88 IU	<0.86 IU	<0.95 IU	1.3
Vanadium	mg/kg	71.5	57.4	74.5	73.8	76.7	84.8
Zinc	mg/kg	97 Jmcdl*E	56.9 Jmcdl*E	76.6 Jmcdl*E	81.8 Jmcdl*E	80.6 Jmcdl*E	94.6 Jmcdl*E

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T1A01(5.0)			LEHR-S-T1A02(5.0)			LEHR-S-T1A03(7.5)			LEHR-S-T1A04(12.0)		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Radionuclides														
Actinium-228	RAD	pCi/g	0.48	0.13	0.11	0.53	0.18	0.14	0.67	0.2	0.17	0.621	0.1	0.1
Bismuth-212	RAD	pCi/g	0.29	0.26	0.21	0.49	0.28	0.26	0.64	0.33	0.3	0.33	0.17	0.15
Bismuth-214	RAD	pCi/g	0.441	0.079	0.086	0.424	0.09	0.096	0.68	0.095	0.12	0.476	0.056	0.073
Carbon-14	RAD	pCi/g	0.14 Jml	0.51	0.29	-0.09 Jml	0.53	0.28	0.05 Jml	0.53	0.3	0.03 Jml	0.47	0.26
Cesium-137	RAD	pCi/g	-0.003	0.03	0.017	-0.005	0.052	0.029	0.009	0.048	0.035	0.001	0.027	0.016
Cobalt-60	RAD	pCi/g	-0.001	0.037	0.015	0.011	0.045	0.021	-0.015	0.051	0.021	-0.002	0.024	0.014
Gross Alpha	RAD	pCi/g	16.2 Jml	6.1	6.5	5.4 Jml	6.5	4.5	2.2 Jml	7.3	4.1	9.9 Jml	6.7	5.5
Gross Beta	RAD	pCi/g	14.7	6.2	4.5	11.7	6.5	4.4	15.3	5.9	4.3	15.6	5.6	4.2
Lead-210	RAD	pCi/g	1	3.9	2.8	0.62	1	0.69	1.3	1.2	0.82	1	2.9	2.1
Lead-212	RAD	pCi/g	0.546	0.063	0.083	0.579	0.077	0.096	0.67	0.077	0.11	0.513	0.045	0.07
Lead-214	RAD	pCi/g	0.57	0.069	0.079	0.652	0.089	0.098	0.73	0.093	0.11	0.645	0.049	0.072
Potassium-40	RAD	pCi/g	9.6	0.43	1.2	9.9	0.44	1.4	11.7	0.53	1.6	11.1	0.29	1.3
Radium-226	RAD	pCi/g	0.6	0.3	0.28	0.43	0.27	0.22	0.54	0.24	0.23	0.9	0.27	0.3
Radium-226 (Gamma)	RAD	pCi/g	1.15	0.68	0.53	0.41	0.83	0.62	0.16	0.88	0.63	0.57	0.53	0.39
Strontium-89,90	RAD	pCi/g	0.06	0.46	0.27	0.02	0.51	0.29	-0.03	0.45	0.26	0.16	0.44	0.26
Thallium-208	RAD	pCi/g	0.146	0.04	0.039	0.147	0.045	0.045	0.211	0.053	0.056	0.156	0.029	0.032
Thorium-234	RAD	pCi/g	0.81	1.5	0.45	0.76	0.99	0.37	1.05	1.2	0.43	0.54	1.1	0.33
Uranium-235	RAD	pCi/g	-0.06	0.19	0.071	0.08	0.2	0.13	0.0	0.24	0.14	0.091	0.15	0.1
Tritium	RAD	pCi/L	340	190	140	320	190	140	80	180	110	-28	190	97.

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T1A01(5.0)			LEHR-S-T1A02(5.0)			LEHR-S-T1A03(7.5)			LEHR-S-T1A04(12.0)		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T301			LEHR-S-T302			LEHR-S-T303			LEHR-S-T401		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Radionuclides														
Actinium-228	RAD	pCi/g	0.3	0.21	0.15	0.55	0.14	0.13	0.56	0.19	0.15	0.4	0.25	0.16
Bismuth-212	RAD	pCi/g	0.17	0.41	0.29	0.38	0.29	0.24	0.44	0.33	0.27	0.22	0.38	0.29
Bismuth-214	RAD	pCi/g	0.317	0.12	0.099	0.501	0.073	0.09	0.593	0.082	0.1	0.41	0.11	0.11
Carbon-14	RAD	pCi/g	-0.06 Jml	0.52	0.28	0.05 Jml	0.52	0.29	-0.03 Jml	0.49	0.27	-0.06 Jml	0.52	0.28
Cesium-137	RAD	pCi/g	0.126	0.053	0.043	-0.013	0.042	0.022	0.003	0.048	0.028	0.026	0.05	0.032
Cobalt-60	RAD	pCi/g	0.004	0.053	0.024	-0.002	0.049	0.019	0.016	0.05	0.021	-0.019	0.061	0.022
Gross Alpha	RAD	pCi/g	5.8 Jml	5.9	4.4	10.9 Jml	5.4	5.3	9.6 Jml	6.3	5.4	6.2 Jml	6.8	4.8
Gross Beta	RAD	pCi/g	15.2	5.9	4.3	12.8	5.4	3.9	15.8	5.9	4.4	12.6	5.6	4.0
Lead-210	RAD	pCi/g	4.4	1.2	1.2	0.64	0.89	0.61	0.59	0.93	0.64	4.7	1.3	1.2
Lead-212	RAD	pCi/g	0.391	0.081	0.082	0.586	0.068	0.09	0.734	0.067	0.1	0.482	0.083	0.091
Lead-214	RAD	pCi/g	0.334	0.098	0.082	0.616	0.077	0.086	0.716	0.079	0.097	0.509	0.11	0.096
Potassium-40	RAD	pCi/g	8.5	0.63	1.3	12.2	0.37	1.6	11.7	0.47	1.6	10.4	0.66	1.5
Radium-226	RAD	pCi/g	0.29	0.25	0.19	0.46	0.3	0.25	1.45	0.19	0.35	0.62	0.24	0.25
Radium-226 (Gamma)	RAD	pCi/g	0.0	0.9	0.72	1.18	0.74	0.55	0.19	0.83	0.6	0.0	1	0.8
Strontium-89,90	RAD	pCi/g	0.07	0.5	0.29	-0.02	0.46	0.26	-0.15	0.46	0.25	-0.08	0.47	0.27
Thallium-208	RAD	pCi/g	0.092	0.063	0.049	0.137	0.039	0.04	0.214	0.04	0.048	0.165	0.064	0.056
Thorium-234	RAD	pCi/g	4.11	1.1	0.57	0.51	0.85	0.3	0.76	0.89	0.33	4.15	1.2	0.59
Uranium-235	RAD	pCi/g	-0.04	0.23	0.13	-0.045	0.19	0.024	0.1	0.2	0.13	0.16	0.25	0.17
Tritium	RAD	pCi/L	100	190	120	40	190	100	-21	190	98.	70	190	110

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T301			LEHR-S-T302			LEHR-S-T303			LEHR-S-T401		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T402			LEHR-S-T403			LEHR-S-T601			LEHR-S-T602		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA
Radionuclides														
Actinium-228	RAD	pCi/g	0.7	0.15	0.15	0.525	0.094	0.088	0.58	0.18	0.15	0.56	0.22	0.16
Bismuth-212	RAD	pCi/g	0.34	0.32	0.25	0.27	0.17	0.14	0.15	0.38	0.27	0.45	0.3	0.27
Bismuth-214	RAD	pCi/g	0.505	0.085	0.097	0.435	0.055	0.067	0.581	0.082	0.1	0.61	0.096	0.11
Carbon-14	RAD	pCi/g	0.06 Jml	0.48	0.27	0.09 Jml	0.55	0.31	-0.01 Jml	0.5	0.27	0.1 Jml	0.51	0.29
Cesium-137	RAD	pCi/g	-0.01	0.039	0.014	-0.011	0.025	0.014	-0.011	0.048	0.026	-0.019	0.055	0.023
Cobalt-60	RAD	pCi/g	-0.015	0.049	0.02	0.0022	0.022	0.01	0.013	0.035	0.018	-0.02	0.053	0.017
Gross Alpha	RAD	pCi/g	5.6 Jml	6.2	4.5	9.1 Jml	6	5.2	7.8 Jml	6.2	4.9	8.3 Jml	7.3	5.5
Gross Beta	RAD	pCi/g	12.8	6.4	4.5	15.1	6.4	4.6	14.9	5.7	4.2	15.1	6.3	4.5
Lead-210	RAD	pCi/g	0.26	1	0.66	9	26	19	0.81	0.89	0.63	1.05	1.2	0.81
Lead-212	RAD	pCi/g	0.548	0.062	0.086	0.511	0.044	0.069	0.672	0.067	0.098	0.614	0.07	0.097
Lead-214	RAD	pCi/g	0.617	0.071	0.089	0.547	0.047	0.064	0.742	0.081	0.099	0.75	0.087	0.11
Potassium-40	RAD	pCi/g	10.8	0.44	1.5	11	0.3	1.3	11.5	0.48	1.5	12.1	0.51	1.7
Radium-226	RAD	pCi/g	0.5	0.23	0.23	0.43	0.26	0.22	0.64	0.26	0.25	0.35	0.24	0.2
Radium-226 (Gamma)	RAD	pCi/g	0.46	0.73	0.54	0.04	0.54	0.4	0.35	0.83	0.58	0.0	0.82	0.63
Strontium-89,90	RAD	pCi/g	0.08	0.46	0.26	0.22	0.46	0.28	0.0	0.46	0.26	0.0	0.44	0.25
Thallium-208	RAD	pCi/g	0.157	0.046	0.045	0.138	0.029	0.03	0.2	0.042	0.047	0.242	0.048	0.056
Thorium-234	RAD	pCi/g	0.7	0.98	0.34	0.83	3.6	0.51	0.61	0.93	0.34	0.65	1.1	0.39
Uranium-235	RAD	pCi/g	0.06	0.19	0.12	0.011	0.16	0.093	0.01	0.21	0.13	0.16	0.22	0.14
Tritium	RAD	pCi/L	1,270	190	220	50	190	110	160	190	120	460	190	150

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T402			LEHR-S-T403			LEHR-S-T601			LEHR-S-T602		
			Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA	Value	Uncert	MDA

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T603		
			Value	Uncert	MDA
Radionuclides					
Actinium-228	RAD	pCi/g	0.67	0.093	0.1
Bismuth-212	RAD	pCi/g	0.32	0.2	0.16
Bismuth-214	RAD	pCi/g	0.513	0.056	0.074
Carbon-14	RAD	pCi/g	-0.21 Jml	0.53	0.27
Cesium-137	RAD	pCi/g	-0.004	0.024	0.014
Cobalt-60	RAD	pCi/g	0.006	0.023	0.011
Gross Alpha	RAD	pCi/g	7.9 Jml	7.5	5.4
Gross Beta	RAD	pCi/g	16.4	6.1	4.5
Lead-210	RAD	pCi/g	0.5	2.8	2.0
Lead-212	RAD	pCi/g	0.576	0.043	0.074
Lead-214	RAD	pCi/g	0.616	0.048	0.068
Potassium-40	RAD	pCi/g	12.8	0.29	1.5
Radium-226	RAD	pCi/g	0.22	0.24	0.17
Radium-226 (Gamma)	RAD	pCi/g	0.89	0.51	0.39
Strontium-89,90	RAD	pCi/g	0.0	0.42	0.24
Thallium-208	RAD	pCi/g	0.21	0.025	0.035
Thorium-234	RAD	pCi/g	0.49	1.2	0.32
Uranium-235	RAD	pCi/g	-0.028	0.16	0.018
Tritium	RAD	pCi/L	70	180	110

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Pclass	Units	LEHR-S-T603		
			Value	Uncert	MDA

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303
Cations and Anions								
Bromide	mg/kg	<0.099 IU	<0.1 IU	<0.1 IU	<0.11 IU	---	---	---
Chloride	mg/kg	2.69	2.86	4.46	3.52	---	---	---
Nitrogen, Nitrate (as N)	mg/kg	16.4 Jhl	16.9 Jhl	23.5 Jhl	4.45 Jhl	0.163 IJ	0.454	0.234

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303

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Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603
Cations and Anions							
Nitrogen, Nitrate (as N)	mg/kg	0.284	0.3	0.411	0.597	0.237 U	0.919

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T401	LEHR-S-T402	LEHR-S-T403	LEHR-S-T601	LEHR-S-T602	LEHR-S-T603

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General Chemical								
Formaldehyde	mg/kg	<0.11 UJmlU	<0.11 UJmlU	<0.11 UJmlU	<0.12 UJmlU	<0.11 UJmlU	<0.12 UJmlU	<0.12 UJmlU
pH	pH Un	8.3 Jhl	8.23 Jhl	8.15 Jhl	8.29 Jhl	9.15 Jhl	9.07 Jhl	8.42 Jhl

Data Gap Investigation - Analytical Results for Domestic Septic Tank Systems

Lab_chem	Units	LEHR-S-T1A01(5.0)	LEHR-S-T1A02(5.0)	LEHR-S-T1A03(7.5)	LEHR-S-T1A04(12.0)	LEHR-S-T301	LEHR-S-T302	LEHR-S-T303

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General Chemical							
Formaldehyde	mg/kg	<0.11 UJmlU	<0.11 UJmlU	<0.12 UJmlU	<0.11 UJmlU	<0.12 UJmlU	<0.13 UJmlU
pH	pH Un	8.21 Jhl	8.41 Jhl	8.74 Jhl	7.68 Jhl	8.1 Jhl	8.68 Jhl

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